United States Department of Agriculture

Forest Service

2006

Hiawatha National Forest

2006 Forest Plan

Forest Terminology Acronyms

AMS: Analysis of the Management Situation
ASQ: Allowable Sale Quantity
BA: Basal Area
BFES: Budget Formulation and Execution System
Bg: Background
BMP: Best Management Practices
CEQ: Council on Environmental Quality
CFR: Code of Federal Regulations
cRNA: Candidate Research Natural Area
Dbh: Diameter at Breast Height
DC: Desired Condition
DEIS: Draft Environmental Impact Statement
DNR: Michigan Department of Natural Resources (also MDNR)
EA: Environmental Assessment
EIS: Environmental Impact Statement
ELT: Ecological Landtype
EPA: Environmental Protection Agency
FEIS: Final Environmental Impact Statement
Fg: Foreground
FOFEM: First Order Fire Effects Model
FS: Forest Service
FSH: Forest Service Handbook
FSM: Forest Service Manual
FWS: United States Fish and Wildlife Service (also USFWS)
G: Guideline (forest plan)
GIS: Geographical Information Systems
HUC: Hydrologic Unit Code
IMPLAN: Impact Analysis for Planning
LAC: Limit of Acceptable Change
LAU: Lynx Analysis Unit
Lb: Pounds
LCAS: Lynx Conservation Assessment and Strategy
LE: Landscape Ecosystem
LSC: Land Suitability Class
LT: Landtype
LTA: Landtype Association
MA: Management Area
Mg: Middleground
MIH: Management Indicator Habitat
MIS: Management Indicator Species
MMBF: Million Board Feet
MVR: Market Valued Resource
NEPA: National Environmental Policy Act
NF: National Forest
NFMA: National Forest Management Act
NFS: National Forest System
NOI: Notice of Intent
NPV: Net Present Value
OG: Old-Growth
OHV: Off Highway Vehicle
OML: Objective Maintenance Level
PILT: Payment in Lieu of Taxes
PM: Particulate Matter
PNM: Primitive Non-Motorized
PSD: Prevention of Significant Deterioration
R9: Region 9 (Forest Service Eastern Region)
RAP: Roads Analysis Process
RFSS: Regional Forest Sensitive Species
RMV: Recreation Motor Vehicle
RMZ: Riparian Management Zone
RNA: Research Natural Area
RNV: Range of Natural Variation
ROD: Record of Decision
ROS: Recreation Opportunity Spectrum
RVD: Recreation Visitor Days
S: Standard (forest plan)
SAF: Society of American Foresters
SIL: Scenic Integrity Level
SIO: Scenic Integrity Objective
SMC: Special Management Complex
SMS: Scenery Management System
SNA: Scientific and Natural Area
SPM: Semi-Primitive Motorized
SPNM: Semi-Primitive Non-Motorized
TES: Threatened, Endangered, or Sensitive
TEUI: Terrestrial Ecological Unit Inventory
TMDL: Total Maximum Daily Load
TSI: Timber Stand Improvement
USDA: United States Department of Agriculture
USFWS: United States Fish and Wildlife Service (also FWS)
VGS: Vegetation Growth Stage
VIS: Viability Indicator Species
WO: Washington Office

2006 Forest Plan

Hiawatha National Forest

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Preface

The Hiawatha National Forest has prepared the 2006 Forest Plan to establish management direction for forest resources. The Final Environmental Impact Statement accompanies this plan and describes the analysis used in developing the 2006 Forest Plan. The two documents should be reviewed concurrently.

If any part or particular application of the 2006 Forest Plan is found to be invalid, the remainder of the Plan and its application will not be affected.

Organization of the Forest Plan

This document is organized into four chapters and an appendix section.

Chapter 1: **Understanding the Forest Plan.** This chapter discusses the general purpose of the Forest Plan, the forest plan revision process, the relationship of the Plan to other documents and the direction for implementing the Plan. It includes definitions of desired conditions, goals, objectives, standards and guidelines.

Chapter 2: **Forest-wide Management Direction.** This chapter presents management direction for the Forest as a whole. It describes by resource area, the forest-wide desired conditions, goals, objectives, standards and guidelines that will be used in managing the Forest.

Chapter 3: **Management Area Direction.** This chapter presents management direction for specific management areas. It includes the purpose of each management area, describes the landscape of each area and describes the specific standards and guidelines that are exclusive to that area.

Chapter 4: **Monitoring and Evaluation.** This chapter presents a plan for monitoring and evaluating the effects of the management practices.

Appendices: The following appendices are included in this document:

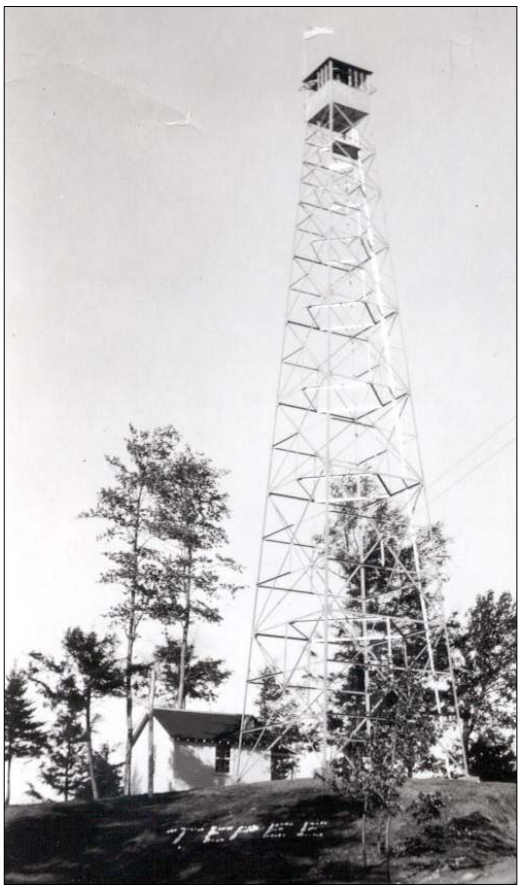
Appendix A: Proposed and Probable Practices, Goods Produced and Other Information

Appendix B: Management Indicator Species and Habitats

Appendix C: Visual Quality Objectives

Appendix D: Seral Class Definitions

Appendix E: A compilation of forest terminology used in the Forest Plan.



CHAPTER 1

Understanding the Forest Plan

Diamond Hill Lookout, 1929

"The vast possibilities of our great future will become realities only if we make ourselves responsible for that future."

Gifford Pinchot
1st Chief of the Forest Service (1905-1910)

Understanding the Forest Plan

Purpose of a Forest Plan

This Forest Plan guides all natural resource management activities for the Hiawatha National Forest. It describes desired resource conditions, management practices, levels of resource production and management and determines the availability of suitable land for vegetation management.

The Plan provides management direction to ensure that ecosystems are capable of providing a sustainable flow of goods and services to the public. More specifically, it establishes:

- How the Hiawatha should look if the Forest Plan is fully implemented (goals and desired conditions);
- Measurable, planned results that contribute to reaching the desired conditions (objectives);
- Required action designed to meet the desired conditions and objectives (standards);
- Preferable action used to reach desired conditions and objectives (guidelines);
- Management direction that applies only to specific management areas;
- Monitoring and evaluation requirements;
- Designation of land as suited or not suited for timber production and other resource management activities.

Land use determinations and standards and guidelines, constitute the forest plan's management direction. However, the actual outputs, services and rates of implementation are dependant on annual budgets from Congress.

Revising the 1986 Forest Plan

Hiawatha's Forest Plan was issued in 1986. The National Forest Management Act requires that forests revise their forest plans every 10 to 15 years (36 CFR 219.10).

The Hiawatha National Forest began its formal revision process when it published the Notice of Intent on September 18, 2003. Then the interdisciplinary team completed extensive analysis and developed the four alternatives that were considered in the draft EIS. The Hiawatha used comments received during the public comment period to prepare the Final EIS and the 2006 Forest Plan.

This Forest Plan is based on the alternative the Regional Forester selected in the Record of Decision. Chapter 2 of the Final EIS has a summary of this alternative. The 2006 Forest Plan will completely replace the 1986 Forest Plan and will be implemented 30 days following publishing of the Notice of Availability in the *Federal Register*.

Once the Forest Plan is in place, the Hiawatha will complete annual monitoring and evaluation reports to determine if the Plan continues to provide effective management direction for forest resources.

The Forest Supervisor is required to review conditions of the land at least every five years to determine if the Forest Plan needs revising. If monitoring and evaluation indicate that the immediate changes cannot be handled by amendment, then it would be necessary to revise the Plan.

Relationship of the Forest Plan to other documents

Developing the Hiawatha National Forest's 2006 Forest Plan was guided by the following laws and policies:

- **Organic Administration Act** authorized the creation of what is now the National Forest System. It established forest reserves to improve and protect the forests within the boundaries, or for the purpose of securing favorable water flows, and to furnish a continuous supply of timber for United States citizens.
- **Multiple-Use Sustained Yield Act** affirmed the application of sustainability to the broad range of resources which the Forest Service has responsibility. This act confirms the authority to manage the national forests for outdoor recreation, timber, watershed and wildlife and fish purposes.

- **National Forest Management Act (NFMA)** requires that National Forest System lands be managed for a variety of uses on a sustained basis to ensure in perpetuity a continued supply of goods and services to the American people. It also establishes analytical and procedural requirements for developing, revising and amending forest plans.
- **National Environmental Policy Act (NEPA)** ensures that environmental information is made available to citizens and public officials before decisions are made and action is taken. This disclosure helps public officials make decisions that are based on an understanding of environmental consequences and take actions to protect, restore and enhance the environment. Essential to this process are accurate scientific analyses, expert agency input and public involvement—which all have been part of this revision process. The 2006 Forest Plan has been analyzed and the potential effects of the plan have been disclosed in the accompanying FEIS.
- **Endangered Species Act:** One purpose of this act is to provide a means to conserve the ecosystems that threatened and endangered species depend on. Federal agencies are required to carry out programs for the conservation of threatened and endangered species in consultation with the U.S. Fish and Wildlife Service (USFWS).
- **Federal Threatened and Endangered Species and Regional Foresters Sensitive Species:** All federal threatened and endangered species and critical habitat listed by the USFWS for the Hiawatha National Forest and all current Regional Foresters Sensitive Species lists for the Hiawatha are incorporated into this Plan by reference.
- **Forest Service Directives:** Management direction in the Forest Service Directive System, including the Forest Service Manual (FSM) and the Forest Service Handbook (FSH), is part of forest plan management direction and is not repeated in the Forest Plan. This direction also includes applicable laws, regulations and policies, although they may not be restated in this Forest Plan. Direction for managing National Forest System land comes from a variety of levels. National and regional direction includes laws, executive orders, regulations and Forest Service policy.
- **Healthy Forest Restoration Act of 2003** reduces the risks of damage to communities, municipal water supplies and federal lands from catastrophic wildfire; to authorize grant programs to improve the commercial value of forest biomass; to enhance efforts to protect watersheds and address threats to forest and rangeland health; to promote systematic information gathering to address the impacts of insect infestation on forest and rangeland health; to improve the capacity to detect insect and disease infestations at an early stage; and to benefit threatened and endangered species, improve biological diversity and enhance carbon sequestration. This act was another extension of the focus on implementing the National Fire Plan.
- **Wild and Scenic Rivers Act:** For the segments of rivers that have been determined to be eligible for consideration as national wild, scenic or recreational rivers under this act, the Forest Service is required to provide for the protection of the river values. The Forest Plan addresses resource protection, developing land and facilities, public use and other management practices necessary or desirable to maintain the eligibility of the river segments.
- **The USDA Forest Service Mission Statement:** "The mission of the USDA Forest Service is to sustain the health, diversity and productivity of the nation's forests and grasslands to meet the needs of present and future generations."
- **USDA Strategic Plan Framework:** The Strategic Plan goals and objectives are incorporated into the 2006 Forest Plan. Implementation of the Forest Plan will reflect the USDA Strategic Plan Framework and any modifications or changes that occur within it throughout the planning period.

Forest Service treaty obligations; other Laws and regulations of Tribal importance

- **Forest Service Treaty Obligations:** The FS has treaty obligations on NFS lands within areas ceded in the treaties of 1836, 1837 and 1842 to the tribes of Lake Superior Chippewa Indians. National Forests in the ceded territory include the Chequamegon-Nicolet in Wisconsin, the Ottawa and Hiawatha in Michigan's Upper Peninsula and the northern part of the Huron-Manistee in Lower Michigan.

- **1966 Natural Historic Preservation Act as amended 1980 and 1992** established a program for the preservation of our nation's historic properties. The National Register of Historic Places established regulations to maintain and expand this list and are found at 36 CFR 60. This act required establishing regulations to provide for curation of historical properties, and are at 36 CFR 79. Further protection for archaeological resources is in 36 CFR 296.
- **American Indian Religious Freedom Act of 1978** protects and preserves for American Indians their inherent right of freedom to believe, express, and exercise their traditional religions.
- **1979 Archaeological Resources Protection Act as amended 1988** provides protection of archaeological resources and sites which are on public lands and Indian lands.
- **1990 Native American Graves Protection and Repatriation Act** provides a process for museums and federal agencies to return certain Native American cultural items; human remains, funerary and sacred objects or objects of cultural patrimony to lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations.

Implementing the Forest Plan

The 2006 Forest Plan provides a framework and context that guides the Hiawatha National Forest's day-to-day resource management operations. It is a strategic, programmatic document and does not make project-level decisions.

NFMA requires "permits, contracts and other instruments for use and occupancy" of National Forest System lands be "consistent" with the Forest Plan (16 USC 1640(i)). In the context of a revised Plan, the National Forest Management Act specifically conditions this requirement in three ways:

1. These documents must be revised only "when necessary"
2. These documents must be revised as "soon as practicable"
3. Any revisions are "subject to valid existing rights"

Basic Management Principles

A set of fundamental principles guides management at the Hiawatha National Forest. Direction in the 2006 Forest Plan adds to and qualifies these basic principles:

Principle 1: The Forest Service will follow laws, regulations and Forest Service Manual policies that relate to managing National Forest System land. This Forest Plan will supplement — not replace — direction from these sources.

Principle 2: The Forest Service will coordinate management activities with the appropriate local, state or Tribal governments, as well as with other federal agencies.

Principle 3: The Forest Service will actively consult with Tribal governments and collaborate with interested individuals, groups and organizations.

Principle 4: The Forest Service will manage the Hiawatha National Forest for multiple uses. The Forest is open for any legal public activity or management action, unless specially restricted by law, policy, or by the Forest Plan. While allowed, such activities and actions may require administrative review and authorization before they are implemented.

Tools and Techniques

The Hiawatha National Forest will reach its desired conditions for vegetation through natural ecological processes and by using a diverse range of management tools and techniques. To the extent practical, timber management will emulate naturally-occurring disturbances (e.g. fire and windstorms). These management practices will include both even-aged and uneven-aged techniques. Clearcutting will be used when it is the optimal method to meet the objectives and requirements of the Forest Plan. The Forest will also use harvesting methods to create or maintain multi-aged and uneven-aged stands.

Prescribed fire will be used alone or with silvicultural treatments to mimic the effects of natural fire. Management-ignited fire and lightning-caused fire will help maintain, enhance and restore natural ecological processes. Minimum impact management tactics will generally be used in wildland fire suppression and in prescribed fire application to reduce adverse fire suppression effects.

The Forest will promote re-growth of harvested or other disturbed forests with a variety of regeneration practices. This includes tree planting, seeding and natural regeneration. Some areas will naturally change through succession. The Forest will use environmentally sustainable management practices to provide commodity and non-commodity resources to contribute to the social and economic stability of local communities. Management practices include prescribed fire, timber harvest and traditional gathering activities.

The Forest will provide recreation opportunities in a multiple-use setting by implementing the Recreation Opportunity Spectrum. Ecological functions of watersheds and riparian areas will be enhanced or restored through improving road and trail crossings and decommissioning unneeded roads. Silvicultural treatments or fire may be used to enhance shade, coarse woody debris recruitment or bank stability in riparian areas.

The Forest may create new roads and trails if needed for site-level projects or to respond to increased demand. The majority of these roads will be temporary and will be decommissioned after they are not needed.

Site-level Projects

Implementing the 2006 Forest Plan means developing and implementing site-level management projects to reach the desired conditions described in the plan.

Project-level compliance with NFMA is concerned with consistency with the Plan and NFMA regulations. Compliance with NEPA involves the correct environmental analysis process for the specific proposal, proper documentation and public disclosure of effects published in an environmental assessment, environmental impact statement or in a categorical exclusion.

When necessary, the Hiawatha National Forest will perform environmental analysis on site-level projects and activities. An analysis file or project file is available for public review, but it is not always necessary to document the analysis in the form of an environmental assessment or environmental impact statement.

Environmental analysis of site-level projects will use as its basis, the data and evaluations in the Forest Plan and the Forest Plan EIS. The following are some examples of project-level decisions that may require additional environmental analyses and disclosure as the Forest Plan is carried out:

- Timber harvest
- Wildlife improvement and restoration
- Prescribed burns
- Watershed improvement projects
- Trail or road construction
- Special use authorizations
- Land exchanges

Operational Activities Exempt from NEPA

Resource inventories, action plans and schedules do not require additional environmental analysis and disclosure at the project level. The following are examples of operational activities that do not constitute site-specific decisions and are exempt from NEPA procedures:

- Developing five-year wildlife action plans
- Developing fire-situation reports
- Scheduling maintenance for developed recreation sites
- Preparing land ownership adjustment plans
- Scheduled road maintenance

Budgets

Annual Forest budget proposals are based on the activities and actions required to achieve the desired conditions and objectives of the Forest Plan. The Forest proposes a budget every two years, but Congress approves an annual budget.

The National Forest System appropriation from Congress provides funds for stewardship and management of all 192 million acres of federal land. The appropriated funds are key for translating the desired conditions and objectives stated in the Forest Plan to on-the-ground results.

Upon receipt of the final budget, the Forest prepares an implementation budget, which is the result of program development, annual work planning and monitoring processes. These processes supplement the Forest Plan and make the annual adjustments needed to reflect current priorities within the overall management direction contained in the Forest Plan.

Therefore, the funding distribution between program components and the intensity or level of activities in those programs is a reflection of the Plan as well as the will of Congress. The final determining factor in carrying out the intent of the Forest Plan is the level of funding, which dictates the rate of implementation of the Plan.

Forest Plan Amendments

Most proposed activities will be consistent with Forest Plan direction. If management actions are found to be inconsistent with Plan direction, or if site-specific analysis shows an error in the Plan, the Forest Plan or the proposal must be adjusted according to the analysis. An adjustment in management direction would require an amendment and may result from:

- Changes in physical, biological, social or economic conditions
- Recommendations of an interdisciplinary team based on the results of monitoring and evaluation
- Determination by the Forest Supervisor that existing or proposed projects, permits, contracts, cooperative agreements, or other instruments authorizing occupancy and use are appropriate, but not consistent with elements of the Forest Plan management direction
- Errors in planning found during implementation

Location of the Forest

The Hiawatha National Forest has nearly 1.3 million acres within its proclamation boundary. The lands are split between two units located in Michigan's Upper Peninsula.

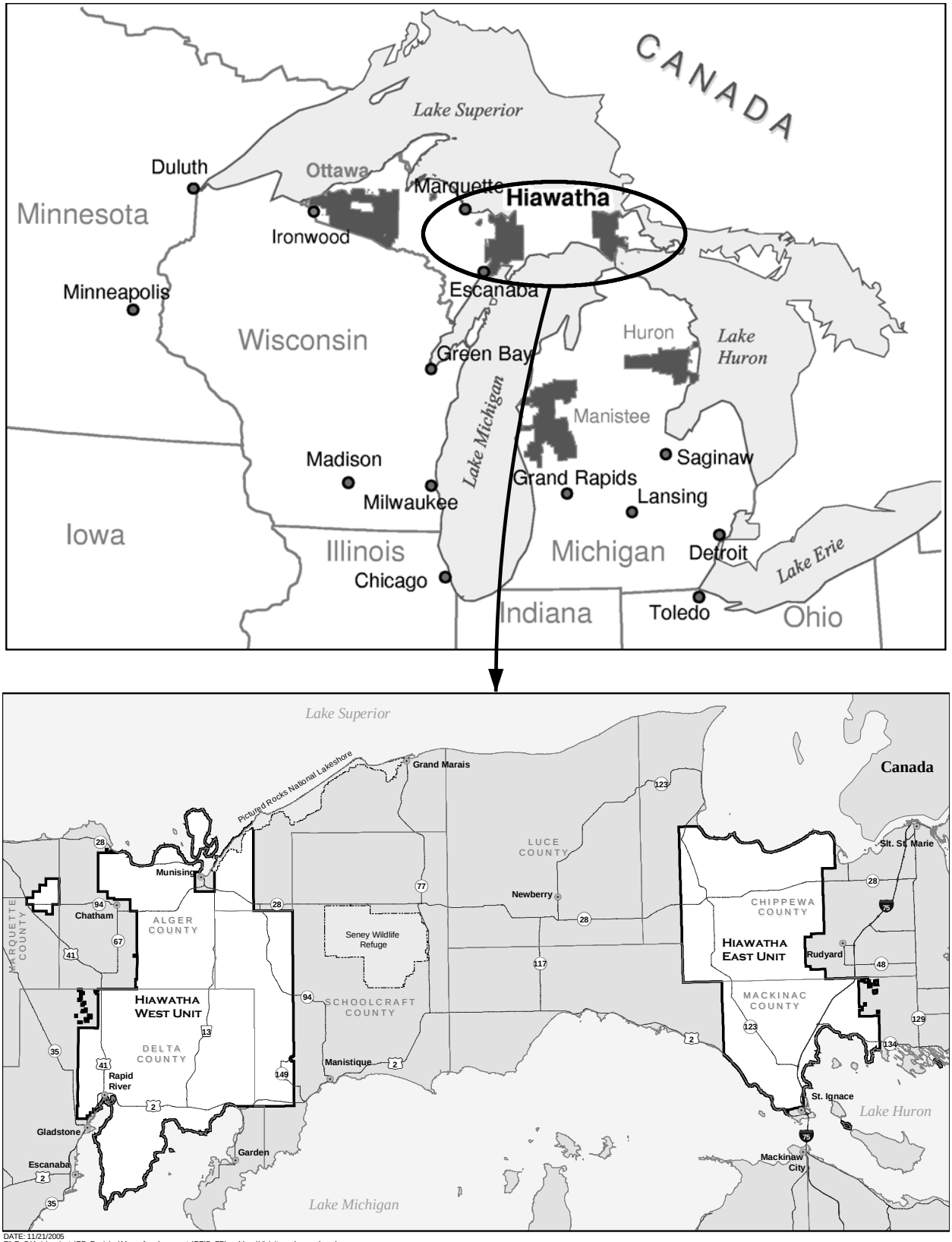
The East Unit was established by President Teddy Roosevelt in 1909 as the Marquette National Forest. President Herbert Hoover signed a proclamation in 1931 to create the Hiawatha National Forest in the central region of the Upper Peninsula.

In a February 9, 1962 executive order, all lands within the Marquette National Forest (East Unit) were transferred and made part of the Hiawatha National Forest (West Unit).

The Hiawatha National Forest touches three of the five Great Lakes (Lakes Huron, Michigan and Superior). Visitors from Michigan's Lower Peninsula, Illinois, Indiana, Minnesota, Ohio, Wisconsin and Canada, can easily reach one of the units in a day's travel.

Figure 1-1 shows a map of the Hiawatha National Forest.

Figure 1-1. Map of the Hiawatha National Forest.



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CHAPTER 2

Forest-Wide Management Direction

Whitefish Bay, Sault Ste. Marie RD, Hiawatha National Forest

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"The national forests are some of the most outstanding places in this country. They serve as America's outdoor playground and they contain a wealth of wildlife and other natural resources."

Dale Bosworth
Forest Service Chief (2001-present)

Introduction

The management direction in this chapter guides all natural resource management practices for the Hiawatha National Forest. They state the bounds or rules which are applied to management practices to accomplish the direction set in the Forest Plan. The desired conditions, goals, objectives and standards and guidelines apply to all management areas on the Hiawatha.

The Hiawatha National Forest used the following definitions when developing management direction:

Goals and Desired Conditions are very similar. **Desired conditions** set the context for goals and other management direction by providing a broad, user-friendly snapshot of what the forest or management area will look like when goals, objectives, standards and guidelines have been met.

Goals are concise statements that describes desired conditions to be achieved some time in the future (36 CFR 219.3). Goals address Forest priorities and issues. They are broad and general in scope with no specific timeframe, and can be developed for the entire forest or for specific management areas.

Objectives are concise, time-specific statements of measurable planned results that respond to pre-established goals (36 CFR 219.3). Objectives are more specific and tangible than goals. Objectives are measurable, but they are not standards. They are budget-dependent and are subject to forces beyond Agency control.

Standards are mandatory permissions and limitations needed to achieve the goals and objectives of the plan. ***They are applicable to all foreseeable management situations and deviation from them requires amendment to the Forest Plan.***

They should be easily implemented and comply with all applicable laws, regulations, executive orders and policies. Implementing standards should not depend on future plans, analysis or accomplishments that may never occur. In addition, a standard should not attempt to regulate factors beyond management control, but it can regulate activities when certain conditions exist. Because standards must be monitored (36 CFR 219.12(k)), they should be written in such a way that compliance could be verified.

Guidelines are permissions and limitations that should be implemented in most situations. ***Deviation from a guideline does not require an amendment to the Forest Plan, but the rationale must be disclosed in the project decision documents.***

If a management practice does not entail sufficient risk to be addressed in the effects analysis, it is probably not necessary to develop guidelines for that practice. Because guidelines must be monitored (36 CFR 219.12(k)), they should be written in such a way that compliance could be verified.

Forest-wide Management Direction

1500 External Relations

Tribal Relations

Goals:

1. The Hiawatha National Forest will honor U.S. Government trust responsibility and treaty obligations towards Indian tribes within a government to government relationship.

Objectives:

1. Nothing in this Forest Plan or in its implementation, is intended to modify, abrogate or otherwise adversely affect tribal reserved or treaty-guaranteed rights applicable within the Hiawatha National Forest.

2100 Environmental Management

Air Resource

Desired Conditions: The air on the Hiawatha is of high quality. Forest ecosystems are not impaired by airborne stressors. Visitor, resident and employee health are not adversely affected. Visibility conditions do not impair the enjoyment of viewing the forest, and other air quality related values are not adversely affected.

Goals:

1. Management activities will maintain or enhance air quality conditions at a minimum of Class II attainment, as defined by the U.S. Environmental Protection Agency standards.

Objectives:

1. Identify areas at risk for reduced visibility and acid and mercury deposition.

Guidelines:

1. Management activities with the potential to adversely affect forest air quality should be coordinated with Seney Wildlife Refuge and with the State of Michigan, Department of Environmental Quality, Air Quality Division.

2200 Grazing Management

Guidelines:

1. Livestock grazing should not occur.

2300 Recreation Management

Desired Conditions: The Forest provides a variety of high-quality outdoor recreational opportunities that are designed to meet the niche, meet recreation demands and settings, minimize user conflicts, while sustaining natural resources. The Hiawatha's Wild and Scenic Rivers are managed to protect the outstandingly remarkable values for which they were designated in the National Wild and Scenic River System and to protect their free-flowing nature.

The Congressionally-designated Wildernesses provide remote, undisturbed areas and secluded recreational settings where natural processes function without human interference. Grand Island National Recreation Area's rocky cliffs, sand beaches and network of trails and overlooks offer excellent island recreation opportunities for hikers, bicyclists, boaters and back country campers.

The Whitefish Bay Scenic Byway along Lake Superior's south shore provides access to a variety of overnight, day use and interpretive recreation opportunities that connect with and complement similar opportunities between Sault Ste. Marie to the east and Tahquamenon Falls State Park to the west.

Heritage areas that have national or tribal significance will be identified for special management. Lighthouse "lookers" seek out views of and interaction with the six historic lighthouses which stand on the Hiawatha's Great lakes shorelines.

Boaters and anglers can select from a range of motorized and non-motorized experiences on inland lakes on the Hiawatha. Some access sites accommodate larger fishing boats and personal watercraft, while others provide for either carry-in access or have no developed access. Canoeists and kayakers have a variety of opportunities to access inland lakes, rivers and streams that afford a variety of skill and challenge levels.

The Hiawatha also provides a number of improved Great Lakes boat launches that are cost-effective to maintain and meet recreation demands. One new boat access may be developed as part of the Whitefish Bay Scenic Byway on Lake Superior. Boat accesses and forest facilities provide support to a Great Lakes water trail development, in partnership with other resource agencies. Because of natural lake level fluctuations, some inland and Great Lake access sites may be temporarily or permanently closed.

The Hiawatha will continue to develop a motorized route system that connects roads, trails, recreation and service facilities and accesses to provide enhanced recreation experiences. Limited new trail construction will offer additional motorized routes and single use trails.

Hikers, bicyclists, cross country skiers, dog-mushers, snowshoers, horseback riders and other non-motorized enthusiasts enjoy a variety of looped trails and routes that are connected with recreation facilities such as campgrounds and day use areas. Trails are located in a variety of settings — from roaded natural to semi-primitive, non-motorized. Some trails are managed for multiple non-motorized uses, while other trails are managed for single uses to reduce resource damage and to minimize user conflicts. The Hiawatha will cooperate with the National Park Service in managing the North Country National Scenic Trail.

Off-highway vehicle (OHV) recreationists have access to a variety of designated roads and trails that loop and connect to forest and off-forest facilities for hunting, fishing and touring. Snowmobile recreationists have a variety of groomed trails and un-groomed areas to ride. Cross-country travel by OHVs is prohibited.

Much of the Forest is accessible via a road system comprised of native soil "woods roads," as well as paved and graveled, county and Forest Service roads. Some roads are closed and/or obliterated to provide for non-motorized recreation opportunities and/or to protect natural resources.

Recreation facilities, including campgrounds, trails and boat launches, are managed in conjunction with the recreation setting. Some facilities will be renovated and/or upgraded to eliminate deferred maintenance and to make them accessible. Other facilities will be decommissioned due to low demand and/or occupancy.

Recreation Opportunity Spectrum

Guidelines:

1. Forest management activities should reflect the Recreation Opportunity Spectrum (ROS) indicated in Table 2300-1.

Table 2300-1. Recreation Opportunity Spectrum Assignment by Management Area

Management Area	Primitive (P)	Semi-Primitive Non-motorized (SPNM)	Semi-Primitive Motorized (SPM)	Roaded Natural (RN)	Rural (R)	Urban (U)
MA 1.2				■		
MA 2.3*			■	■		
MA 4.2				■		
MA 4.4				■		
MA 4.5				■		
MA 5.1		■				
MA 5.1.1		■				
MA 5.1.2		■				
MA 5.1.3		■				
MA 6.1		■				
MA 6.2			■			
MA 6.3		■				
MA 6.4			■			
MA 7.1**				■	■	
MA 8.1	Research Natural Areas and Candidate RNAs do not have assigned ROS classifications.					
MA 8.2	Recreation use is incidental to this management area.					
MA 8.3***		■	■	■		
MA 8.4****		■	■	■		
MA 8.4.1****			■	■		
MA 8.4.2****		■	■	■		
MA 8.4.3****			■	■		
MA 8.4.4****			■	■		
MA 8.4.5****		■		■		
MA 8.5	Please refer to Chapter 3 for ROS information for this management area.					

* SPM ROS objectives only applies to the Buck Bay Creek, Delias Run and Boot Lake areas.

** These management areas have two ROS objectives.

*** This management area has three ROS objectives — grading from SPNM in the interior core, to SPM and to RN in the exterior.

**** Both study segments and designated Wild and Scenic Rivers have three ROS classifications: RN in recreational segments; SPM in scenic segments; SPNM in wild segments.

Great Lakes and Inland Lakes Access

Goals:

1. A variety of watercraft accesses are provided to and motorized/non-motorized recreation opportunities are available on the Great Lakes and inland lakes.
2. A variety of related recreational opportunities and are provided to forest lakes and rivers.

Table 2300-2. Percentage of watercraft accesses managed for non-motorized/motorized and personal watercraft on inland lakes

Managed Setting	Total % by Setting
Non-motorized	47%
Motorized, no personal watercraft (PWC)	38%
Motorized with personal watercraft (PWC)	15%

Objectives:

1. In this planning period, develop up to one additional Great Lakes boat access located along the Lake Superior shoreline in conjunction with the Whitefish Bay Scenic Byway.
2. Evaluate launches and make future use determinations for Carp River and Hunters Point boat accesses.

Table 2300-3. Percentage of watercraft accesses by facility type on inland lakes

Managed Access	Total % by Facility Type
No Access	50%
Carry-in Access	35%
Back-in Access	15%

3. In this planning period, manage Forest inland lakes to achieve the objectives outlined in Tables 2300-2 and 2300-3.

Guidelines:

1. Beach and near-shore dredging activities on the Great Lakes should maintain a supply of sediment to the area that is sufficient to prevent shoreline erosion or to prevent loss of prominent beach features such as points or dunes.
2. Great Lakes boat accesses that are non-functional based on historical water levels or that incur unreasonable costs to maintain, should be closed (temporarily or permanently) or relocated, unless partnership funding is provided to support the continued maintenance and operation of the access.
3. On inland lakes, watercraft access should generally be restricted to one per lake.
4. Lakes that do not contain a trout fishery and are less than 10 acres in size, should be managed for carry-in watercraft access or no access, and for non-motorized use.
5. Lakes with a trout fishery that are less than 5 acres in size should be managed for non-motorized watercraft use.
6. Lakes that have a maximum depth of less than 5 feet, should be managed for non-motorized use.
7. On inland lakes that are entirely surrounded by National Forest lands, launching and retrieving personal watercraft should be prohibited. However, consideration should be given to current uses and other resource needs and settings.
8. Launching and retrieving personal watercraft from National Forest lands should be prohibited on lakes that are less than 20 acres in size and/or are shallow and narrow.
9. On slopes that are greater than two percent, back-in access should be graveled or paved.
10. Watercraft operating restrictions should be enacted on lakes within developed campgrounds to provide “quiet hours” during high-use recreation seasons.
11. Lakes with no inventoried access should be managed according to the criteria indicated in Table 2300-4.

Table 2300-4. Management Criteria for Lakes with No Inventoried Access			
ROS Class	Motorized Watercraft Use Presently Occurs	Ownership: Private or NFS	Desired Motorized Use
RN/SPM	Yes	Private	Yes
RN/SPM	Yes	NFS	No
RN	No	Private	Yes
RN	No	NFS	No
SPM	No	Private	No
SPM	No	NFS	No
SPNM	Yes	Private/NFS	No
SPNM	No	Private/NFS	No

Motorized & Non-Motorized Trails

Goals:

1. A safe and cost-effective road and trail system provides a variety of recreation experiences, responds to changing social needs and minimizes user conflicts. The system includes loops and connections to access recreation facilities and local community services.
2. Trail and route development provide for multiple use, mitigate social conflicts and prevent natural resource damage.
3. Through coordination with adjacent public land/road management agencies complementing OHV and snowmobile policies and routes are provided.
4. OHV use is restricted to ATVs, MATVs and motorcycles unless otherwise authorized on the Forest's Motor Vehicle Use Map(s).

Objectives:

1. In this planning period, develop three trail management objective prescriptions per year for existing trails.
2. In this planning period, complete a snowmobile and OHV trail agreement with the State and other Michigan National Forests.
3. In this planning period, provide off-highway vehicles trails, routes and areas indicated in Table 2300-5.
4. In this planning period, provide snowmobile trails, routes and areas indicated in Table 2300-6.
5. In this planning period, provide non-motorized trails indicated in Table 2300-7.

Table 2300-5. Off-Highway Vehicle (OHV) Trails, Roads and OHV Areas	
Type of Access	Total
Maximum miles of trails	75 miles
Maximum miles of ML 3-5 Forest Service roads	150 miles
Maximum miles of ML 2 Forest Service roads	2,100 miles
Maximum acres of OHV area	15 acres

Table 2300-6. Snowmobile Trails, Roads and Snowmobile Areas	
Type of Access	Total
Maximum miles of groomed trails	340 miles
Maximum miles of open, ungroomed ML 3-5 roads	373 miles
Maximum miles of open, ungroomed ML 2 roads	2,100 miles
Maximum acres of snowmobile area	15 acres

Table 2300-7. Non-Motorized Trails	
Type of Access	Total
Maximum miles of hiking trails	135 miles
Maximum miles of hiking/biking/ski trails	175 miles
Maximum miles of hiking/ biking/ski/horse trails	115 miles

Note: Reference 7700 Trail and Road Density Table 7700-1 Maximum Trail and Road Densities for additional guidelines.

Standards:

1. Trail management objective prescriptions will be developed for all new trail construction.
2. No motorized activities will be permitted on National Scenic Trails, except for maintenance, administrative or emergency purposes, or on those portions of the trail that incorporate roads as part of the route.
3. Roads will be closed to OHVs unless designated open.
4. Cross-country travel by OHVs is prohibited except in the designated OHV area.
5. Forest roads within motorized ROS objectives will be open to snowmobile use unless designated closed.
6. Cross country snowmobile use is generally allowed within motorized ROS classes unless prohibitions or restrictions are needed for resource protection to meet management objectives.

Guidelines:

1. Motorized trails and routes should be located or relocated away from Wilderness boundaries and semi-primitive non-motorized management areas.
2. Non-motorized trail systems should be managed separately from motorized activities or trails.

Recreation Development and Recreation Facilities

Goals:

1. A variety of recreation facilities, settings and opportunities are provided which minimize user conflicts.
2. Complementary recreation opportunities for forest visitors are developed in coordination with other regional recreation providers.
3. Aesthetically pleasing, safe and healthy vegetative conditions are maintained in developed recreation sites.

Objectives:

1. In this planning period, complete and implement the Whitefish Bay Scenic Byway Management Plan.
2. In this planning period, complete and implement the Forest Recreation Strategic Plan.
3. In this planning period, develop and implement the Grand Island National Recreation Area (NRA) Strategic Plan.
4. In this planning period, complete the Recreation Facilities Master Plan.
5. In this planning period, reduce the backlog of deferred maintenance on recreation facilities by 15 percent.

Guidelines:

1. Recreation development and facilities should:
   - Correct health and safety problems
   - Complement prescribed recreation opportunities
   - Meet public demand
   - Implement the Forest recreation niche
2. The locations of recreation developments should be determined with priority given to:
   - Correcting health and safety problems
   - Protecting the environment
   - Protecting sensitive species
   - Meeting the experience requirements within individual management area direction
3. Recreation development and facilities should conform to the assigned Recreation Opportunity Spectrum (ROS) objectives.
4. Campgrounds with low occupancy rates should be reduced in size, decommissioned or converted to dispersed sites.

Heritage Resources

Goals:

1. Heritage resources are identified, evaluated, preserved and enhanced.

Objectives:

1. Increase the number of heritage resources that meet USDA Forest Service National Heritage Resource Management standards by an average of five sites per year.

2. Within three years of Forest Plan approval, complete consultations with federally-recognized tribes regarding a comprehensive agreement for meeting the objectives of the Native American Grave Protection and Repatriation Act.
3. Within three years of Forest Plan approval, complete consultations with the State Historic Preservation Office and the Advisory Council on Historic Preservation to develop an agreement to improve and streamline the Section 106 National Historic Preservation Act compliance process.
4. In this planning period, decrease the number of heritage resource sites that do not meet national management standards. The order of priority should be:
   A. Sites threatened by deterioration, natural disturbance, vandalism or recreation use
   B. Sites on lands being sold or exchanged
   C. Sites potentially affected by Forest Service management activities
   D. Sites that contribute to implementing the Forest recreation strategy/niche
   E. All other sites

Guidelines:

1. In selecting projects to increase the number of sites meeting national management standards, priority should be given to:
   A. National Register of Historic Places evaluation
   B. Site protection
   C. Implementation of agreements with outside parties, such as federally-recognized tribes, the State Historic Preservation Office, the Advisory Council on Historic Preservation, universities and other parties interested in historic preservation
2. In-place protection is the preferred management strategy for archaeological and traditional use/sacred sites. Rehabilitation and adaptive reuse is the preferred treatment for most historic structures.

Scenery Management

Goals:

1. The visual diversity and the natural-appearing character of the Forest is maintained or enhanced.

Objectives:

1. In this planning period, increase the amount of National Forest lands meeting visual quality objectives as identified on the VQO Map (Forest Plan Appendix C) or as otherwise specified within individual management area direction.

Wildernesses

Goals:

1. Wildernesses are managed to protect the biological and physical resources and Wilderness values while accommodating recreation use.
2. Wildernesses are maintained so that ecosystems are unaffected by human manipulation and influences and plants and animals develop and respond to natural disturbances.

Objectives:

1. During this planning period, evaluate the need for management plans for Round Island, Mackinac and Delirium Wildernesses.

Wild and Scenic Rivers

Goals:

1. Designated and study Wild and Scenic River corridors are managed to maintain and enhance each river's outstandingly remarkable values and free-flowing condition.
2. Components of the aquatic and terrestrial ecosystem degraded by past human activities are restored.
3. Aquatic and terrestrial resources are managed based on ecological and landscape characteristics.
4. Opportunities for recreation are provided within the river corridors.
5. Water quality is protected and enhanced.
6. Social settings where the sights and sounds of nature are dominant are maintained.
7. Vegetation is managed primarily for late successional species and/or to protect or enhance the outstandingly remarkable river values.

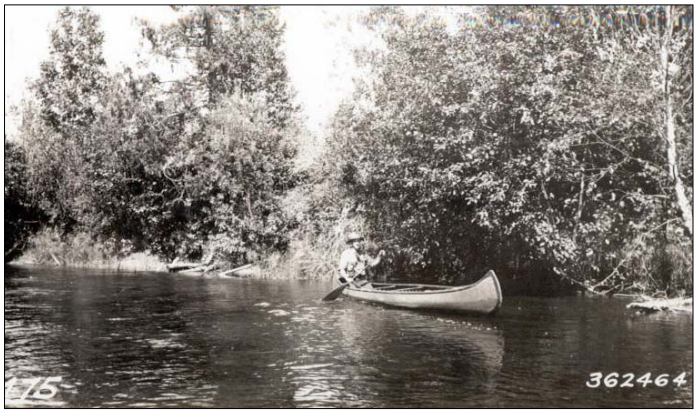
North Country National Scenic Trail Management

Standards:

1. Management of the North Country National Scenic Trail will conform with the National Trail Systems Act and the "North Country National Scenic Trail Comprehensive Plan for Management and Use" (USDI-NPS, 9/1982, as amended).

Guidelines:

1. The North Country National Scenic Trail should be managed and maintained primarily for hiking and backpacking.
2. As displayed on the Forest Plan Visual Quality Objectives map, five percent of the trail should be managed to achieve preservation in the Wilderness; 37 percent should be managed to achieve retention and 58 percent should be managed to achieve partial retention.
3. Timber activities may be seen along portions of the trail in retention and partial retention. Temporary openings as seen from any point along the trail should generally not be greater than 5 acres in retention and not greater than 10 acres in partial retention.
4. Activity fuels or slash occurring from management activities should be completely removed from the edge of the trail for the first 25 feet. For the next 25 feet, materials should be reduced to 48 inches within one year.



2400 Vegetation Management

Desired Conditions: Provide a diverse, productive, healthy and sustainable forest that is resilient to natural and human-caused disturbances. Non-native invasive species are at low levels and do not alter ecosystem processes. Vegetation composition and structure provide plant and animal species habitats, timber products and settings conducive to recreation activities.

The Forest contributes to the health of soils and water resources. It has a diverse mix of species, tree sizes and hardwoods and conifers. Vegetation constantly changes through management activities and through naturally occurring succession and disturbances. Vegetation is present in amounts, distribution and characteristics that allow contribution to a sustained yield of timber and pulpwood products.

The Forest has a mix of even and uneven-aged northern hardwoods. The uneven-aged shade tolerant hardwoods, such as sugar maple and beech are managed for quality sawtimber. Within-stand diversity is maintained or increased by encouraging long-lived conifers such as white pine and hemlock. Uneven-aged forests will also provide a desirable setting for dispersed recreation.

Even-aged hardwoods such as red maple, birch, basswood, oak and cherry are evident. They will provide habitat for wildlife species that require temporary openings or closed canopy and open understory in later years. White pine is an important species on the Hiawatha as a result of planting and natural succession. Established red pine stands are maintained through appropriate rotation lengths, being regenerated through both the shelterwood and clearcut systems.

Prescribed fire mimicking natural fires is used as a tool to establish regeneration in these types where appropriate. Early successional forest types such as balsam fir and aspen will provide habitat for a variety of game and non-game species. Jack pine and savannas will be evident on xeric ecosystems to provide habitat for Kirtland's warbler, sharptail grouse and other associated species.

Lowland conifer and cedar stands are primarily in older age classes; however some young stands are evident to meet vegetation age diversity objectives.

Undesirable non-native invasive plant and animal species will be excluded or at least kept from spreading on the Hiawatha. Vegetation on the Hiawatha will contribute to local and regional healthy forests and gene pools.

Vegetation Management

Goals:

1. Native vegetation communities are diverse, productive, healthy and resilient.
2. Vegetation conditions contribute toward ecosystem sustainability and biological diversity.
3. Vegetative conditions represent native species in age, size and successional states that support native wildlife and fish species and other uses of the forest.

Forest Products

Goals:

1. Commercial wood products are provided for mills in the upper Great Lakes Region.
2. The Forest contributes toward satisfying the demand for special forest products on National Forest System lands.
3. Harvest activities occur at sustainable levels.

Objectives:

1. Provide opportunities for gathering special forest products.

Note: For vegetation objectives, please see Chapter 3 (management area direction) and Appendix A.

Harvest Methods/Practices

Guidelines:

1. Cedar harvest should be limited to sites where a high probability exists for successful regeneration.
2. Management activities should be designed to minimize adverse impacts on recreation use and wildlife populations.

3. In partial harvests, damage to residual stems should be less than three percent.
4. Log decks should not be located immediately adjacent to collector and arterial roads.
5. Live trees retained in regeneration treatments should be free of insects and diseases that could spread to other reserve trees or affect regeneration.
6. Where harvesting occurs, regeneration harvest methods in Table 2400-1 should be followed.

Table 2400-1. Type of Timber Management Practices by Forest Type Group

Forest Type*	Clearcut** (Including patch or strip cut)	Shelterwood/ Seed tree**	Selection
Aspen	■		
Balsam Fir	■	■	■
Black Spruce	■		
Cedar	■	■	
Hemlock		■	■
Jack Pine	■		
Lowland Hardwoods		■	■
Northern Hardwoods		■	■
Oak		■	
Paper Birch		■	
Red Pine	■	■	
Spruce-Fir	■	■	■
Swamp Conifer	■	■	
Tamarack	■	■	
White Pine		■	■

* Type to be regenerated either through maintenance of an existing type or conversion from another forest type. For example, conversion of hardwoods to aspen would utilize harvest cutting methods for aspen. ** Includes intermediate cuts during the rotation of the stand.

Old Growth

Goals:

1. An old growth system is maintained that is comprised of lands which will become late successional ecosystems. The system will be characterized by older, larger trees, native species, low road and trail densities and minimal human disturbance.
2. Old growth structural diversity that includes multi-layered canopies, canopy gaps, tip-up mounds and an accumulation of dead woody material is maintained.
3. Old growth tracts vary from small, isolated forested areas to larger landscape complexes. The tracts may include ecologically important non-forested openings, younger patches produced by natural disturbances, wetland and water bodies.

Objectives:

1. Maintain a 52,000 acre old growth system.

Standards:

1. Designated old growth stands will be unsuited for timber production.

Guidelines:

1. Vegetation management (such as timber harvest, prescribed fire, etc) should enhance old growth objectives or control the spread of a non-native pests or pathogens that threaten the old growth character/potential.
2. Permits for gathering special forest products should not be issued.
3. Prescribed fires and natural prescribed fires should accomplish specific old growth objectives.

4. Fire control should protect public health and safety and result in minimal disturbance.
5. Old growth stands affected by catastrophic natural disturbances (such as fire, blow downs, insects and disease, etc.), may be reclassified as suited for timber production. Replacement stands will then be reclassified to maintain the amount of designated old growth acres.

Temporary Openings

Standards:

1. The maximum acre limits will not apply to salvage harvest resulting from catastrophic events such as fire, insect and disease outbreaks or blow down.

Guidelines:

1. A temporary opening should be considered forested when the re-established stand has reached a height that is greater than 20 percent of the height of the surrounding trees.
2. Openings should be separated by a stand of at least the minimum stand size, normally 10 acres.

Reforestation/Silvicultural Practices

Guidelines:

1. An ecological classification system, soil resource inventory or on-site soil investigation information should guide opportunities for species conversion.
2. Reforestation of harvest areas through natural regeneration or seeding should be emphasized. Interplanting to restore components of the ecosystem which are in decline or absent should be allowed.
3. Silvicultural prescriptions should incorporate genetic improvement principles and practices.
4. Even-aged management should be used where vegetation objectives emphasize less shade-tolerant species such as ash, birch or cherry.
5. The timber rotation ages defined in Table 2400-2 should be followed for forest management activities.

Table 2400-2. Timber Rotation Ages (in years)[1]

	Aspen	Paper Birch	Northern Hardwoods[2]	Jack Pine	Balsam Fir	Black Spruce	White Spruce	Red/White Pine	Cedar
MA 1.2	35-70	45-100	80-160	40-70	40-70	70-150	70-110	80-160	80-160
MA 2.3	45-70	50-70	80-120	40-60	40-60	70-150	70-100	80-120	80-120
MA 4.2	35-70	45-100	80-160	40-70	40-70	70-150	70-100	80-120	80-120
MA 4.4	35-70	45-100	80-160	40-60	40-60	70-150	70-110	60-160	80-160
MA 4.5	35-70	45-100	80-160	40-70	40-70	70-150	70-110	60-160	80-160
MA 6.1[3]	35-70	45-100	120-200	50-70	50-70	70-150	70-110	60-160	120-160
MA 6.2	35-70	45-100	120-200	50-70	50-70	70-150	70-110	60-160	120-160
MA 6.4	35-70	45-100	120-200	50-70	50-70	70-150	70-110	60-160	120-160
MA 7.1[3]	35-70	45-100	120-200	60-80	60-80	70-150	70-110	100-200	120-160
MA 8.1	35-70	45-100	80-200	50-70	50-70	70-150	70-110	60-160	80-160
MA 8.2	**Rotation age depends on objectives of study**								
MA 8.3	35-70	45-100	120-200	50-70	50-70	70-150	70-110	60-160	60-160
MA 8.4	35-70	45-100	120-200	50-70	50-70	70-150	70-110	60-160	60-160

[1] Rotation ages are not applicable to MAs 5.1 and 6.3 because timber harvests are not allowed.

[2] Rotation ages do not apply for northern hardwoods that are managed for uneven aged.

[3] MAs 6.1 and 7.1 do not have programmed timber harvests, but do allow vegetative treatments.

2500 Watershed Management

Desired Conditions: The Hiawatha National Forest has healthy watersheds that are resilient to natural disturbance events such as floods, fire and drought and are capable of absorbing the effects of human-induced disturbances. Healthy watersheds absorb rain, recharge groundwater, filter sediment, provide cleaner water, increase soil fertility and decrease erosion.

They provide high quality wildlife and fish habitat that allows for the conservation of native and desired non-native species. The Forest will provide habitat to support a quality recreational fishing experience that includes a variety of fish species and access to lakes and streams. Within ecological capability, riparian corridors consist of older, late seral species providing shade and woody debris to the site. A multi-layered forest canopy may also be present. Super canopy trees provide nest sites for riparian-associated species.

High quality aquatic habitat supports diverse and productive biological communities in streams and lakes. The diversity and abundance of native and desired non-native aquatic flora and fauna are maintained or restored in a manner that is consistent with the ecological capability of the water body. Exotic species are not spreading or adversely affecting native flora and fauna in riparian and aquatic areas. The diversity and function of wetlands are maintained or restored over time. They provide for diverse plant and animal communities, flood retention, economic value such as timber, recreation and other uses.

Long-term productivity and hydrologic function is maintained. The physical and biological functionality of seasonal pools is maintained.

Watershed Management

Goals:

1. Watersheds are protected and improved to provide sustained water quality and quantity for intended beneficial uses and conditions necessary to support proper ecological function of streams, lakes, riparian areas and wetlands.
2. Healthy watersheds:
   - Meet the needs of current and future generations and are resilient to natural and human disturbances
   - Provide for federal, state, tribal and local beneficial uses
   - Provide for unique plant and animal communities, special habitat features, habitat linkages and wildlife corridors
3. Beaver abundance and distribution are managed in cooperation with Michigan Department of Natural Resources to sustain important wetland ecosystems while minimizing adverse effects on high quality coldwater fish habitat, rare species and road and trail stream crossings.
4. Riparian corridors are managed for riparian-dependent resources by restoring and enhancing the riparian ecological function.
5. Water quality is maintained to the standards identified by the state of Michigan.
6. Riparian areas are managed to meet Forest designations for warm, cool and coldwater streams.

Objectives:

1. In this planning period, obliterate, relocate or improve 20 segments of roads and trails in riparian corridors.
2. In this planning period, improve road and trail crossings of streams and wetlands (as needed), to facilitate flow, sediment transport and/or passage of aquatic species.
3. In this planning period, restore approximately 300 acres of impacted wetlands ecosystems.
4. In this planning period, assess conditions and identify improvement opportunities in all Forest sixth level watersheds. Stratify assessments by fifth level watersheds where feasible.
5. In this planning period, improve the condition class in 10 percent of fifth level watersheds where classification is less than optimal.

6. Treat 10 acres per year for non-native invasive species in riparian areas.
7. Implement 100 acres per year of vegetation improvements to enhance riparian function.

Standards:

1. Management actions on National Forest System land will not increase the total combined acreage of upland young forest (younger than 16 years) and upland openings to exceed 60 percent of the total area (all ownership) of any sixth-level Hydrologic Unit Code (HUC) watershed.
2. A determination of coastal zone consistency will be completed for all activities occurring within one-quarter mile from the Great Lakes high water mark.

Guidelines:

1. Small forest seeps and springs should be protected from ground-disturbing activities.
2. Logging slash in woodland ponds should not be allowed.
3. Clear cutting should not occur adjacent to woodland ponds.
4. Individual tree harvests that emphasize retaining shade, cavity and nest trees, may occur adjacent to woodland ponds.
5. Landings and roads should be located to avoid erosion and the contribution of sediment into woodland ponds.
6. Woodland ponds should be adequately frozen before allowing operation of heavy equipment on them.

Riparian Ecosystem

Standards:

1. Wetland roads or trail crossings will preserve cross drainage.

Guidelines:

1. The state of Michigan "Water Quality Management Practices on Forest Land" (BMPs) should be implemented as a minimum standard for managing forest resources on Forest System land.
2. Excavated soil material (including spoils, drilling mud, etc.) should be deposited in upland locations.
3. Stream and river crossings should be designed to span bankfull width, maintain channel morphology and allow for aquatic fauna passage.
4. On lakes where there is less than 20 percent of lake shoreline in public ownership, new activities or developments that may reduce the natural function of riparian areas should not occur.
5. The number of road and trail stream crossings should be minimized.
6. When obliterating roads, remove bridges, culverts and fill material from streams, floodplains and wetlands to re-establish natural drainage and to restore wetlands.
7. Aspen regeneration should not be prescribed within 500 feet of designated portions of cool- and coldwater stream systems tributaries and spring ponds.

Aquatic Ecosystem

Standards:

1. Stream habitat improvement projects will be designed to preserve or enhance natural stream processes and to stabilize channel morphology.

Guidelines:

1. Coarse woody debris should not be removed from streams and lakes unless it presents a hazard to people or structures or creates an impassible barrier to watercraft. Remove only the amount necessary for safe passage, but it should not exceed half the channel width.
2. Control beaver and remove beaver dams as needed to protect ecologically sensitive areas or to prevent capital improvements (roads recreation areas or buildings) from flooding.
3. Long-term maintenance of in-channel sediment basins should not occur where the same results can be achieved by other methods.
4. Natural-appearing materials and techniques that allow natural river processes to occur should be used when restoring eroded river/stream banks.

Soil Resources

Desired Conditions: The Hiawatha's soils will be physically, chemically and biologically resilient to human and natural disturbances. Soil productivity will be maintained or enhanced and will contribute to ecological sustainability of the Forest. Soil water percolation and infiltration rates will be within the range of natural variability for the soil.

Goals:

1. The minimum threshold values for soils defined in the Region 9 Soil Quality Standards are met.
2. Soil productivity is restored, maintained or enhanced.

Objectives:

1. In this planning period, on a project level basis, identify soils that fail to meet Region 9 soil quality standards or where soil erosion or compaction is contributing to an overall decline in watershed condition or ecological function.
2. In this planning period, inventory the Forest for areas where soil-hydrologic function is impaired by past management activity (roads, railroad grades).
3. In this planning period, on a project level basis, identify areas of ELT 10/20 where soil organic matter has been lost due to past land use and wildfire. Where practicable and not in conflict with other management objectives, seek to restore organic matter on these sites through long-term vegetation management objectives.

Standards:

1. Areas maintained as open areas (savannas) will have defined vegetation goals and objectives that will maintain the productivity of the land within the ecological context and management objective for the site.

Guidelines:

1. Equipment operation (except in emergency operations or where the ground can be appropriately stabilized to avoid compaction, puddling or rutting), will only occur when soils are capable of supporting equipment without incurring detrimental compaction, puddling or rutting.
2. In areas managed for timber production, whole-tree timber harvest methods should not be used on sites with inherently low fertility and low organic matter reserves (ELT 10/20, phase 0, 1 and 2; Grayling and Rubicon soil series). Evenly distributed slash across the site.
3. Within the context of the vegetation management objective, prescribed burns on ELT 10/20 (phase 0, 1 and 2; Grayling and Rubicon soil series) the burning prescription should consider the objective of maintaining or restoring organic matter on the site.
4. Heavy equipment should not be operated on slopes greater than 35 percent gradient.
5. Equipment operation on coarse textured (sand) soils during dry periods should avoid soil displacement.
6. Within the ecological context of the site, activities on sand dunes should minimize the exposure of sands (soil displacements) to prevent wind erosion.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Desired Conditions: The Hiawatha National Forest provides habitats that support viable populations of a wide range of existing native and desired non-native wildlife and plant species. Aquatic and terrestrial wildlife habitats on National Forest System lands contribute to ecosystem sustainability and biological diversity of the Great Lakes region.

The Forest provides wildlife habitat with corridors and contiguous tracts to allow for greater distribution of wildlife species. Management activities contribute to the conservation and recovery of federally-listed threatened, endangered and sensitive species.

The Hiawatha monitors four management indicator species and other species of interest to ensure that necessary habitat are maintained or enhanced to support these species, as well as associated species.

Goals:

1. Diverse, healthy, productive and resilient habitats for aquatic and terrestrial wildlife are provided.
2. Ecological conditions are provided to sustain viable populations of native and desired non-native species and to achieve objectives for management indicator species.
3. Habitat for resident and anadromous fish is maintained or enhanced.
4. Habitat for resident and migratory wildlife species is maintained or enhanced.
5. Provide for self-sustaining populations of desired fish and other aquatic species.
6. Desired fish populations in lakes and streams are achieved through cooperation with the Michigan Department of Natural Resources (MDNR), Tribes and U.S. Fish and Wildlife Service (FWS).

Objectives:

1. In this planning period, annually restore or enhance 9 to 13 miles of riparian and in-channel stream habitat. This will include 7 to 11 miles of coldwater and coolwater habitat annually.
2. In this planning period, annually restore or enhance conditions for warmwater fish communities in 3 to 5 lakes.
3. In this planning period, annually conduct fishery resource inventories on 7 to 10 lakes and 5 to 8 streams to assess the capability of habitats and fish populations to meet the public need.

Vegetation Management Standards:

1. Vegetation will be managed within the ecological capabilities of the forest.

Vegetation Management Guidelines:

1. The maximum size of temporary openings for sharp-tailed grouse and Kirtland's warbler management should not exceed 1,100 acres. In Kirtland's warbler management areas, the 1,100-acre temporary opening guideline may be exceeded by harvesting adjacent blocks after the appropriate stocking density (determined in consultation with the FWS) is achieved and after the third-year stocking review.
2. Deeryards and adjacent uplands should be managed to provide winter thermal cover and browse.
3. Vegetation management activities should encourage intrastand diversity and mast producing species.

Structural Guidelines:

1. When determining reserves for even-aged managed stands on ELTs 10/20, method A or B, or a combination of both should be used. For all other ELTs, either method A or method B should be used.
   A. Two to four live trees with diameters greater than or equal to the average stand diameter per acre should be reserved. Preference should be given to live den trees.
   B. Variable size reserve islands/clumps that total up to a half-acre for every 10 acres should be reserved.
2. For uneven-aged managed stands:
   A. Up to five live den trees per acre should be reserved, unless they present a safety concern.
   B. Live den trees felled for safety reasons should be left as coarse woody debris.

3. For reserve snag and down logs in managed stands:
   A. Two to 10 snags per acre should be reserved, except where additional snags would be beneficial to rare species or unless they present a safety concern or interfere with mechanical site preparation. Additional snags should be recruited from live trees where there are fewer than two snags per acre.
   B. Snags felled for safety reasons should be left as coarse woody debris.
   C. Two or more down logs per acre that are equal to or greater than 10 inches in diameter and 8 feet long, should be maintained. In stands where tree diameters are less than 10 inches, down log diameters equal to or greater than the average stand diameter should be provided.

Plant Management Guidelines:

1. Indigenous plants of the Hiawatha NF seed zone or those non-native plants identified at project level, should be used in all planting or seeding operations.

Federal Threatened and Endangered Species (T&E) and Regional Forester Sensitive Species (RFSS)

Goals:

1. The Hiawatha National Forest contributes to the conservation and recovery of federal threatened and endangered species and works cooperatively with U.S. Fish and Wildlife Service, Tribes, other state and federal agencies and recovery teams to update and implement threatened and endangered species recovery plans and management strategies.
2. The Hiawatha National Forest contributes to the conservation of Regional Forester Sensitive Species and works cooperatively with state and federal agencies to complete and implement conservation assessments and strategies.

Objectives:

1. In this planning period, complete 10 conservation assessments of Regional Forester Sensitive Species.
2. In this planning period, establish at least one new population of:
   - Downy sunflower (*Helianthus mollis)*
   - Prairie dropseed *(Sporobolus heterolepis)*
   - Douglas hawthorn *(Crataegus douglasii*)
   - Lakeside daisy *(Hymenoxys herbacea)*

Standards:

1. Signed federal recovery plans for threatened and endangered species will be implemented. Deviations specific to the Hiawatha National Forest may be allowed after consultation with the U.S. Fish and Wildlife Service.
2. All known populations of threatened and endangered plant species and wildlife nest and denning sites will be protected.

Guidelines:

1. Conservation approaches for regional forester sensitive species should be implemented.
2. Non-native invasive plants within element occurrences of threatened and endangered and Regional Forester Sensitive Species should be eliminated or controlled.
3. Adverse impacts to known occurrences of Regional Forester Sensitive Species should be avoided, minimized or mitigated.
4. Prior to implementing management activities, surveys should be conducted for federally listed species and Regional Forester Sensitive Species where suitable habitat exists.
5. For all threatened and endangered species, special closure orders may be used to protect known breeding areas, nests and denning sites.
6. Deference should be afforded to implementing conservation measures for federal threatened and endangered species when and where they conflict with conservation measures for unlisted species.

American Bittern & Yellow Rail (RFSS)

Goals:

1. Graminoid/sedge marshes are maintained or improved to provide suitable habitat conditions.

American Peregrine Falcon (RFSS)

Guidelines:

1. Design management activities to protect active and historic nest sites and to minimize disturbance in primary and secondary zones.

Black-backed Woodpecker (RFSS)

Guidelines:

1. Patches of mature forest should be retained around known black-backed woodpecker breeding sites.

Black Tern, Common Loon and **Trumpeter Swan** (RFSS)

Guidelines:

1. Inland lakes should have seasonal restrictions to protect active black tern, loon and trumpeter swan nests.

Canada Lynx (Threatened)

Goals:

1. Vegetation is managed to retain, improve, or develop habitat characteristics suitable for snowshoe hare and other important alternate prey in sufficient amounts and distributions so that availability of prey is not limiting lynx recovery.
2. Vegetation is managed to provide for foraging habitat in proximity to denning habitat in amounts sufficient to provide for lynx.
3. Sufficient habitat connectivity is maintained to allow for lynx dispersal and movement. The Forest participates in cooperative efforts to identify, map and maintain or restore, where feasible, linkage areas that provide habitat connectivity sufficient to allow lynx to disperse between disjunct blocks of lynx habitat at larger landscape scales.
4. Well-distributed denning habitat is maintained or promoted.
5. The natural competitive advantage of Canada lynx in deep snow conditions is maintained. Snow compacting activities (such as snowmobiling, snowshoeing, skiing and dogsledding) are planned and accommodated in areas best suited to the activity while maintaining large, inter-connected areas of habitat with little or no snow compacting, recreational activities.

Guidelines:

1. Sufficient habitat connectivity within east and west units should be maintained to allow for lynx dispersal.
2. Following a disturbance on National Forest System land greater than 20 contiguous acres (such as a blowdown, fire, insect or disease) that could contribute to lynx denning habitat, generally retain a minimum of 10% of the affected area on NFS land unless salvage or prescribed fire is necessary to address human health, safety or scenic integrity.
3. Where additional designated trails for snow compacting activities are desired within lynx habitat, proposed routes should be planned to protect or improve the habitat's integrity and minimize snow compaction. Trail design should strive to:
   - Move recreational use away from more sensitive or better quality lynx habitat
   - Concentrate use within existing developed areas rather than developing new recreational areas in lynx habitat
   - Be located within the right of way of a currently used road and trail system

4. Where existing unplowed roads and regularly-used snow-compacted trail and route densities coincide with lynx habitat, and are greater than 2 miles per square mile (at the LTA scale) where possible or feasible, reduce density through seasonal restrictions or decommissioning to maintain or improve the natural competitive advantage of lynx in deep snow. If reduction of road and/or trail density is not possible or feasible, the density should not be increased above current levels.
5. Denning habitat should be maintained in patches larger than five acres that comprise at least 10% of lynx habitat.

Hine's Emerald Dragonfly (Endangered)

Standards:

1. Known Hine's emerald dragonfly breeding sites will be protected.

Kirtland's Warbler (Endangered)

Goals:

1. Provide for Kirtland's warbler management within forest-wide vegetation goals.
2. Provide a minimum of 6,700 acres of jack pine in the appropriate size class (K2), as determined in consultation with the U. S. Fish and Wildlife Service (FWS), striving to achieve desired Kirtland's warbler stocking levels on ELT 10/20 in MAs 4.4 or 4.2.

Objectives:

1. Regenerate an average of 670 acres of jack pine per year in MAs 4.4 or 4.2 on ELT 10/20 to provide Kirtland's warbler habitat.

Guidelines:

1. For Kirtland's warbler management, strive to regenerate jack pine stands with the appropriate stem density and non-forested openings, as determined in consultation with the U.S. Fish and Wildlife Service.
2. Pre-commercial thinning or release of jack pine should not occur in areas managed for Kirtland's warbler prior to vegetation achieving the suitable size criterion or until vegetation exceeds the suitable size criterion for Kirtland's warbler breeding, unless such activity maintains or enhances Kirtland's warbler habitat on the forest, as determined in consultation with the U.S. Fish and Wildlife Service.

Lake Sturgeon (RFSS)

Goals:

1. The Hiawatha National Forest cooperates with State, Tribal and Federal agencies to restore lake sturgeon in the Whitefish and Sturgeon Rivers.

Northern Goshawk and **Red-shouldered Hawk** (RFSS)

Guidelines:

1. Best available science recognized by Forest biologists, should be used to protect active and historic breeding territories, nesting areas and post-fledging habitat.

Piping Plover (Endangered)

Goals:

1. Nesting habitat is improved by providing nesting structure and controlling non-native invasive species.

Standards:

1. Known active piping plover nest sites will be protected with area closures and predator control if necessary.

Guidelines:

1. Recreation activities should be discouraged near active and historic piping plover nesting sites.

Sharp-tailed Grouse (RFSS)

Objectives:

1. In this planning period, maintain permanent openings within vegetation goals for habitat suitable for sharp-tailed grouse.

Dwarf Bilberry *(Vaccinium cespitosum)* (RFSS)

Guidelines:

1. Bacillus thuringiensis (BT) should not be sprayed in the vicinity of dwarf bilberry populations due to the host relationship with the northern blue butterfly.

Dwarf Lake Iris *(Iris lacustris)* and Houghton's Goldenrod *(Solidago houghtonii)* (Threatened)

Guidelines:

1. Management in Great Lakes shoreline sand dune/sand beach, cobble beach, interdunal wetland communities should be designed to protect element occurrences of Dwarf lake iris and Houghton's goldenrod.

Hart's Tongue Fern *(Asplenium scolopendrium v. americanum)* (Threatened)

Guidelines:

1. Management within Niagara escarpment community should be designed to protect Hart's tongue fern element occurrences.

Lakeside Daisy *(Hymenoxys herbacea)* (Threatened)

Guidelines:

1. Management in the Alvar community should be designed to protect Lakeside daisy element occurrences.

Pitcher's Thistle *(Cirsium pitcheri)* (Threatened)

Guidelines:

1. Management in Great Lakes shoreline sand dune/sand beach communities should be designed to protect Pitcher's thistle element occurrences.
2. The biological controls used to control non-native thistles should not be used unless it is determined they have no negative effect on Pitcher's thistle.

2700 Land Uses Management

Goals:

1. Provide and maintain special use permits in accordance with resource management direction and to meet identified Forest and public needs.
2. Provide for utility transmission corridors and communication sites in accordance with resource management direction and to meet identified Forest and public needs.

Objectives:

1. Within this planning period, identify and correct recreation residences that do not meet local safety, health and sanitation requirements.
2. Within this planning period identify and correct any special use permits that are not in compliance.

Standards:

1. No new recreation residence tracts will be developed.

Guidelines:

1. Roads and utility distribution systems should be located within existing corridors where possible.
2. New construction, upgrades and replacement of existing utility distribution lines should be buried where possible.
3. Applicable BMPs should be implemented during to protect wetlands and water quality during utility construction and maintenance operations.

2800 Minerals and Geology

Goals:

1. Process requests for oil, gas and mineral permits to provide within ecological capabilities, resource management direction and to meet identified forest and public needs.
2. Unique geological features on the Forest are protected.
3. Common variety minerals are provided for Forest and other uses in a cost-efficient manner, and subject to availability for non-Forest uses.
4. Non-native invasive species are controlled in gravel pits.

Objectives:

1. In the next decade, complete pit management plans for all operational pits.
2. In this planning period, inventory significant geologic features.
3. In this planning period, on a project-level basis, identify and determine management strategy for geological features on the Forest.

Standards:

1. Caves eligible to be designated as significant caves, will be managed to ensure that the cave resources are protected.

Guidelines:

1. Maintain, to the extent feasible, geologic special areas and natural karst processes while providing for other land uses as appropriate.
2. Sand and gravel extraction below seasonal water table within ¼ mile of designated cool and cold water streams should be avoided.

3. Surface occupancy for mineral extraction will not be allowed on lands with federal mineral ownership and the these resources or uses:
   - Sensitive wildlife nesting/mating areas
   - Designated trails
   - Recreational residences

   - Known dispersed recreation areas
   - Developed recreation areas
   - Organizational camps
   - Winter deer areas of less than 1,000 acres
   - Lakes, streams and rivers
   - Wetlands and floodplains of 15 acres or less
   - Cultural resource areas
   - Designated old growth areas
   - Threatened and endangered wildlife and plant habitats
   - Special management areas (such as experimental forests, research natural areas, cRNAs and areas having unique geological features)
   - Forest management areas designated for non-motorized use
   - Wild and scenic river corridors

3400 Forest Pest Management

Desired Conditions: Reduce the impacts from invasive species by restoring the forest's health in order to be resilient to the effects of invasive insects, pathogens, plants, animals and other pests.

Goals:

1. Work with state, local, tribal, other agencies and organizations to discourage the spread of undesirable non-native species.
2. Missing ecosystem components are restored and maintained to improve ecosystem resiliency.
3. The spread of existing non-native invasive species is controlled using permissible mechanical, biological and chemical controls.
4. Educational materials about controlling and/or reducing the spread of non-native invasive species are developed and distributed at appropriate locations including boat launches, trailheads, etc.

Objectives:

1. In this planning period, identify and map areas of non-native invasive species concentration on the forest.
2. Annually treat 40 acres of identified non-native invasive species.

Guidelines:

1. Integrated pest management methods should be used to minimize the effect or prevent the spread of insect and disease infestations.
2. Promote spatial diversity of vegetation and age classes guided by the ecological characteristics of the landscape to reduce the risk of insect and disease damage.
3. Prescribed burns may be used to prevent the spread of non-native invasive species.
4. Gravel and topsoil should be from a source where weed reduction practices are being used.

5100 Fire Management

Desired Conditions: The Forest has a reduced risk from catastrophic wildland fire due to healthy forests and increasing resilience to the effects of wildland fires. Accumulations of natural and activity fuels are treated to enhance ecosystem resiliency and to maintain desired fuel levels. Prescribed fire is present on the landscape, restoring or maintaining desirable plant community attributes, processes and functions. Wildland fire is actively suppressed, where necessary, to protect life and valuable resources.

Prescribed Natural Fires

Goals:

1. Natural fires are allowed to occur within prescribed parameters within designated old growth, wildernesses, research natural areas and candidate research natural areas.

Objectives:

1. In this planning period, develop prescribed natural fire plans for all wildernesses and research natural areas.

Fuel Management

Goals:

1. Prescribed fire, mechanical treatments and other tools are used to establish, maintain or improve vegetative conditions.
2. Vegetation is treated in high fire hazard areas within the wildland/urban interface areas to reduce the risk from wildland fire.
3. Fuels are reduced and vegetation in the understory of stands that have historically had natural occurring low intensity surface fires is controlled.
4. Hazardous fuel loads are reduced where catastrophic disturbances such as windthrow occur.

Objectives:

1. In this planning period, reduce wildfire risks by fuel management of an average of 1,000 acres per year.

Wildfire Prevention

Goals:

1. Wildfire prevention activities emphasize joint efforts with state, Tribal, local and other federal agencies.

Objectives:

1. In this planning period, the Forest will work with other agencies to prevent wildfires through:
   - Unified state-wide interagency reporting system
   - Fire prevention education and training
   - Public information development and dissemination
   - Grants and agreements
   - Community at risk protection plans
2. In this planning period, develop community wildfire protection plans for three high risk communities. Work in cooperation with other governmental agencies and private property owners.

Fire Suppression

Goals:

1. Fires are managed in a safe and economically efficient manner giving consideration to the effects on resource values and risks to life and property.

Objectives:

1. Prior to the fire season each year, update the Hiawatha Fire Management Action Plan.

Guidelines:

1. Minimum impact management tactics should be used on wildland fires and prescribed fires to reduce adverse fire suppression effects.
2. Delivery of chemical retardant, foam, additives or gray water to surface water should be avoided.

5400 Land Ownership

Goals:

1. Land adjustment activities should strive to meet five basic goals:
   A. Protect or enhance habitat for federal threatened and endangered and sensitive species, watershed function, research and unique ecological and geological features
   B. Consolidate ownership to provide blocks of National Forest System land of sufficient size to meet management area objectives
   C. Reduce amount of property lines
   D. Improve legal access to National Forest System lands
   E. Acquire parcels needed for specific management purposes, including private lands within Wildernesses
2. Land adjustments with local communities, governments and Tribes are considered to meet their needs for land from Hiawatha National Forest tracts.
3. Surface and subsurface mineral ownership is consolidated.

7100 Engineering Operations

Guidelines:

1. All management areas (except those noted below), should use Class A property line marking standards.
2. The following management areas, should use Class C property line marking standards:
   - Candidate research natural areas
   - Research natural areas
   - Wild and scenic rivers
   - Wildernesses

7700 Transportation System

Desired Conditions: The Hiawatha National Forest provides a system of roads to accomplish required management activities and meet the needs of a variety of uses. The transportation system is designed to consider the environmental, social and health concerns of the public. Roads will be maintained at a level commensurate with the use planned.

Goals:

1. A road system is provided that is structurally adequate, safe, environmentally sound and appropriately located to provide transportation that is responsive to public and management needs.
2. The Forest Service road system provides a seamless interface with other public road agencies.
3. New arterial and collector roads are not constructed. Existing arterial and collector roads are retained.

Objectives:

1. In this planning period, reconstruct an average of 10 miles of arterial/collector roads per year.
2. In this planning period, construct and/or reconstruct an average of one bridge per year.
3. In this planning period, replace an average of two major culverts per year.

Guidelines:

1. Road reconstruction should follow the existing corridor alignments.
2. Road use should be restricted when conditions would cause damage to the road, structures, other resources and for safety reasons.
3. Forest roads should be managed per direction contained in the Road Management Objective.

Road Closure/Decommissioning

Goals:

1. Road closures are effective and appropriately signed.
2. Roads that are not needed for public or administrative use or are causing resource damage are decommissioned.

Objectives:

1. In this planning period, during project planning, inventory classified and unauthorized roads for decommissioning.
2. In this planning period, decommission an average of 5 miles of roads per year.

Standards:

1. Temporary roads will be obliterated and reclaimed for natural resource purposes in accordance with R-9 soil standards.

Guidelines:

1. Classified and unauthorized roads that are not needed for long-term access should be decommissioned.
2. Decommissioned roads should be reclaimed for natural resource purposes in accordance with R-9 soil standards.

Trail and Road Density

Guidelines:

1. When determining trail and road densities for forest management activities, guidance in Table 7700-1 should be followed:

Table 7700-1. Maximum Trail and Road Densities.

Management Area	Miles of Motorized Trails per Square Mile[1]	Miles of non-motorized Trails per Square Mile	Miles of System Roads per Square Mile[2]
MA 1.2	1	Not Specified	3
MA 2.3	1	Not Specified	4
MA 4.2	1	Not Specified	4
MA 4.4	1	Not Specified	4
MA 4.5	1	Not Specified	2.5
MA 5.1	No motorized trails allowed	Not Specified	No roads allowed
MA 6.1	No motorized trails allowed	3	2
MA 6.2	1	3	2.5 (1.5 open)
MA 6.3	No motorized trails allowed	3	0
MA 6.4	1	3	2.5 (1.5 open)
MA 7.1	.5	No Limit	No Limit
MA 8.1	Not Specified	Not Specified	1
MA 8.2	Not Specified	Not Specified	4
MA 8.3	Not Specified	3	2
MA 8.4	Not Specified	3	Not specified
MA 8.4.1	Not Specified	3	Not Specified
MA 8.4.2	Not Specified	Not Specified	Not Specified
MA 8.4.3	Not Specified	Not Specified	Not Specified
MA 8.4.4	Not Specified	Not Specified	Not Specified
MA 8.4.5	Not Specified	Not Specified	Not Specified
MA 8.5	Specific guidance for this management area is located in Chapter 3, MA 8.5		

[1] The motorized trail density identified in the table will not exceed this average across the management area.

[2] There are several units assigned to each management area. None of the individual units may exceed the road density assigned to the management area.

[3] Long-term road densities may average 4 miles per square mile or more over the entire management area, as needed to accommodate research activities.

CHAPTER 3

Management Area Direction

Trout fishing Indian River, Manistique RD 7/1962

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"As the population of the country rises and demands on the timber, forage, water, wildlife and recreation resources increase, the national forests more and more provide for the material needs of individual, and the economy of the towns and states and contribute to the nation's strength and well-being."

Edward P. Cliff
Forest Service Chief (1962-1972)

Introduction

This section describes the management direction that is specific to each management area on the Hiawatha National Forest. Locations of all the management areas are shown on the maps on pages 3-3 and 3-4. A management area (MA), is a specific geographic location on the Hiawatha National Forest, where specific management direction will be applied.

For example, there are several MA 1.2 areas on the Forest and the same management direction will be applied to each area. Maps have been included at the beginning of each management area section that show where each management area is located on the Hiawatha National Forest.

Management direction for each management area includes:

- Purpose of the management area;
- Goals/desired conditions for the management area;
- Standards and guidelines specific to the management area (if any).

Table 3-1 provides a brief summary of the management areas and acres assigned to them. Each management area should be studied in detail to understand the standards and guidelines that apply to each area.

Table 3-1. Summary of Management Areas.		
MA	**Emphasis Summary**	**Acres of NFS land**
1.2	Aspen management for fiber production and deer and grouse habitat. Dispersed recreation.	45,891
2.3	Older forest management for uneven-age hardwoods and high quality sawlogs. Dispersed and developed recreation.	208,874
4.2	Conifer management for sawlog production and non-game wildlife.	126,128
4.4	Conifer management for fiber production and upland wildlife species habitat. Dispersed and developed recreation.	113,166
4.5	Older forest management for conifer sawlogs, wetland plant communities, deeryards and upland and lowland wildlife habitat. Dispersed recreation.	116,065
5.1	Congressionally-designated Wildernesses.	37,020
6.1	Semi-primitive non-motorized (SPNM) recreation and undisturbed wildlife species habitats.	11,486
6.2	Semi-primitive motorized (SPM) recreation and access to fishing and canoeing areas. Even and uneven-aged timber management and game and non-game wildlife habitats.	17,511
6.3	Semi-primitive non-motorized recreation and non-game wildlife habitats.	2,606
6.4	Game and non-game wildlife habitat; waterfowl and wetland habitat. SPM recreation and access to hunting and fishing areas. Even and uneven-aged timber management.	46,603
7.1	Developed recreation areas.	1,086
8.1	Candidate and Research Natural Areas (protected areas of significant biological, geological or cultural features).	16,078
8.2	Forest research activities in concentrated areas.	5,573
8.3	Even and uneven-aged timber management, wetland plant communities, secluded wildlife habitat and dispersed recreation.	103,964
8.4	Congressionally-designated Wild & Scenic Rivers.	29,841
8.5	Direction for the Grand Island National Recreation Area.	13,421
Total National Forest System Acres		**895,313**

Figure 3-1. Management Area Map of the East Unit of the Hiawatha National Forest

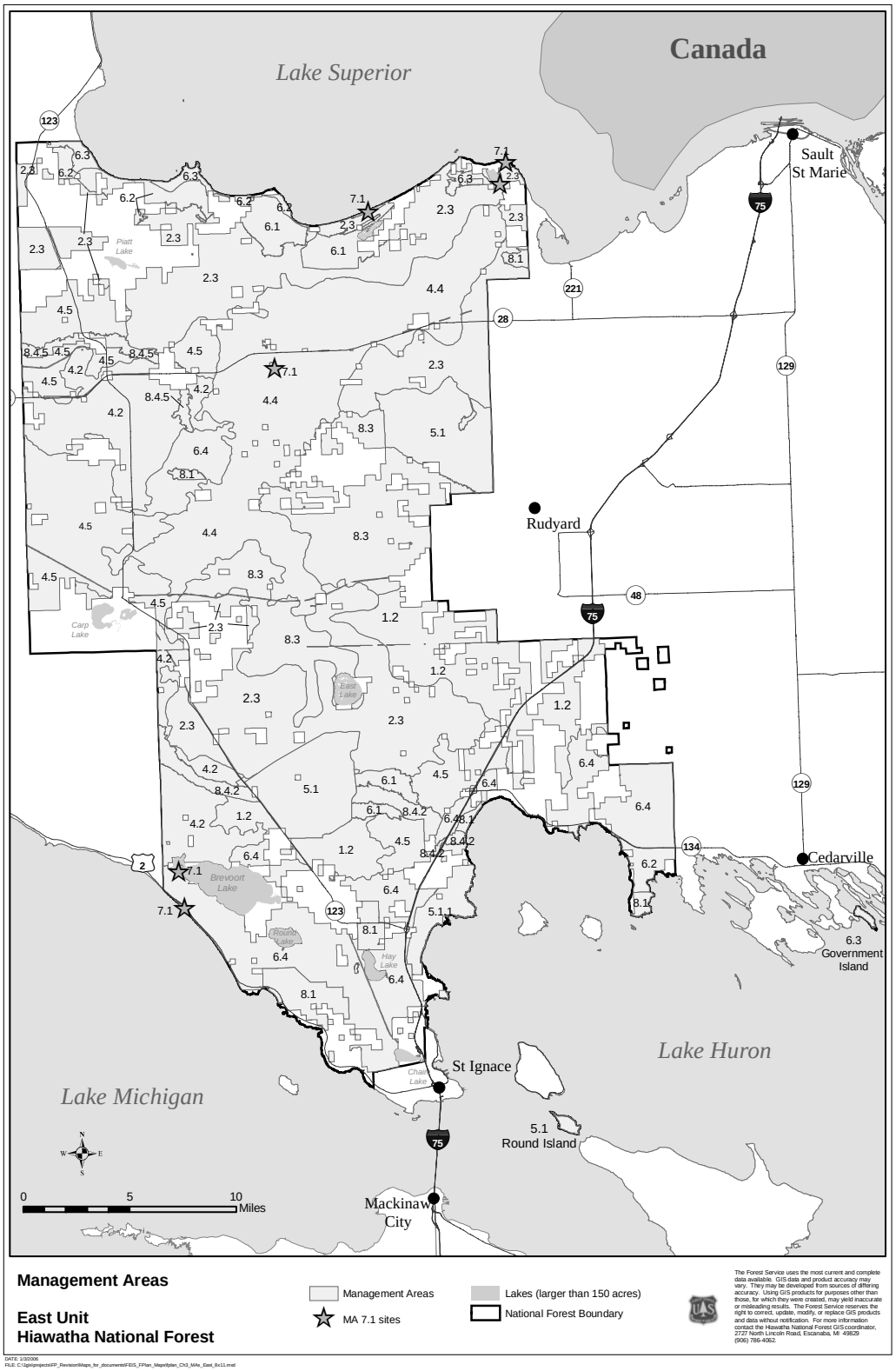
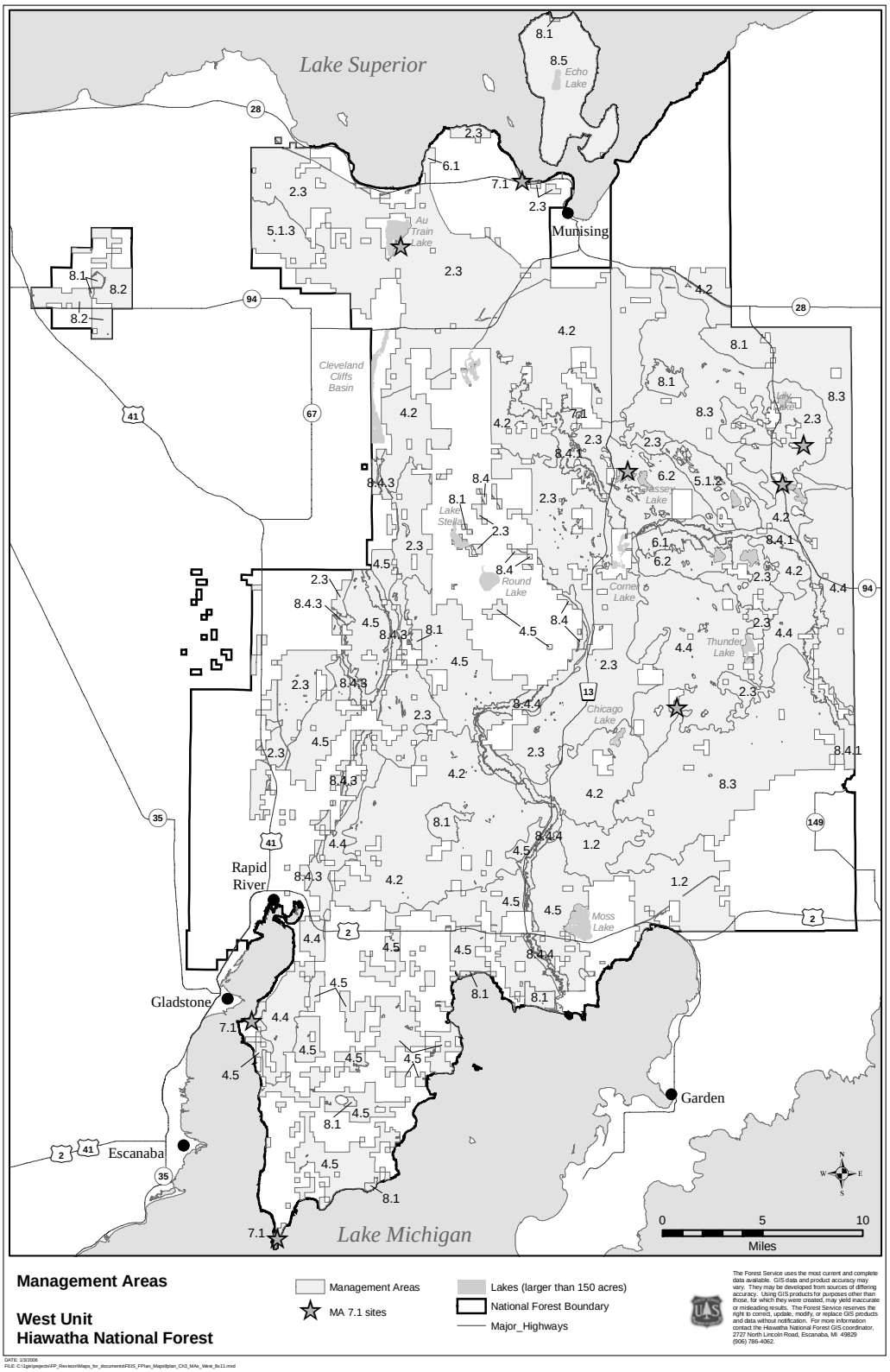


Figure 3-2. Management Area Map of the West Unit of the Hiawatha National Forest



Management Area 1.2

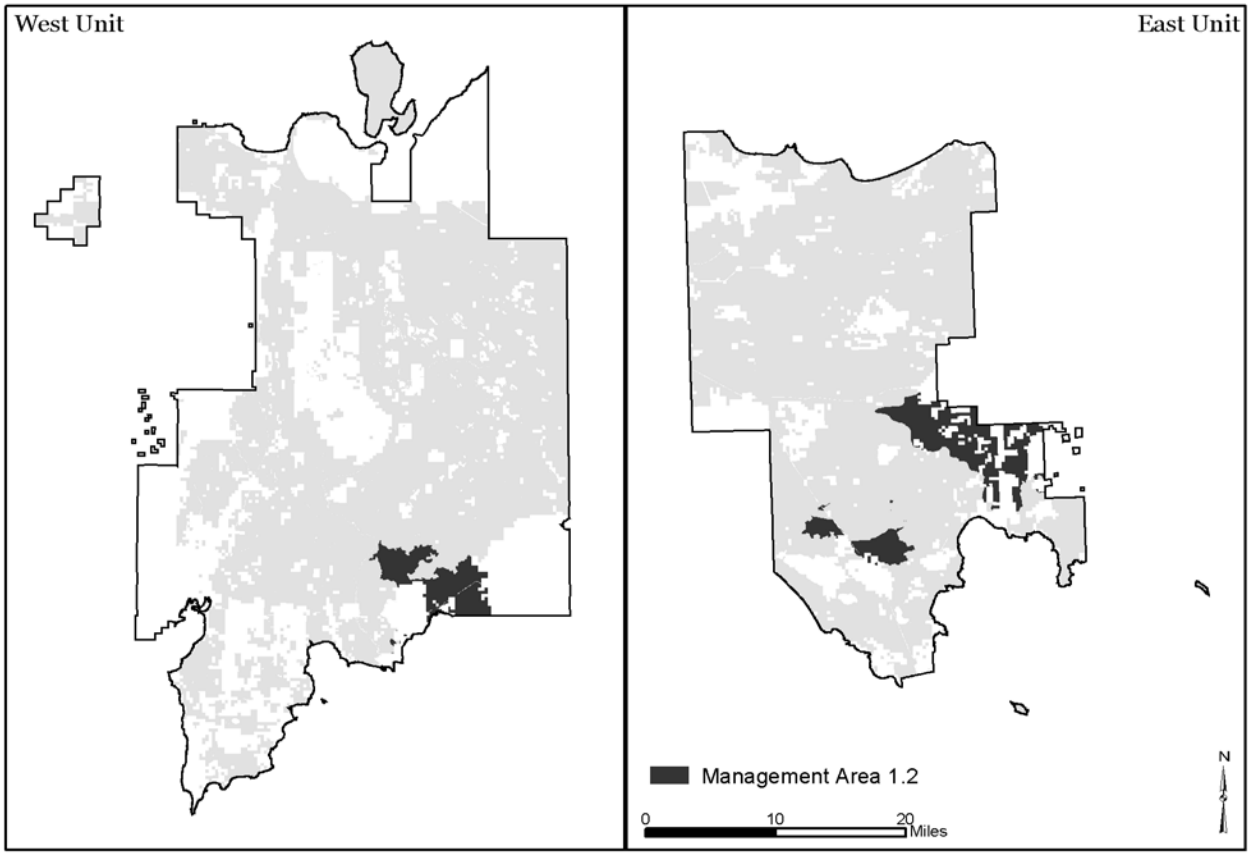


Figure 3-3. The locations of Management Area 1.2 are shown in dark gray.

Suited Uses: To manage aspen for fiber production to the regional economy; to provide habitat and hunting opportunities for wildlife species such as deer and grouse; and to provide dispersed recreation.

Landscape Description: This area consists of relatively flat to rolling topography. Slopes are typically less than 5 percent but range up to 25 percent. Glacial landforms include clay lake plains, lake plains, bedrock controlled ground moraines and a few areas of wet beach ridges.

Soils are typically finer textured with relatively high productivities. The soil moisture regime is wet-mesic. Wetlands occupy about 46 percent of the area.

Major landtype associations (LTAs) include: Fishdam Embayment, Isabella Remnant Moraine, Pine River Patterned Wetland and Niagara South. Minor LTAs include: Cooks Moraine, Cooks Outwash, Rudyard Clay Plain and Niagara II.

Due to the proximity to the northern end of Lake Michigan, windthrow is the dominant natural disturbance factor in these LTAs. The wet, fine textured soils of the Pine River Patterned Wetlands and Rudyard Clay Plain LTAs cause shallow rooting of trees, which exacerbates the windthrow potential.

Pre-settlement vegetation information indicates aspen was not uncommon in this management area.

Desired Conditions: Aspen is common, although northern red oak, paper birch, balsam fir, jack pine, red maple, red pine and white pine are also found. Vegetation management is directed at providing age diversity in aspen stands, which range from 10 to 25 acres. Regenerated aspen stands will be thick and may contain a variety other tree species. A mix of aspen, hardwoods and conifers will be managed to provide diversity for a variety of wildlife species.

Deer, snowshoe hare, ruffed grouse, woodcock and golden-winged warbler use the aspen stands for food and cover. Down, dead or diseased trees remain within the forest, offering additional habitat diversity.

During timber harvest activities, the sights and sounds of heavy equipment may be obvious. Logging trucks and decks of pulpwood may be seen frequently. Individual openings created by timber harvests will generally be obscured within a few years because of the rapid aspen regrowth.

The road network provides access to a variety of recreation activities such as dispersed camping, sightseeing, hunting, skiing or hiking. Off-highway vehicle use occurs on designated/ posted trails and roads within this management area. Snowmobile use generally occurs on groomed trails and Forest roads. Closed roads will provide opportunities for non-motorized recreation.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years). The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-2 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed. Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Table 3-2. MA 1.2 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0	1	3								
	1			2	6	2	6	0	3	1	4
	2			8	18	5	12	1	3	3	12
	3			10	18	5	20	2	4	3	12
	4			0	3	1	5			8	20
	5										
30	0	1	3								
	1			4	10			2	10		
	2			14	25			6	15		
	3			17	30			7	15	4	12
	4			0	5			8	20	5	13
	5							2	10	3	12
40 50 90	0										
	1			4	10			1	5		
	2			10	20			2	8	5	10
	3			17	25			3	10	10	20
	4			4	10			6	10	6	16
	5									3	13
60	0	1	3								
	1			5	10			1	10		
	2			25	35			2	15	1	5
	3			30	40			3	18	5	15
	4			0	5			5	20	4	15
	5							1	12	2	12
70A	0										
	1			3	6			1	7	1	10
	2			15	20			7	15	3	12
	3			20	30			6	15	5	15
	4			0	10					6	15
	5										
70B	0										
	1			3	8						
	2			15	30						
	3			20	30						
	4			0	10						
	5										
80A, 80B: *There are no vegetation goals for these ELTs.*											

Management Area 2.3

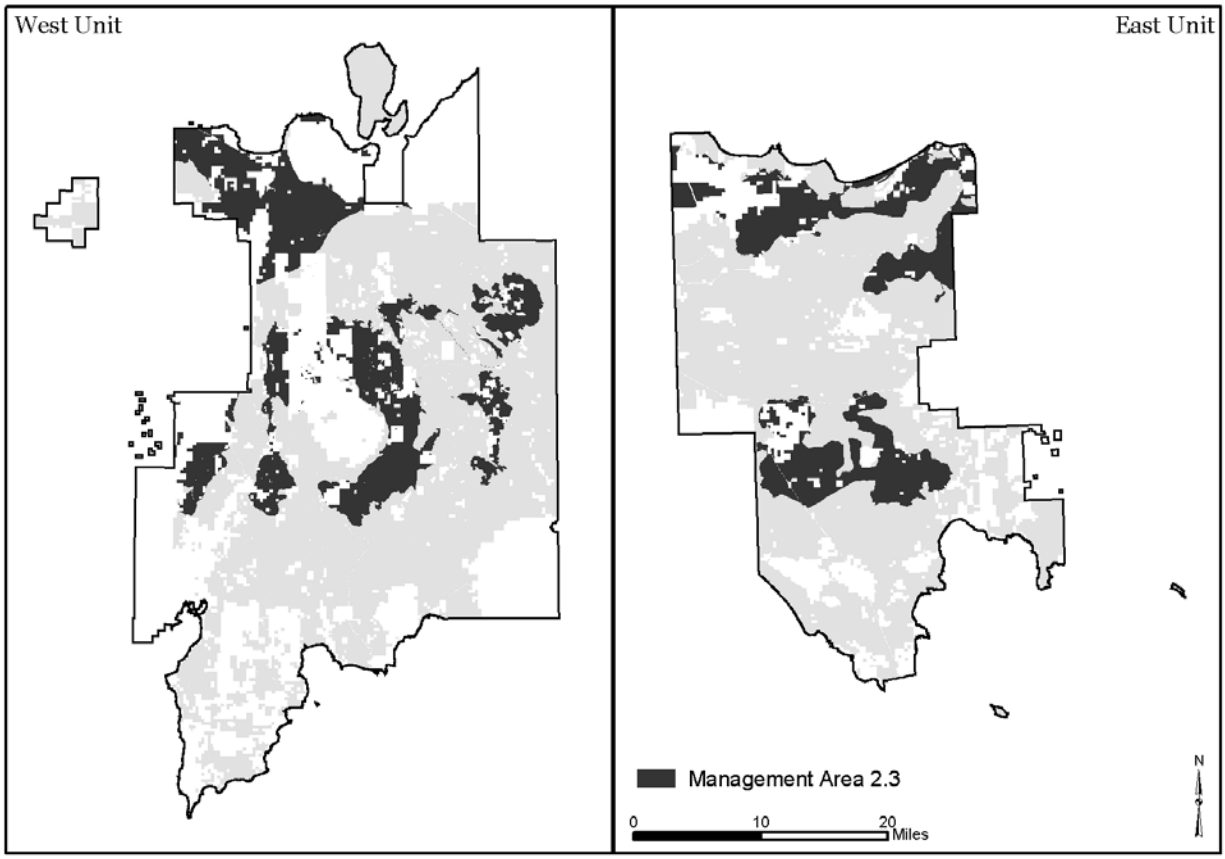


Figure 3-4. The locations of Management Area 2.3 are shown in dark gray.

Suited Uses: To provide quality sawlogs for lumber and veneer to the regional economy; to manage northern hardwoods for wildlife habitat for species such as northern goshawk, red-shouldered hawk, American marten and redback salamander; and to provide dispersed and developed recreation.

Landscape Description: This area consists of rolling to steep topography with slope gradients ranging from about 6 percent to 40 percent with some steeper areas in the wave cut lake plain landform and in minor areas of the ice contact landforms. Glacial landforms include bedrock-controlled ground moraines, ground moraines, ice margin complexes and small areas of clay lake plains and outwash plains.

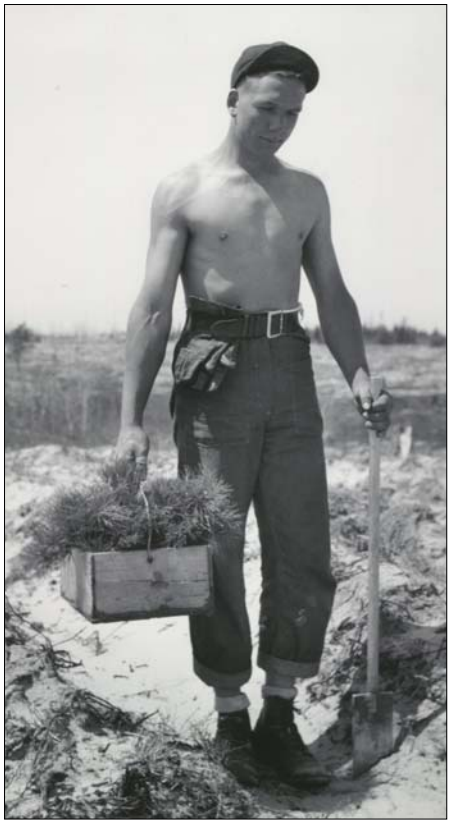
Soils range from productive sands to loamy sands and silt loams. Soils are dominantly productive uplands, with wetlands developed in kettle areas and along streams and lake margins.

Wetlands occupy about 20 percent of the area and are located along streams and in ice-formed depressions (lowlands).

Dominant landtype associations include: Munising Moraine IV, Onota Channelized Moraines, Munising Disintegration Moraine, Boot Lake Plain, Au Train Bedrock Controlled Moraines, Steuben Segment, Niagara Escarpment I, Sand/Clay Transistion North and Haymeadow Buried Moraine. Other LTAs include: Lake Stella Complex, Trenary Till Plain and Lake Superior Plains.

Due to well-drained soils and deep rooted trees, individual tree or small gap windthrow is the dominant natural disturbance regime. Northern hardwoods is the dominantly forest type and presettlement vegetation data indicates northern hardwoods was the dominant forest type present in 1850.

Desired Conditions: Northern hardwoods, such as sugar maple and beech, dominate this area, although red maple, cherry, yellow birch and basswood are also found. In addition, white pine and hemlock will be interspersed within the hardwood stands. Areas appear largely unaltered for long periods of time and the forest canopy appears continuous over large areas. Generally, trees from seedling to sawtimber size grow within the same stand. Areas of even-aged hardwoods and early seral species are evident. Down, dead or diseased trees remain within the forest, offering wildlife habitat. Black bear, black-throated blue warbler, northern goshawk, red-shouldered hawk, wood thrush, veery, American marten, redback salamander and barred owl are found in this area.



During timber harvest activities, the sights and sounds of heavy equipment will be obvious. Logging trucks and decks of pulpwood and sawlogs may be a common sight. Narrow single lane roads used for logging may be blocked by equipment during harvest operations.

The road network in this management area serves in transporting timber products and provides access for recreation activities. Driving for pleasure, camping at dispersed or developed recreation sites, skiing, hiking, viewing fall colors, hunting, fishing, trapping, horseback riding and berry picking are some activities enjoyed in this area.

Off-highway vehicle use occurs on designated/posted trails and roads within this management area. Snowmobile use generally occurs on groomed trails and Forest roads.

Some roads may be closed to protect wildlife habitat or when they are not needed for forest management activities. Closed roads will provide opportunities for non-motorized recreation.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years). The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-3 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed. Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Table 3-3. MA 2.3 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0	1	5								
	1			0	1						
	2			1	3						
	3			1	4			1	5	10	20
	4			0	5			2	5	20	30
	5									10	20
30	0										
	1			0	2			2	5	2	5
	2			2	8			7	15	7	15
	3			2	10			6	15	6	15
	4			0	5			11	20	10	20
	5							4	10	3	10
40 50 90	0	0	1								
	1			0	1						
	2			1	3						
	3			1	4						
	4			0	2			5	10	20	30
	5									50	60
60	0										
	1			2	5						
	2			8	15						
	3			10	20						
	4			0	5			10	20	15	25
	5							5	10	15	25
70A	0										
	1			1	2						
	2			5	10						
	3			6	10			5	10		
	4			0	1			5	10	25	35
	5									20	30
70B	0										
	1			1	5						
	2			5	10						
	3			6	12			5	25	2	10
	4			0	5			5	25	12	30
	5									6	20
80A	0										
	1										
	2										
	3							5	20	2	10
	4							5	20	12	30
	5									6	40
80B	0										
	1										
	2										
	3							5	30	2	10
	4							5	30	12	30
	5									6	40

Management Area 4.2

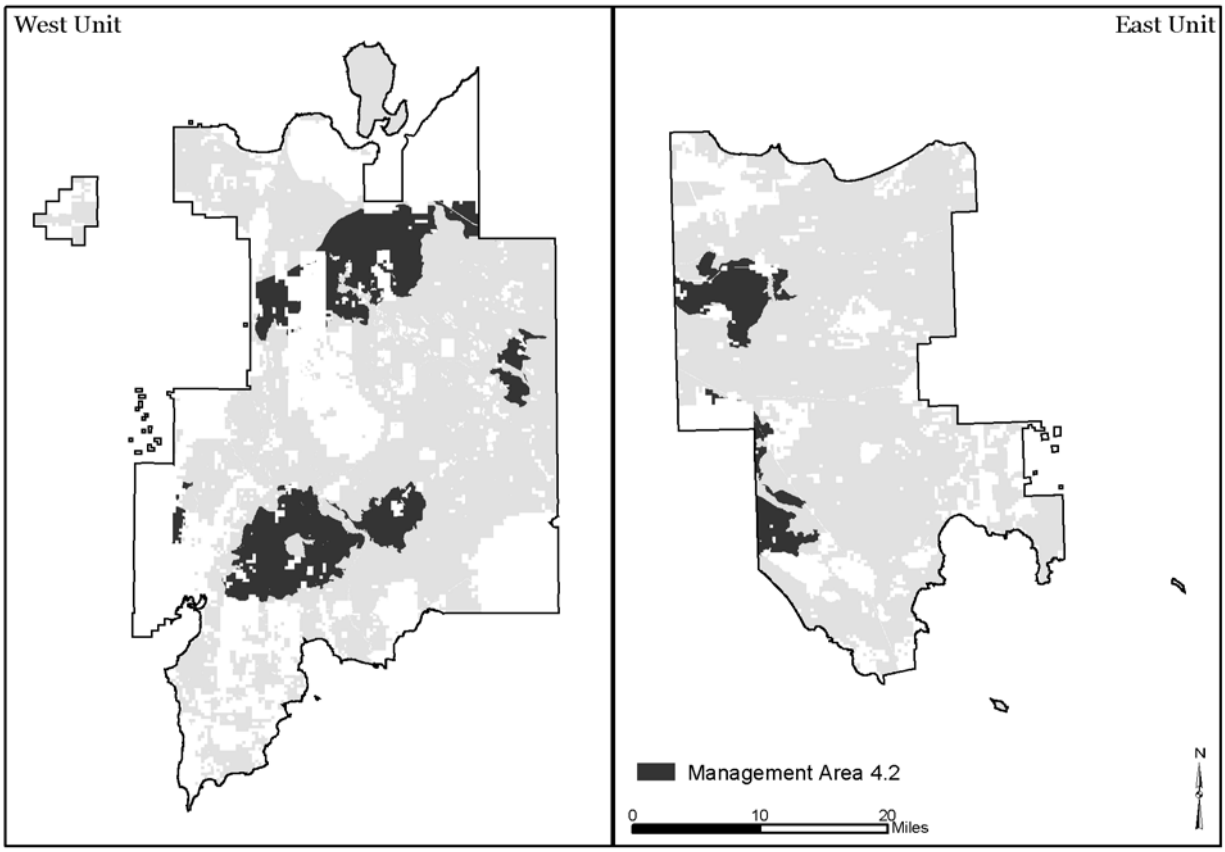


Figure 3-5. The locations of Management Area 4.2 are shown in dark gray.

Suited Uses: To provide conifer timber products to the regional economy and to manage conifer for wildlife habitat for species such as red squirrel, American marten, Kirtland's warbler and pine warbler.

Landscape Description: This area predominately consists of gently sloping to rolling topography. Slope gradients in most landtype associations (LTAs) are less than 15 percent, but range up to 50 percent on the steep faces of the sand dunes in the ridge/swale LTA.

Landforms include: lake plains, outwash plain lowlands, pitted outwash plains, bedrock controlled ground moraines and dune capped lake plains. Soils are dominantly sands that range from wet to very dry.

Wetlands occupy about 26 percent of the area. Wetmore Outwash, Wetmore Outwash 2, Beaton Lake Outwash, Ridge/Swale Complex, Steuben Outwash/Moraine, Lake Superior Highlands, Strongs Outwash Hills and Carp/Ozark Creek Wetlands LTAs are common. The Watson Till/Wetland complex occupies a small part of the LTA.

Desired Conditions: Red pine is the most common species, although jack pine, oak, aspen, white pine and northern hardwoods are also found. A mixture of conifers and hardwoods are evident along lakes and streams. The area is managed for conifer production, which is favored by wildlife species such as red squirrel, American marten, Kirtland's warbler and pine warbler.

During timber harvest activities, the sights and sounds of heavy equipment will be obvious. Logging trucks and decks of pulpwood may be a common sight. Narrow single lane roads used for logging may be blocked by equipment during harvest operations. Harvest sites may be cleared in preparation for reforestation projects. Temporary open areas created by timber harvest may be evident.

The road network in this management area serves in transporting timber products and provides access for recreation activities. Driving for pleasure, camping at dispersed or developed recreation sites, skiing, hiking, viewing fall colors, hunting, fishing, trapping, horseback riding and berry picking are some activities enjoyed in this area.

Off-highway vehicle use occurs on designated/posted trails and roads within this management area. Snowmobile use generally occurs on groomed trails and Forest roads. Some roads may be closed to protect wildlife habitat or when they are not needed for forest management activities. Closed roads will provide opportunities for non-motorized recreation.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years). The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-4 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed. Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Table 3-4. MA 4.2 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0	2	6								
	1			0	2	3	8			4	10
	2			2	4	5	12			8	15
	3			2	4	10	20			7	15
	4							1	5	25	40
	5									7	15
30	0	1	6								
	1			0	2	0	1	4	10	1	5
	2			0	2	0	2	8	15	4	10
	3			0	2	0	2	11	17	3	8
	4			0	2			15	40	5	25
	5							22	40	7	25
40 50 90	0	0	4								
	1			0	2			1	5	0	5
	2			0	4			3	10	1	5
	3			0	5			6	15	2	7
	4			0	2			8	15	34	45
	5							1	10	25	40
60	0	0	2								
	1			1	5	0	2	1	5	1	5
	2			3	10	0	5	5	10	4	10
	3			4	12	0	5	5	10	5	10
	4			1	5	0	2	11	18	18	30
	5							5	15	8	20
70A	0										
	1			1	5	0	1	1	5		
	2			5	10	0	2	6	15		
	3			6	10	0	2	7	15	8	15
	4			0	2					20	30
	5										
70B	0										
	1			1	5			1	5	1	5
	2			5	10			3	10	2	10
	3			6	12			3	10	7	25
	4			0	5					7	25
	5										
80A	0	0	5								
	1							1	5	1	5
	2							3	10	2	10
	3							3	20	7	30
	4									7	40
	5										
80B	0										
	1							1	5	1	5
	2							3	10	2	10
	3							3	10	7	25
	4									7	25
	5										

Management Area 4.4

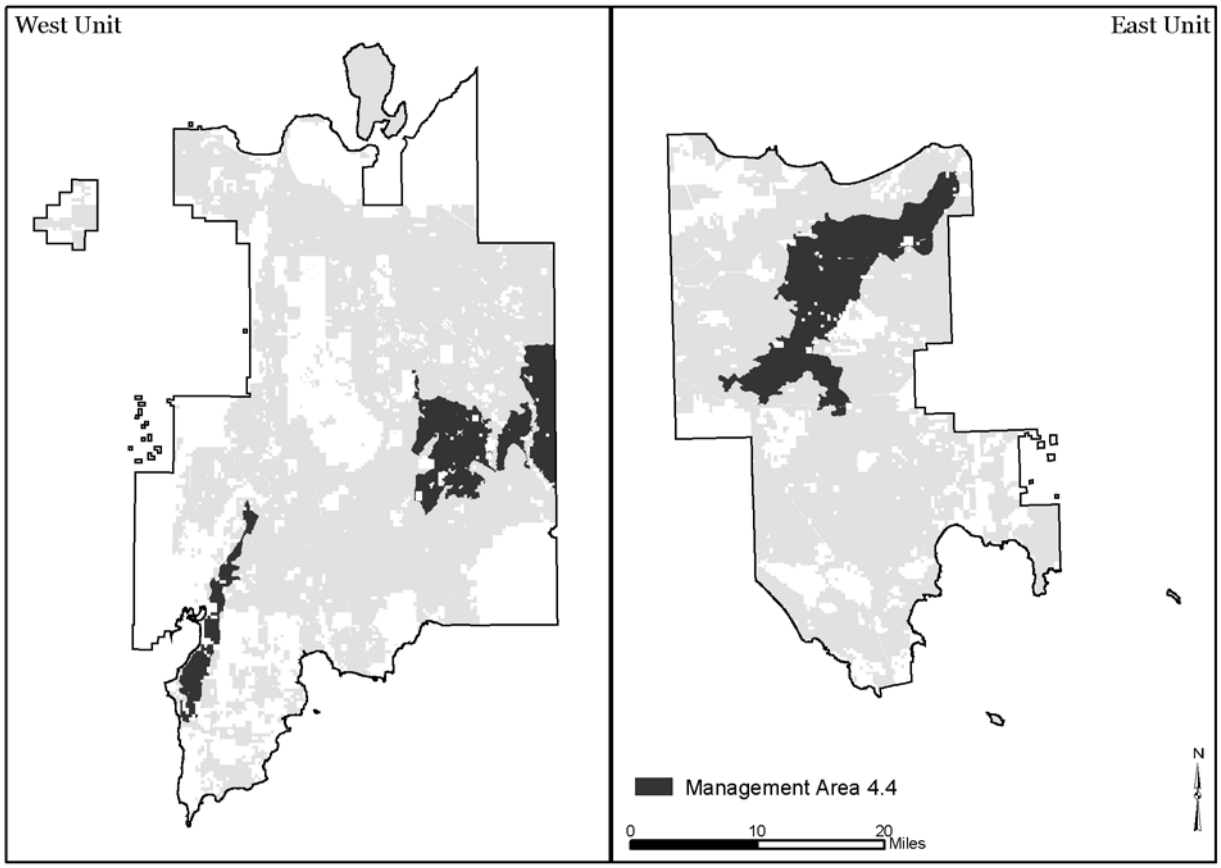


Figure 3-6. The locations of Management Area 4.4 are shown in dark gray.

Suited Uses: To provide wildlife habitat for Kirtland's warbler and other upland species such as sharp-tailed grouse, sandhill crane, and black-backed woodpecker; to provide conifer timber products to the regional economy; and to provide dispersed and developed recreation.

Landscape Description: This area primarily consists of nearly level to gently sloping topography. Slope gradients in most areas are less than 5 percent. Glacial landforms include: outwash plains, outwash plains lowlands, pitted outwash plains, lake plains and minor areas of disintegration moraines.

Soils are dominantly dry sands with low to moderate productivity. Due to the dry, sandy soils and jack pine and red pine forest types, fire is the dominant disturbance regime. Wetlands occupy about 15 percent of the area. Dominant LTAs include: the Whitefish Delta, Steuben Outwash, Indian River Upland, Mint Farm, Raco Sand Plains North and Raco Sand Plains South.

Desired Conditions: Jack pine is most common tree species, although oak, aspen, paper birch, lowland hardwoods, red pine and white pine are also found. Blueberries may be found throughout the management area.

Kirtland's warbler habitat will be developed and maintained by incorporating large areas of densely stocked young jack pine across the landscape. Sharp-tailed grouse, upland sandpiper, northern harrier, sandhill crane, American kestrel, bluebird and black-backed woodpecker habitat will be provided through large openings/savanna complexes. Pockets of densely stocked aspen or jack pine will also be found throughout the complex.

Mature trees will be left to provide snags and coarse woody debris or could be commercially harvested to maintain the desired stocking densities and opening

characteristics of the complex. The large adjacent temporary openings from jack pine harvest will provide additional open land habitat. As these stands regenerate and mature, the jack pine will provide habitat for Kirtland's warbler and spruce grouse.

During timber harvest activities, the sights and sounds of heavy equipment may be obvious. Logging trucks and decks of pulpwood may be a common sight.

The road network provides access to a variety of recreation activities such as dispersed camping, sightseeing, blueberry picking, hunting, fishing, skiing or hiking.

Off-highway vehicle use occurs on designated/posted trails and roads within this management area. Snowmobile use generally occurs on groomed trails and Forest roads.

Some roads may be closed to protect wildlife habitat or when they are not needed for forest management activities. Closed roads will provide opportunities for non-motorized recreation.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years).The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-5 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed. Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Table 3-5. MA 4.4 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0	11	15								
	1			0	2	7	12	0	3	3	5
	2			1	3	11	20	1	5	6	10
	3			1	4	25	35	2	5	6	10
	4					0	10	2	5	8	15
	5										
30	0	0	3								
	1			1	5	1	5	2	5	0	5
	2			4	10	2	5	8	15	0	5
	3			5	10	3	5	10	15	1	5
	4			1	5	1	5	14	20	2	5
	5							10	20	10	15
40, 50, 90: *There are no vegetation goals for these ELTs*											
60	0	1	5								
	1			0	2	5	10	1	3	0	5
	2			1	3	20	25	3	8	0	5
	3			1	4	25	30	6	12	0	5
	4			0	2	1	5	8	14	4	10
	5							3	10	3	15
70A	0										
	1					5	10	0	3	1	3
	2					20	30	0	3	3	7
	3					20	30	1	4	5	10
	4							0	3	2	10
	5										
70B, 80A, 80B: *There are no vegetation goals for these ELTs*											

Management Area 4.5

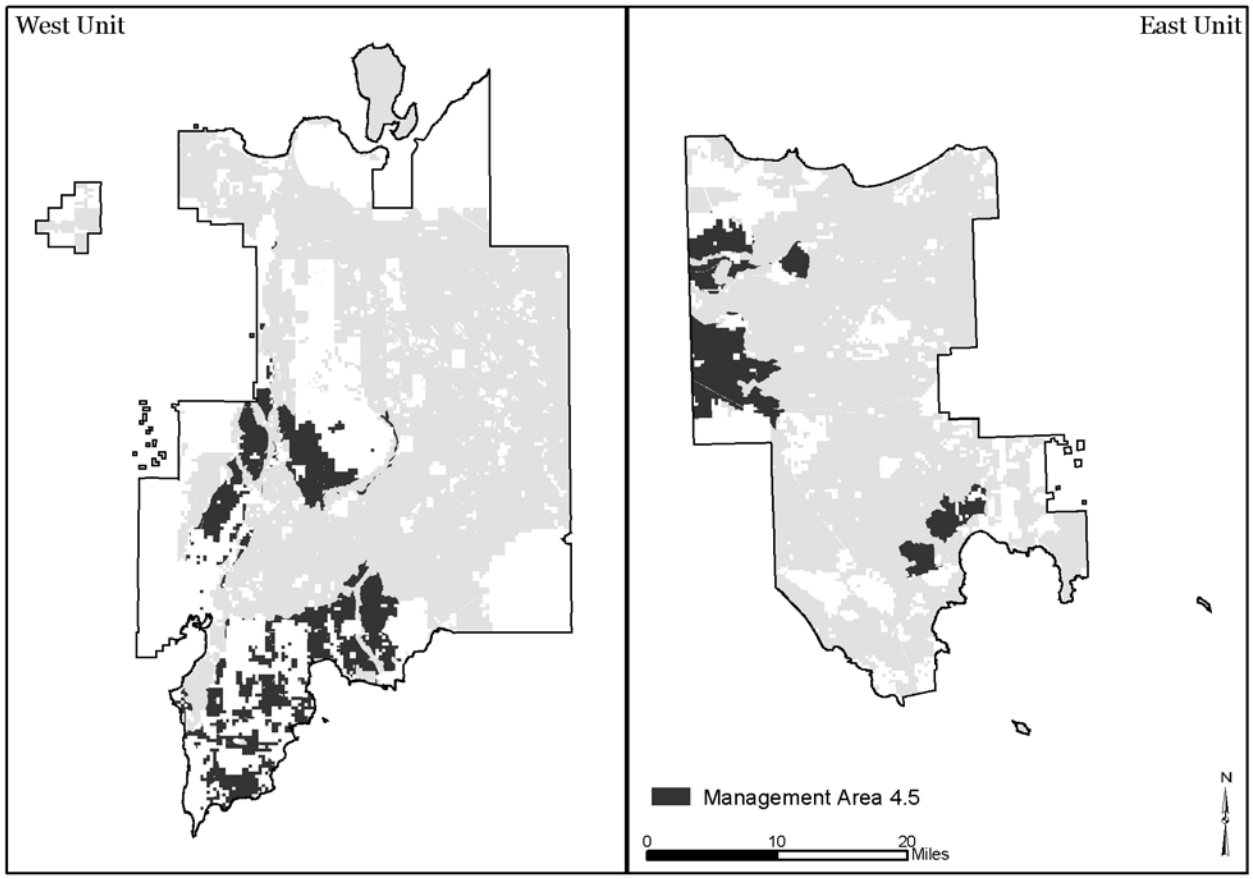


Figure 3-7. The locations of Management Area 4.5 are shown in dark gray.

Suited Uses: To provide older forest habitat for wildlife and wetland plant communities; to provide conifer sawlogs to the regional economy; and to provide dispersed recreation.

Landscape Description: This area consists of gently sloping to rolling topography with infrequent steep areas where bedrock controls the topography. Slope gradients typically range from 5 percent to 20 percent with a few steeper areas. Landforms include glacial drainage channels, lake plains, bedrock benches and ground moraines. It also includes minor areas of outwash plain, beach ridges and dunes.

Soils are dominantly wet mineral and organic. Limestone bedrock often occurs at relatively shallow (less than 40 inches) depths. The primary disturbance regime in this management area is windthrow. Wetlands occupy about 68 percent of the area.

Dominant LTAs include: The Whitefish/ Au Train lowland, Stonington Till Plain, Nahma Lowlands, Mid-Sturgeon Moraine/ Wetland, East Tahquamenon River Drainage, Tahquamenon River Drainage, Wilwin Wetlands and the Lower Carp River Complex.

Desired Conditions: Lowland conifers are the most common species, with cedar, hemlock, spruce and tamarack also widely available. Aspen, red and white pine and hardwoods may be mixed in the swamp conifers or found in separate stands.

Vegetation management provides direction for upland and lowland habitat for deer and other wildlife species associated with more remote, older coniferous forests. These forests also provide winter cover for white-tailed deer. Bobcat, snowshoe hare, American marten, Canada lynx, Connecticut warbler, Cape May warbler and black bear also find suitable habitat in this forest.

Down, dead or diseased trees remain within the forest, offering habitat for a wide variety of animals and birds. Timber harvest activities will generally occur in the winter season.

The road network consisting primarily of narrow, single lane roads will generally be travelable only in winter after the ground is frozen. Many roads may be impassable or closed to vehicle use, which provides protection for remote wildlife habitat. Two lane roads may occur adjacent to or pass through the area to provide access to dispersed recreation opportunities such as hunting and fishing.

Off-highway vehicle use occurs on designated/posted trails and roads within this management area. Snowmobile use generally occurs on groomed trails and Forest roads.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years). The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-6 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed. Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Table 3-6. MA 4.5 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	% Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0										
	1			0	3	2	5			1	5
	2			2	4	5	15			3	10
	3			2	5	7	15			3	10
	4					2	5	5	10	15	25
	5									10	25
30	0	2	4								
	1			2	5			2	5	1	5
	2			7	12			6	12	2	5
	3			9	15			6	12	3	8
	4			2	5			8	15	14	20
	5							8	15	10	20
40 50 90	0	1	2								
	1			1	2						
	2			1	3			2	5	2	8
	3			2	5			3	8	8	15
	4			2	5			5	10	15	25
	5							1	5	17	25
60	0										
	1			2	6	0	1	1	5		
	2			8	12	2	4	2	5	7	15
	3			10	15	3	10	2	5	6	15
	4			2	5	0	2	4	10	10	30
	5							1	5	17	40
70A	0										
	1			1	5	1	5	2	5		
	2			5	10	5	15	3	8	3	6
	3			6	10	5	15	5	10	8	15
	4			0	2	1	5	1	5	15	25
	5									17	25
70B	0										
	1			2	5						
	2			10	15						
	3			12	18					5	10
	4			4	8			5	25	10	30
	5									15	35
80A	0										
	1										
	2										
	3									20	40
	4									30	50
	5										
80B	0										
	1									1	5
	2									2	10
	3									20	40
	4									30	50
	5										

Management Area 5.1
Congressionally-Designated Wildernesses

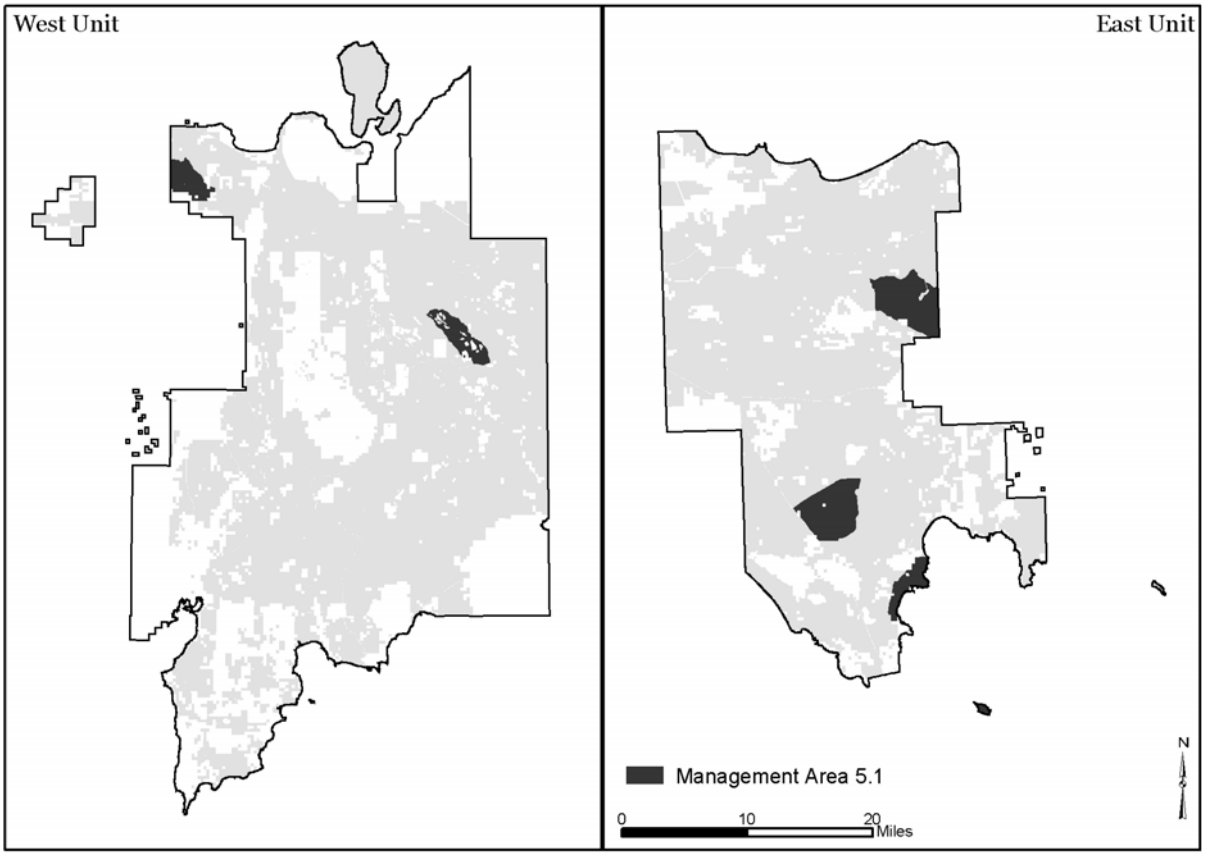


Figure 3-8. The locations of the Hiawatha's six Wildernesses are shown in dark gray.

Suited Uses: To protect and perpetuate Wilderness character and values including, but not limited to, opportunities for scientific study, education, solitude, physical and mental challenge and stimulation and semi-primitive non-motorized recreation experiences.

Landscape Descriptions

Delirium, Mackinac and Round Island Wildernesses are characterized by nearly level to gently rolling topography, with slope gradients ranging from 2 percent to 10 percent. Landforms include outwash plain lowlands and Clay Lake plains with minor areas of bedrock controlled ground moraine and Beach Ridges and Dunes. Soils are typically wet sands and clays. The primary disturbance regime is individual tree and small gap windthrow. Wetlands occupy about 62 percent of the area. The primary landtype associations are: Sand/Clay Transistion North, Sand Clay Transistion South, Niagara Escarpment I and Niagara South. Round Island lies in the Mackinac Breccia LTA.

Horseshoe Bay Wilderness has nearly level to gently sloping topography, with slopes ranging from 2 percent to 10 percent gradient. Landforms include bedrock controlled ground moraines and outwash plain lowlands. Soils are dominantly poorly drained mucks and peats. The primary natural disturbance factor is windthrow. About 85 percent of the area is mapped as wetland. Most of the Wilderness falls within the Huron Lake Beds LTA.

Big Island Lake Wilderness has gently sloping to rolling hills with slopes ranging from 5 percent to 30 percent gradient and lies on a disintegration moraine landform. Soils are dominantly sands and sandy loams and

the soil moisture regime is mesic and dry mesic. The primary disturbance regime is individual tree or small gap windthrow. Wetlands occupy 16 percent of the area. Most of the Wilderness lies within the Steuben Segment LTA.

Rock River Wilderness is characterized by rolling topography deeply dissected by two glacial drainage channels. The glacial drainage waters downcut through the sandstone bedrock, leaving two channels with extremely steep sides and cliffs up to 100 feet high in some areas. Slopes range from 10 percent to 60 percent gradient. The Wilderness lies within the bedrock-controlled ground moraine and glacial drainage channel landforms.

Soils are dominantly loamy and the soil moisture regime is mesic. Organic and wet mineral soils that are shallow to bedrock, are present on the bedrock benches and terraces in the drainage channels. Wetlands occupy about six percent of the Wilderness. Most of the Wilderness is located within the Onota Channelized Moraine LTA.

Desired Conditions

Delirium, Mackinac and Round Island Wildernesses: Remote, undisturbed areas offer a secluded setting. Visitors may find rolling hills, rocky outcrops, old lakeshore dunes, lakes, islands, marshes, bogs, wetlands and quiet secluded forests.

Facilities may be present when necessary to protect the wilderness character of the area. Foot trails exist where needed to control use patterns. Dispersed recreational opportunities for hiking, snowshoeing, backpacking and primitive camping may be found. Isolated fishing areas may be found on interior lakes or streams. Little evidence of human intrusion into the area is apparent. Interaction of recreation users is at a minimum. Motorized interior travel is not permitted.

Down, dead or diseased trees remain within the Forest, offering habitat for a wide variety of animals and birds. A diversity of tree species, age and size is found in this natural appearing forest. The experience is that of quiet, secluded wild woodland.

Horseshoe Bay Wilderness: Remote, undisturbed areas offer a secluded setting where natural processes function without human interference. The Forest landscape is natural appearing. Opportunities to experience solitude and self-reliance exist. Foot trails exist where needed to control use patterns. Dispersed recreational opportunities for hiking, hunting, snowshoeing and backpacking may be found. Little evidence of human intrusion into the area is apparent. Down, dead or diseased trees remain, offering habitat for a wide variety of mammals and birds. Aquatic ecosystems function naturally without human interference.

Big Island Lake Wilderness: Remote, undisturbed areas offer a secluded setting. Visitors will find rolling hills, lakes, islands, marshes, bogs, wetlands and quiet secluded forests. Access may be by foot, canoe, skis and watercraft as specifically allowed in accordance with the Michigan Wilderness Act of 1987. Facilities, such as wilderness toilets and fire rings, may be present, and are normally limited to very low visual impacts recreation sites. Foot trails exist where needed to control use patterns.

Dispersed recreational opportunities for hiking, hunting, fishing, snowshoeing, backpacking and canoeing may be found. Isolated fishing areas may be found on interior lakes. Little evidence of human intrusion into the area is apparent.

Old roadbeds are allowed to naturally revegetate except for those needed to provide a trail system. Interaction between visitors will be minimal. Motorized use is prohibited on National Forest System lands, providing consistency with Wilderness values. The Wilderness is designated Class II Air quality.

Down, dead or diseased trees remain within the forest, offering habitat a wide variety of mammals and birds. Ecosystems function naturally with minimum human interference. A diversity of tree species, age and size class is found in this natural appearing forest. The experience is that of quiet, secluded wild woodland.

Wildlife species that may inhabit this forest include moose, black bear, gray wolf, bobcat, otter, fisher, American marten, mink, raccoon, porcupine, red squirrel, bald eagle, common loon, great blue heron, pileated woodpecker, and various songbirds.

Rock River Canyon Wilderness: Remote, undisturbed areas offer a secluded setting. Wilderness values are given primary importance over convenience, comfort, economic and commercial value. Visitors will find steep hills, cliff-lined river canyons, river, waterfall, lake and wetland resources and dense secluded forests.

Access may be by foot, skis and watercraft as specifically allowed in accordance with the Michigan Wilderness Act of 1987. Facilities, such as wilderness toilets and fire rings, are not found in Rock River Canyon. Foot trail exists for access to Rock River Falls, but no other trails are evident. Dispersed recreation opportunities for orienteering, snowshoeing, hiking, hunting, fishing and backpacking may be found. Isolated fishing areas may be found on interior lakes. Little evidence of human intrusion into the area is apparent.

Old roadbeds are allowed to naturally revegetate. Interaction between visitors will be minimal. Motorized use is prohibited on National Forest System lands. Down, dead or diseased trees remain within the forest, offering for a wide variety of mammals and birds. Ecosystems function naturally with minimum human interference. The Wilderness is designated Class II air quality.

A diversity of tree species, age and size class is found in this natural appearing forest. The experience is that of quiet, secluded wild woodland. Wildlife species that may inhabit this forest include moose, black bear, gray wolf, bobcat, otter, fisher, American marten, mink, raccoon, porcupine, red squirrel, bald eagle, common loon, great blue heron, pileated woodpecker, white-tailed deer and various songbirds.

Vegetation Composition Goals: There are no vegetation management goals for MA 5.1.

Visual Quality Objectives: In this planning period, increase the amount of NFS lands meeting preservation VQO.

Standards & Guidelines

1600 Information Services

Guidelines:

1. Leave No Trace and Wilderness awareness training tools should be used to inform current and potential Wilderness users about Wilderness ethics and to protect Wilderness resources.

2100 Environmental Management

Guidelines:

1. Use of pesticides (herbicides) should occur when necessary to prevent the loss of significant aspects of the Wilderness, or where necessary to prevent significant losses to resource values on private or public lands bordering the Wilderness.

2300 Recreation Management

Recreation Opportunities Guidelines:

1. Recreation use should be managed under a semi-primitive non-motorized Recreation Opportunity Class.
2. Random camping should not occur where it could affect waterbodies, designated campsite(s), trails or portages.
3. Campsites should be closed as necessary to protect threatened, endangered and Regional Forester sensitive species.
4. Big Island Lake Wilderness may have designated campsites.

Party Size Guidelines:

1. Group size may be restricted for camping or travel to maintain/promote Wilderness settings and experiences.

Fire Guidelines:

1. Campfires may be prohibited or restricted to protect Wilderness resources.

Mechanical Devices Guidelines:

1. The use of mechanical devices (other than wheelchairs) should not occur.

2400 Vegetation Management

Guidelines:

1. The gathering of miscellaneous forest products for commercial and/or personal use (other than on-site personal consumption and use) should not be permitted.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Guidelines:

1. Stocking of native species may occur, where this practice occurred prior to designation of the area as Wilderness and it is accomplished by non-motorized means.

2. Wildlife species may be introduced and fish species stocked to perpetuate or recover a threatened or endangered species, or to restore native species eliminated or reduced by human influence.
3. Habitat may be manipulated to correct conditions resulting from human influence or to protect threatened or endangered species.

2700 Special Uses

Guidelines:

1. No new utility corridors should be allowed.

4000 Research

Guidelines:

1. Temporary research and monitoring devices should be installed and operated only when the desired information is essential and cannot be obtained from a location outside the Wilderness or RNA, and the proposed device is the minimum tool necessary to accomplish the objective safely and successfully.

4063 RNAs and cRNAs

Reference MA 8.1 for Research Natural Area and candidate RNA management.

Standards:

1. If conflicting management direction exists between MA 5.1 (wilderness) and MA 8.1 (RNA and cRNA), then the most restrictive of the two directions apply.

Guidelines:

1. Non-manipulative research and monitoring activities that are dependent on a Wilderness environment should be allowed.
2. Research parties should be limited to 8 people with no more than 1 group in the area at any given time within the Horseshoe Bay RNA.
3. Educational use of the area should be allowed as long as the use supports, promotes or does not degrade Wilderness/RNA resource values, and does not disturb on-going research activities.
4. Campfires and collecting firewood should not be permitted within RNAs.

5100 Fire Management

Guidelines:

1. Wildfire suppression tactics and holding lines for fires should mitigate damage to Wilderness (e.g. RNA, WSR, etc), visual quality objectives, threatened and endangered species, and cultural sites, unique to the area.
2. Water should be used instead of fire retardants whenever possible.
3. Prescribed natural fire and human-ignited prescribed fire should occur to protect Wilderness values.

7700 Transportation System

Guidelines:

1. No roads should be provided except those authorized to access private lands within the Wilderness.
2. Maintenance on authorized roads should be consistent with Wilderness values.

Management Area 6.1

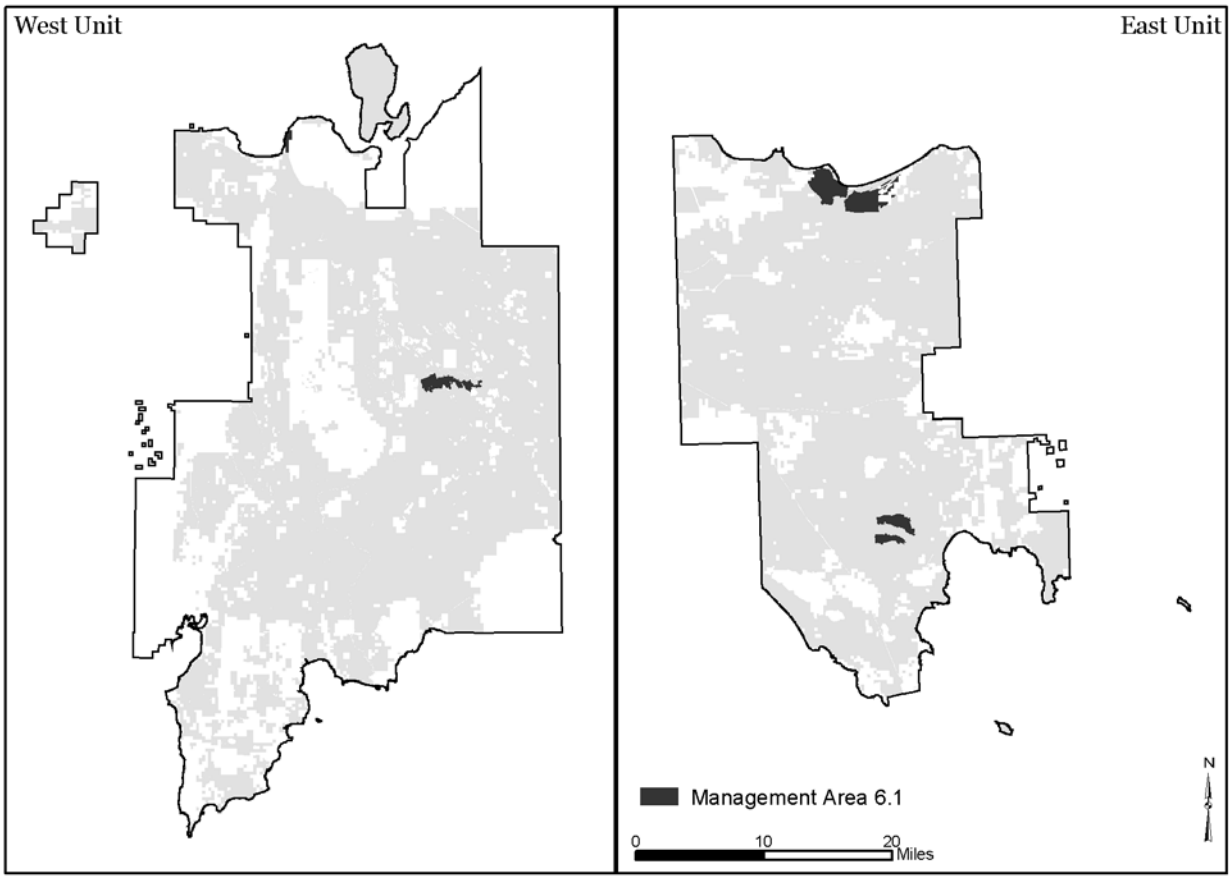


Figure 3-9. The locations of Management Area 6.1 are shown in dark gray.

Suited Uses: To provide semi-primitive non-motorized (SPNM) recreation activities. Provide a natural setting for long-lived trees. Species benefiting from this wildlife habitat include: pileated woodpecker, fisher, gray wolf, American marten and Canada lynx.

Landscape Description: This area consists of a wide variety of ecological settings and conditions. Topography is generally rolling, but includes steep areas in the Grant Creek and Pendills Creek watersheds. Slopes range from 5 percent to 15 percent in most areas, but are up to 60 percent in the upper part of Grant Creek and Pendills Creek. The landforms represented include moraines, wave cut lake plains and clay lake plains.

Soils are dominantly loamy or sandy and have mesic soil moisture regime. Wetlands occupy about 27 percent of the area. The LTAs include: the Au Train Bedrock Controlled Moraines, Steuben Segment, Embayment, Lake Superior Plains, Niagara South and the Carp River Complex.

Desired Conditions: Forests are dominated by a mix of hemlock, red pine, white pine, cedar and northern hardwoods. Forests will generally appear older and serene with large stately trees. Little evidence of human influence is apparent. The older, mature forest will provide the isolation needed for wildlife species such as the American marten, bobcat, Canada lynx, fisher, gray wolf and pileated woodpecker.

Management activities will be designed to retain the remote setting. Timber harvest activities will generally be of small scale, infrequent entries, short duration and scheduled seasonally to protect recreation values and wildlife habitat areas.

Roads are closed to motorized vehicles, although seasonal motorized uses may be permitted for forest management needs.

Roads may border the management area to provide access for remote/secluded recreation activities. Recreational experiences may include hiking, skiing, bicycling, viewing scenery, berry picking, nature study, hunting and fishing.

Interaction of recreation users is low, and low impact facilities include dispersed campsites and horse trails. Non-motorized trails within the management area will emphasize looped trail opportunities.

Vegetation Composition Goals: There are no vegetation management goals for Management Area 6.1.

Standards & Guidelines

2300 Recreation Management

Guidelines:

1. Trailheads should be located on the perimeter or outside the management area.

2400 Vegetation Management

Guidelines:

1. Vegetation management should be allowed for resource enhancement, insect and disease treatments and/or to promote old growth characteristics.

2700 Land Uses Management

Guidelines:

1. Special uses should only be permitted for those uses that do not detract from the semi-primitive environment. Permits may also be allowed for access needed to supply utilities to private land, recreational facilities or administrative sites.

7700 Transportation System

Standards:

1. This management area is closed to all motorized use except for administrative purposes or those authorized by permit or contract.

Management Area 6.2

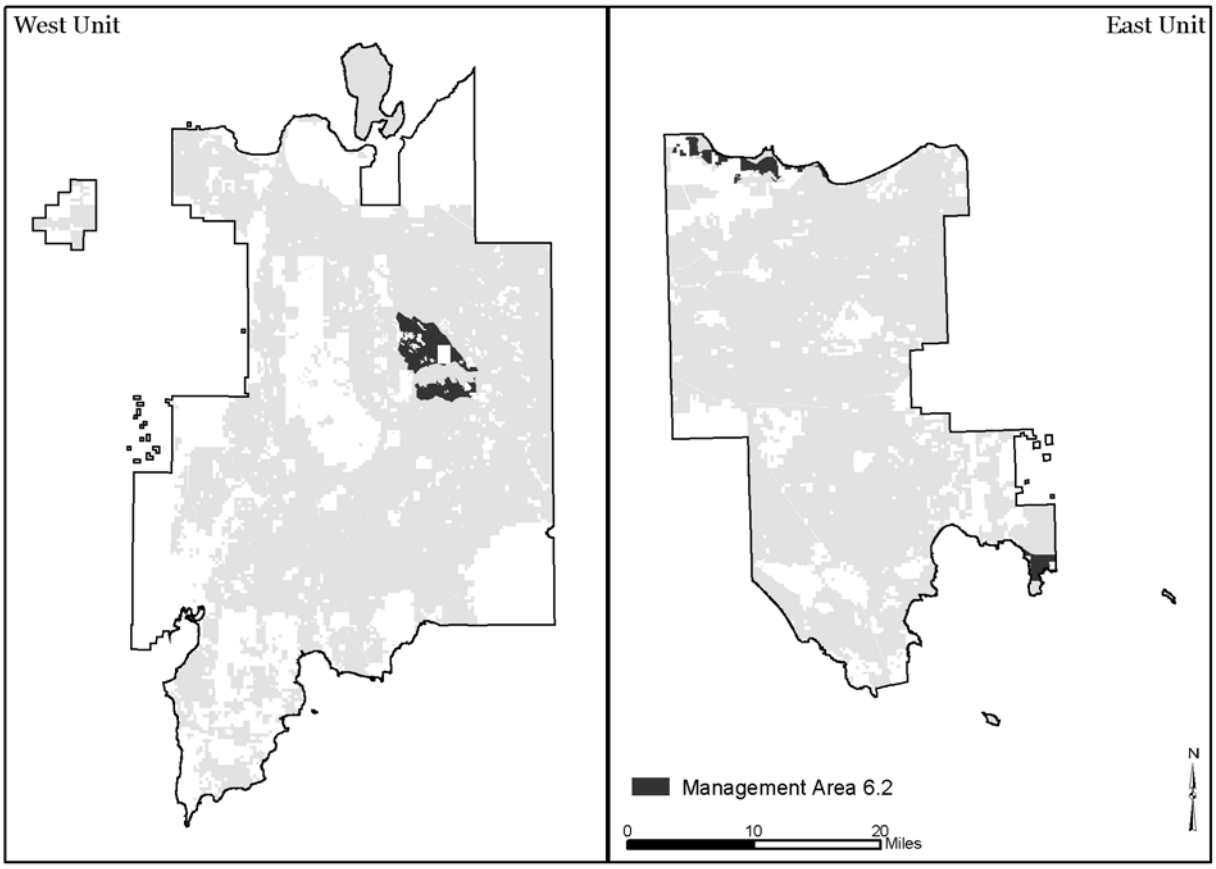


Figure 3-10. The locations of Management Area 6.2 are shown in dark gray.

Suited Uses: To provide semi-primitive motorized (SPM) recreation with access to fishing and canoeing areas. To supply even and uneven-aged timber products to the regional economy. To provide a natural setting for long-lived trees to provide habitat for loons, gray wolf, barred owl, pileated woodpecker, bald eagle and black bear.

Landscape Description: This area consists of a wide variety of ecological settings and conditions. Topography is generally rolling and slopes range from 5 percent to 15 percent gradient. It includes portions of disintegration moraines, bedrock controlled ground moraines, beach ridges and dunes and outwash plains.

Soils are typically well-drained sands, but include poorly drained lake deposits and organic soils near St. Martin. Wetlands occupy about 20 percent of the area. Dominant landtype associations include: the Steuben Segment, Steuben Outwash, Lake Superior Plain, Paradise Embayment, Huron Lake Beds and St. Martin Bay Wetlands.

Desired Conditions: The area has a mix of northern hardwoods and conifers such as sugar maple, beech, oak, hemlock, yellow birch, white and red pine, cedar and aspen are found. The Forest appears largely unaltered for long periods of time.

Vegetative management enhances the recreation values and creates wildlife habitat for American marten, loon and black bear. The gray wolf, Canada lynx, barrel owl, pileated woodpecker and bald eagle also benefit from the vegetative diversity and older forest. Harvest activities will generally be scheduled to avoid impacts on recreationists.

The road network in this management area serves in transporting timber products and provides access for recreation activities.

Two-lane arterial roads may be adjacent to or pass through the area to provide access for recreation activities. Recreational experience afforded by these areas may include hiking, skiing, viewing scenery, camping (rustic cabins, dispersed sites), berry picking, fishing, hunting, canoeing, and horseback and bicycle riding. Off-highway vehicle use occurs on designated/posted trails and roads within this area. Snowmobile use generally occurs on groomed trails and Forest roads.

Many roads may be closed to provide a semi-primitive setting for recreation activities, for wildlife habitat protection, and when not needed for forest management activities.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years).The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-8 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed.

Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Standards & Guidelines

2300 Recreation Management

Guidelines:

1. Recreation facilities should be constructed to meet Recreation Development levels 1 (primitive) and 2 (semi-primitive) standards.

2700 Land Uses Management

Guidelines:

1. Special uses should only be permitted for those uses that do not detract from the semi-primitive environment. Permits may also be allowed for access needed to supply utilities to private land, recreational facilities or administrative sites.

Table 3-7. MA 6.2 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0	0	7								
	1									0	6
	2									10	15
	3									10	15
	4									30	60
	5									20	30
30	0										
	1										
	2										
	3										
	4									15	50
	5									15	50
40 50 90	0	0	2								
	1			0	1						
	2			0	3						
	3			0	3						
	4									20	50
	5									20	50
60	0	0	1								
	1			0	3					0	2
	2			1	5					1	5
	3			1	6					1	5
	4			1	5					15	30
	5									20	50

70A, 70B 80A, 80B: ***There are no vegetation goals for these ELTs***

Management Area 6.3

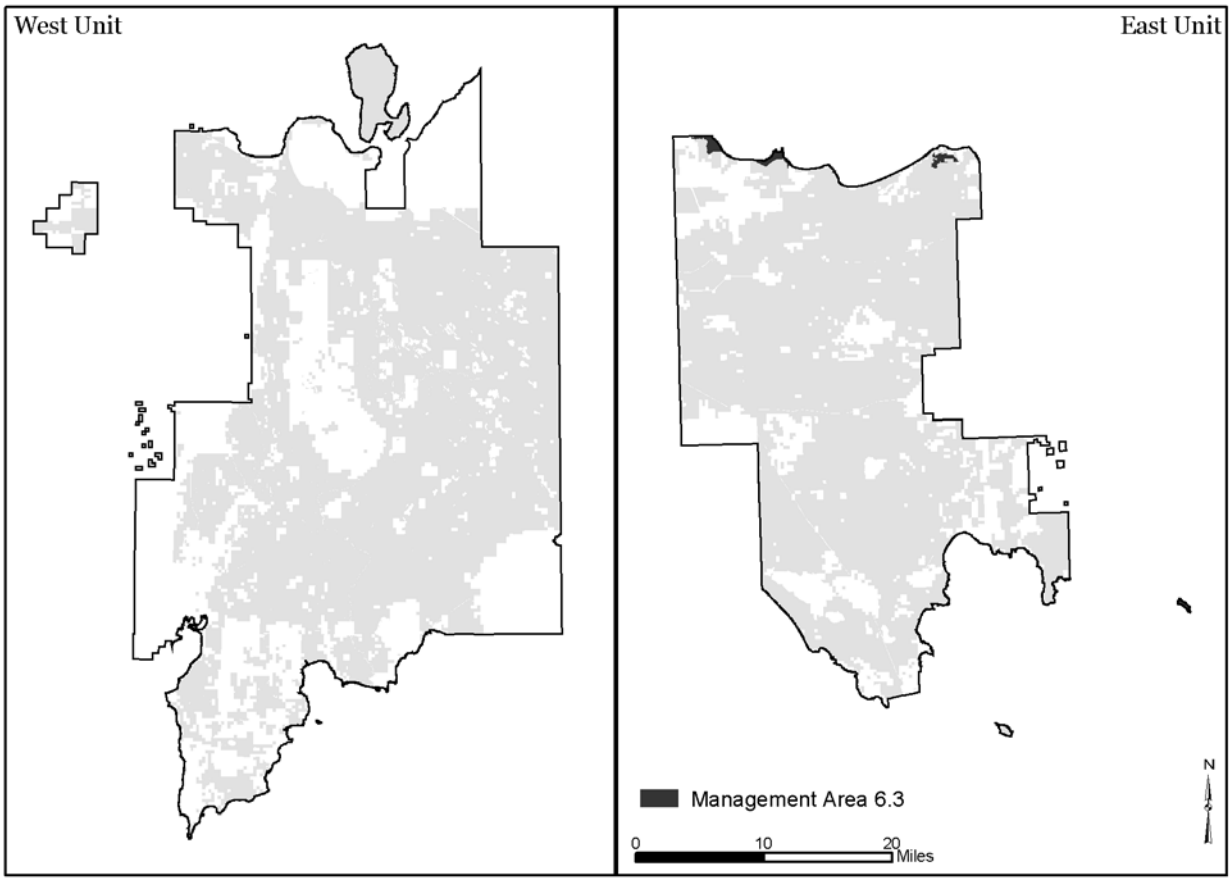


Figure 3-11. The locations of Management Area 6.3 are shown in dark gray.

Suited Uses: Manage for quiet, secluded forests that provide isolated habitats for wildlife such as osprey, bald eagle, loon and black bear. Provide dispersed semi-primitive non-motorized recreational opportunities such as fishing, hunting, kayaking and snowshoeing.

Landscape Description: This area consists of rolling topography along the Lake Superior shoreline and Government Island. Slopes range from 5 percent to 30 percent gradient. Government Island is on a bedrock controlled ground moraine landform. Areas along the Lake Superior shoreline are on the beach ridges and dunes landform and the outwash plain landform.

Soils are dominantly sandy in this area and areas along the Lake Superior shoreline support northern hardwoods. Soils on Government Island range from well-drained gravelly sands to muck. The soil moisture regime is mesic. About 31 percent of the area is mapped as wetland. The area occurs only on the Forest's East Unit and lies on the Lake Superior Plains, Paradise Embayment, Munising Moraine IV and Huron Lake Beds landtype associations.

Desired Conditions: Quiet, secluded forests are dominated by hemlock, white pine, spruce, tamarack, oak and northern hardwoods. Forests are older and serene, often with large stately trees. Natural vegetative succession slowly changes the area to mixed forests. Rolling hills, big trees, Lake Superior shoreline, open meadows and forested lowlands exist in this area.

Older mature forests provide isolation for wildlife species such as the osprey, eagle, American marten, loon, black bear, and bobcat. Fish and wildlife habitat management maintains the isolation of the area. Timber harvests generally do not occur in this area.

Dispersed recreational opportunities include hiking, hunting, fishing, kayaking, snowshoeing and skiing. Old road corridors may be evident, but are being revegetated.

Vegetation Composition Goals: There are no vegetation management goals for Management Area 6.3.

Standards & Guidelines

2300 Recreation Management

Guidelines:

1. Trailheads should be located on the perimeter or outside the management area.

2400 Vegetation Management

Standards:

1. Vegetation management will be allowed for resource enhancement, insect and disease treatments and/or to promote old growth characteristics.

2700 Land Uses Management

Guidelines:

1. Special uses should only be permitted for those uses that do not detract from the semi-primitive environment. Permits may also be allowed for access needed to supply utilities to private land, recreational facilities or administrative sites.

5400 Landownership

Standards:

1. National Forest System lands in this management area are not available for exchange.

7700 Transportation System

Standards:

1. This management area will be closed to all motorized use except for administrative purposes. Roads will be decommissioned.

Management Area 6.4

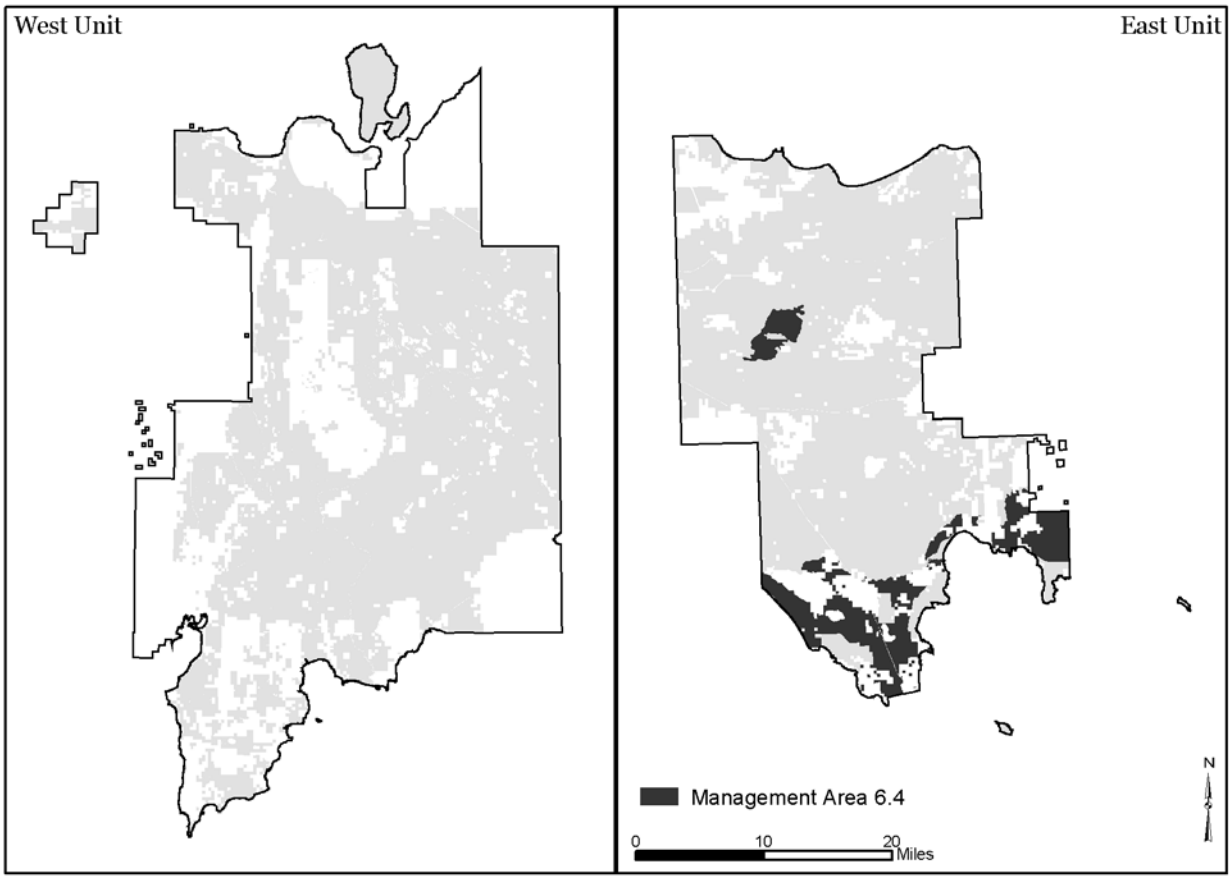


Figure 3-12. The locations of Management Area 6.4 are shown in dark gray.

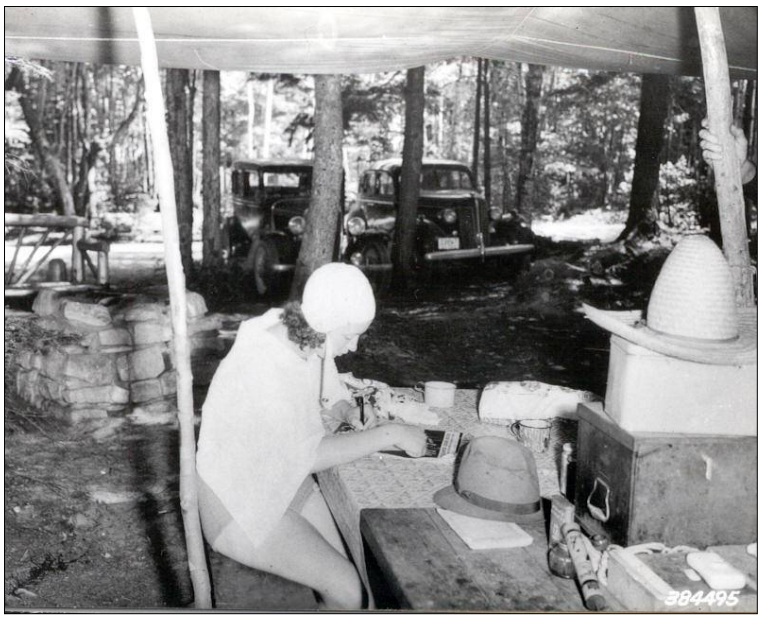
Suited Uses: Provide even and uneven-aged timber products to the regional economy. Provide habitat to benefit species such as: bobcat, American marten, black bear, raccoon, marsh wren, otter and mink. Provide semi-primitive motorized recreation with access to hunting and fishing activities.

Landscape Description: This area consists of nearly level to gently rolling topography. Slopes typically range from 2 percent to 15 percent. Landforms include outwash plain lowlands, outwash plains, clay lake plains, beach ridges and dunes, bedrock controlled ground moraines and ground moraines.

The soils range from well-drained sands and loams to poorly drained organics. Wetlands occupy about 64 percent of the area. It lies on the Betchler Marsh, Huron Lake Beds, Huron Outcrop, St. Martin Bay Wetlands, Moran Complex, Mackinac Breccia and Brevort-Point Aux Chenes LTAs.

Desired Conditions: Cedar, black spruce, hemlock, aspen, red and white pine and lowland hardwoods dominate this area. Forests have many older, dense conifer stands with openings interspersed throughout the low rolling hills, old lakeshore dunes, forested wetland, lowland brush, marshes and sedge meadows. The forest appears largely unaltered for long periods of time.

Vegetative management is designed to enhance wildlife habitat for species such as American marten, otter, mink, muskrat, black bear, raccoon and marsh wren. Young aspen and hardwoods will provide habitat for deer and snowshoe hare. Harvest activities will generally be scheduled seasonally to avoid impacts in wildlife habitat areas and recreation use.



The road network serves in transporting timber products, firewood gathering, access to recreation activities and general forest management. Two-lane arterial roads may be adjacent to or pass through the area.

Many roads may be closed to provide non-motorized areas for recreation activities, for wildlife habitat protection, and when not needed for forest management activities. These closed roads will provide opportunities for hiking, skiing, and hunter walking trails. Open roads will serve in providing access for a variety of recreation activities, transporting timber products, firewood gathering and general forest management.

Off-highway vehicle use occurs on designated/posted trails and roads within this management area. Snowmobile use generally occurs on groomed trails and Forest roads.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years).The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-9 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed. Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Standards & Guidelines

2300 Recreation Management

Guidelines:

1. Recreation facilities should be constructed to meet Recreation Development levels 1 (primitive) and 2 (semi-primitive) standards.

2700 Land Uses Management

Guidelines:

1. Special uses should only be permitted for those uses that do not detract from the semi-primitive environment. Permits may also be allowed for access needed to supply utilities to private land, recreational facilities or administrative sites.

Table 3-8. MA 6.4 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0	3	6								
	1			0	1	0	2				
	2			0	3	0	6				
	3			0	3	0	6				
	4			0	1	0	2			10	30
	5									10	30
30: *There are no vegetation goals for this ELT.*											
40 50 90	0										
	1			2	5						
	2			3	8			1	5		
	3			3	8			3	10		
	4			2	5			7	15	10	20
	5									10	20
60	0										
	1			2	5			1	5		
	2			8	12			3	8		
	3			10	15			6	12	10	20
	4			3	8			10	20	10	20
	5										
70A: *There are no vegetation goals for this ELT.*											
70B	0										
	1			1	5						
	2			5	10						
	3			6	12						
	4			1	5					15	20
	5									5	10
80A: *There are no vegetation goals for this ELT.*											
80B	0										
	1							1	5	1	5
	2										
	3										
	4										
	5										

Management Area 7.1

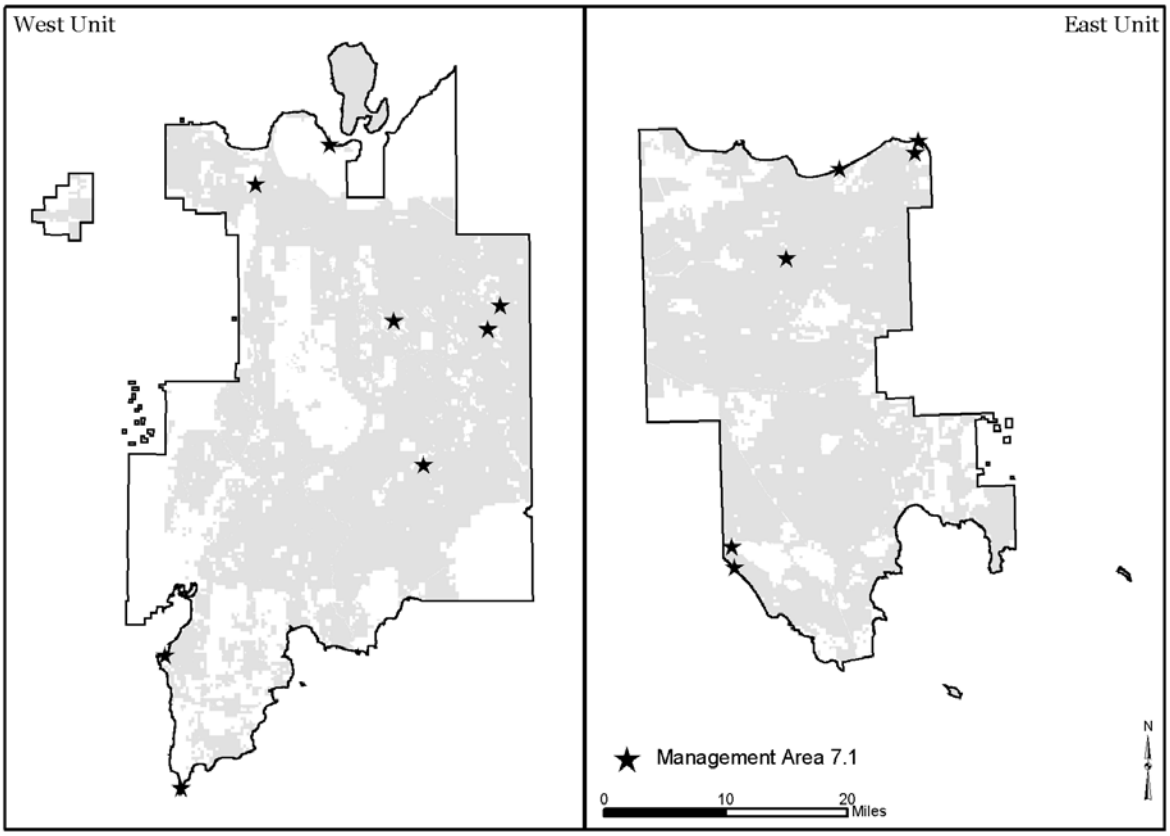


Figure 3-13. The locations of Management Area 7.1 are shown as dark gray stars.

Suited Uses: Developed recreation facilities that are planned to manage at different or inconsistent development levels with the surrounding MA direction.

Landscape Description: The areas have gently rolling topography around recreation sites and campgrounds. Slopes are typically less than 15%. They are located on riparian areas around lakes and streams. Soils are generally well-drained uplands and support late successional hardwood and conifer forest types. Wetlands occupy about 8% of the area.

Desired Conditions: The landscape offers a mosaic of vegetation, including conifer and hardwood forests and may often be dominated by a variety of recreational facilities or structures. A big tree atmosphere is evident in some areas; however, a variety of stand types, shape, sizes and arrangements may exist. Vegetation treatments may address safety needs or to enhance recreational values. Destination-type recreational developments such as lighthouses, modern camping facilities with associated boat launches, picnic areas and trails are encountered by the visitor.

The design and type of construction materials used in facilities blend with a woodland environment, however the facilities are highly visible and designed for high-density-type uses. The variety of recreational opportunities include: swimming, hiking, interpretive tours, fishing, bicycling, historic and natural studies, boating, sailing and water skiing. Facilities may be operated by a concessionaire. Roads may be high standard and high density to serve recreational needs.

Vegetation Composition Goals: There are no vegetation management goals.

Facilities: Au Train, Bay Furnace, Bay View/Big Pines Picnic Area, Brevoort Lake, Camp 7 Lake, Colwell Lake, Lake Michigan, Monocle Lake, Pete's Lake and Soldier's Lake campgrounds. Peninsula Point, Point Iroquois & Round Island Lighthouses. Bay de Noc Recreation Area and Clear Lake Education Center.

Management Area 8.1
Candidate and Research Natural Areas

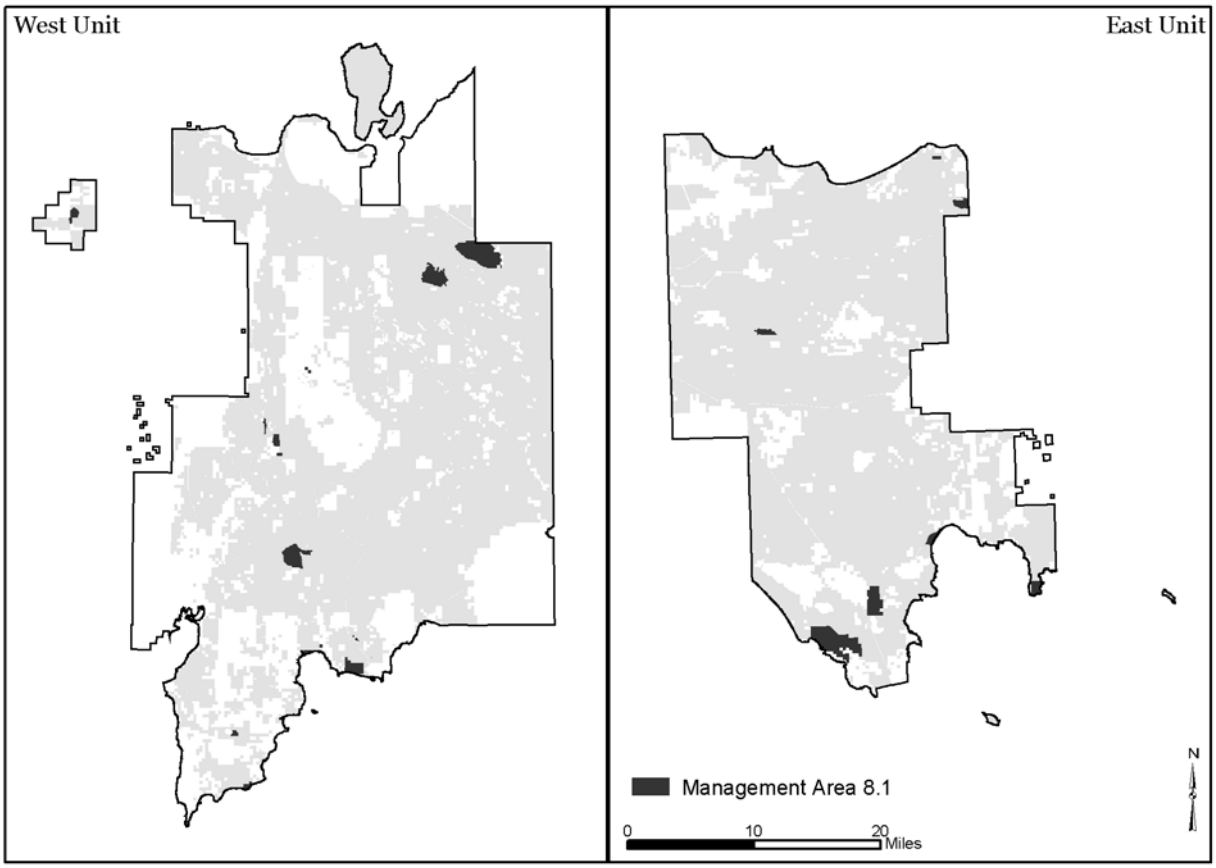


Figure 3-14. The locations of Management Area 8.1 are shown in dark gray. Table 3-9 has additional information about the names and the features of each RNA and CRNA.

Suited Uses: To preserve and maintain areas for ecological research, observation, genetic conservation, monitoring and educational activities. To provide areas that serve as a reference for comparison to similar ecosystems which are subject to a wider range of management activities. To provide management direction for candidate RNAs until evaluated for establishment as RNAs.

Landscape Description: This area consists of relatively pristine representatives that typify a variety of ecological habitats. They are diverse and to some extent includes rare habitats and geological formations. The topography is typically gently rolling, but ranges from nearly level in some areas to steep on the sides of some of the large dunes in other areas. Soils range from well-drained sands on unstable dunes where wind and active sand movement is the primary natural disturbance factor, to very poorly drained organic soils that are underlain by limestone bedrock at shallow depths. Wetlands occupy about 74 percent of the area.

Portions of the landforms include: lake plains, clay lake plains, beach ridges and dunes, bedrock benches, disintegration moraines, bedrock controlled ground moraines, ground moraines, outwash plains, outwash plain lowlands, outwash fan and perched outwash plain.

Portions of the LTAs include: Brevort-Point Aux Chenes, Moran complex, St. Martin Bay Wetlands, Huron Lake Beds, Betchler Marsh, Sand/Clay Transistion-North, Munising Moraine IV, Shingleton Fen, Lake Stella Complex, Mid Sturgeon Moraine,

Haymeadow Buried Moraine, Trenary Till Plain, Grand Island-Au Train-Wood Island-Williams Island Bedrock Controlled Moraines, Ridge-swale Complex, Stonington Till Plain and Nahma Lowlands.

Desired Conditions: Research Natural Areas and Candidate RNAs are chosen as representatives of ecological communities found on the forest. They vary in size from less than 100 acres to more than 1,000 acres.

In general, they exhibit minimal evidence of human disturbance, with vegetative composition resulting primarily from natural ecological processes rather than human-caused activities. Vegetation reflects the full diversity of native upland and lowland communities in the areas and is generally unaffected by non-native invasive species. Natural ecological processes and disturbances shape the landscape.

Components include gap replacement/ individual tree throw and infrequent larger scale blowdown, fire, insect damage, beaver flooding and variations in Great Lakes levels.

Vegetation management activities do not occur. Recreation use may occur, but is not emphasized in these areas. Roads are closed, but there may be some evidence of old road corridors.

Vegetation Composition Goals: There are no vegetation management goals for MA 8.1.

Standards & Guidelines

2300 Recreation Management

Standards:

1. New or expanded recreation use or facilities that conflict with the RNA and cRNA objectives or purposes is prohibited.
2. Permit a bridge over North Light Creek at the historic location within Grand Island RNA. Any new crossing structure will be built for passage of a single snowmobile. Bridge design will be rustic and blend into the existing landscape.
3. Within the Grand Island RNA, designate up to two paths from the trail east and one path west of the North Light Creek to the sand beach.
4. Allow only non-motorized use on the trail within the Grand Island RNA from April 1 to December 31 and allow snowmobile use on the trail from January 1 to March 31.
5. Camping will not be allowed within the Grand Island RNA.

Guidelines:

1. Motorized use should be prohibited except for emergency or administrative situations.

2400 Vegetation Management

Guidelines:

1. Vegetation management should occur only if the desired vegetation type would be lost or degraded without treatment.
2. Hazard trees may be cut but not removed.
3. Gathering special forest products and firewood should not be allowed.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Guidelines:

1. Wildlife management activities should occur only where compatible with the unique values of the area.

2700 Land Uses Management

Standards:

1. Special use permits (including utility corridor permits) will not be issued in designated RNAs. Exceptions may be made for research or educational activities on a case-by-case basis.

Guidelines:

1. Motorized equipment may be authorized for utility corridor maintenance and/or construction.

2800 Minerals and Geology

Standards:

1. Common variety mineral pits will not be developed.
2. Mineral exploration activities that disturb the surface will not be permitted.

5100 Fire Management

Guidelines:

1. Wildfire suppression tactics and holding lines for prescribed fire should protect the unique features being managed in the area.
2. Prescribed fire and prescribed natural fire should be used where it is part of the natural disturbance regime and necessary to protect or maintain RNA or cRNA values.

7700 Transportation System

Guidelines:

1. New roads should not be constructed.
2. Existing roads should be decommissioned and obliterated where not contributing to management objectives or where other feasible alternatives exist.

Table 3-9. Hiawatha National Forest Research Natural Areas and Candidate RNAs

Designated RNAs	Ranger District	Type of vegetation featured
1. Dukes	Munising	Mesic northern forest, northern white cedar, black ash, conifer and hemlock
2. Grand Island	Munising	Mesic northern forest
3. Horseshoe Bay	St. Ignace	Wet cobble beach, ridge swale complex and phragmites-red ash marsh
Candidate RNAs	**Ranger District**	**Type of vegetation featured**
1. Dukes RNA (expansion)	Munising	Northern white cedar, rich conifer swamp
2. Lake Stella Bog	Munising	Patterned fen
3. Rock River Canyon	Munising	Moist non-acid cliff and mesic northern forest
4. Scott's Marsh	Munising	Patterned fen
5. Shingleton Bog	Munising	Patterned fen
6. Eighteen Mile Lakes	Rapid River	Red pine, paper birch, northern white cedar, black ash/American elm/red maple
7. Upper Eighteen Mile Lake	Rapid River	Northern fen
8. Lake Sixteen	Rapid River	Paper birch, northern white cedar
9. Nahma	Rapid River	Paper birch, northern white cedar, black ash/American elm/red maple, northern red oak; Great Lakes coastal dune complex
10. Ogontz Bay	Rapid River	Paper birch, northern white cedar
11. Ramsey-Lost Lakes (now includes Ogontz Lake Plain)	Rapid River	Red pine, Sand ridge-lake plain complex (wooded dune and swale)
12. Lower Sturgeon River Floodplain	Rapid River	Hardwood floodplain with strong southern element (southern flood plain forest)
13. Upper Sturgeon River	Rapid River	Northern white cedar, black ash/American elm/red maple
14. Wedens Bay	Rapid River	Paper birch, northern white cedar; Great Lakes coastal dune complex
15. Betchler Tamarack Flats	Sault Ste. Marie	Tamarack
16. Little Waiska Basin	Sault Ste. Marie	Red maple; dissected clay lake plain
17. Oak Ridge North	Sault Ste. Marie	Northern red oak; Lake Superior wooded dunes; Lake Nippising escarpment
18. Point Aux Chenes Bay	St. Ignace	Interdunal wetland
19. St. Martin's Point	St. Ignace	Web cobble beach, fen-like wetlands
20. Summerby Swamp	St. Ignace	Northern fen

Management Area 8.2
Upper Peninsula (Dukes) Experimental Forest

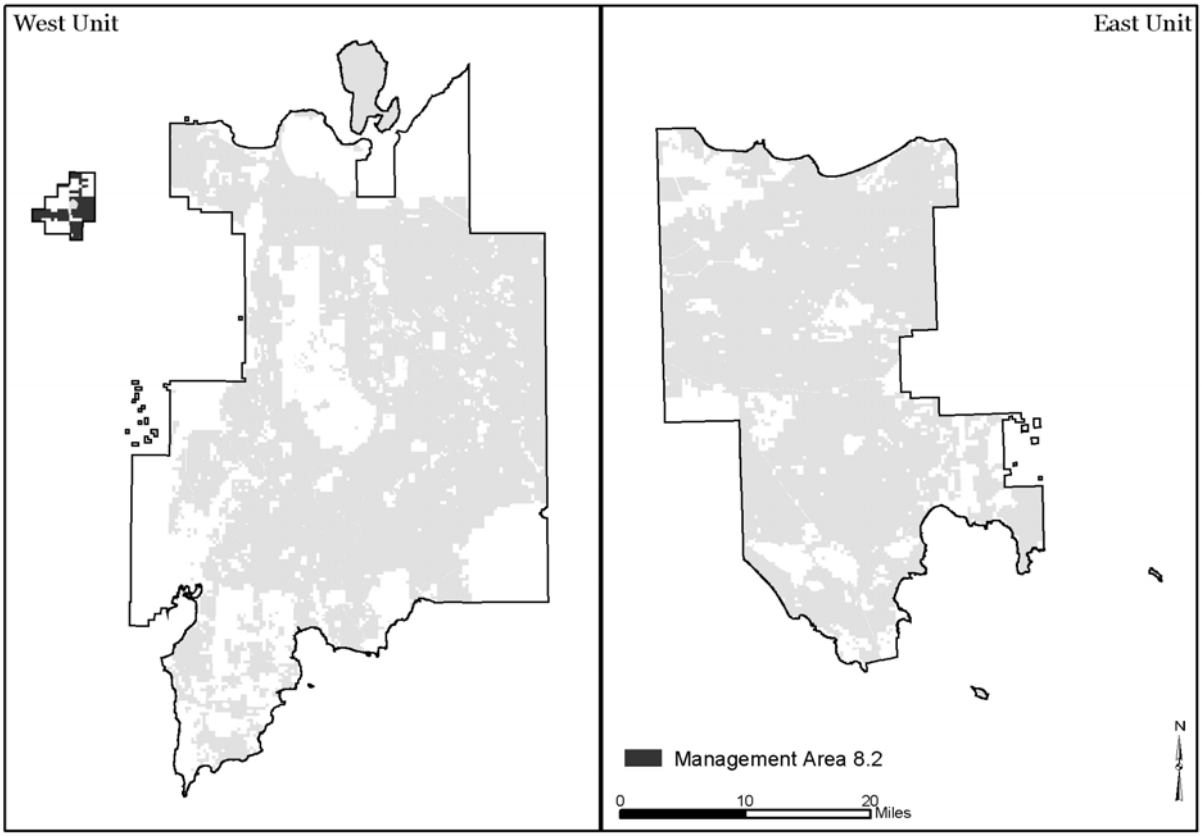


Figure 3-15. The locations of Management Area 8.2 are shown in dark gray.

Suited Uses: To provide forest research activities for the Upper Peninsula (Dukes) Experimental Forest.

Landscape Description: This area consists of gently sloping topography with dominantly between two and 15 percent gradient. It lies on the Fluted Ground Moraine, Till Floored Lakebed and Bedrock Controlled Moraine landforms. The soils are dominantly sandy loam but range to sands. The soil moisture regime is mesic.

Wetlands occupy about 27 percent of the area. It lies on the Watson Till/Wetlands Complex, Trenary Till Plain and Big Hole Moraines LTAs.

Desired Conditions: Northern hardwoods are the primary tree species. Stand size and shape may be varied and irregular. Wildlife species such as squirrels and song birds may inhabit or pass through the area. A variety of hardwood management activities demonstrate the response of various hardwood silvicultural treatments through time. These activities may be readily apparent as evidenced by tree numbering systems, uniform tree arrangement, presence of research equipment or public information signs.

Roads may be frequent, with densities variable and dictated by research needs. They may be closed as needed to accommodate research requirements. Where not restricted by research projects, recreation use may include activities such as hunting, fishing, berry picking and motorized recreation.

Vegetation Composition Goals: There are no vegetation management goals for Management Area 8.2.

Standards & Guidelines

1900 Planning

Standards:

1. Vegetative composition objectives will be based on research needs.

2300 Recreation Management

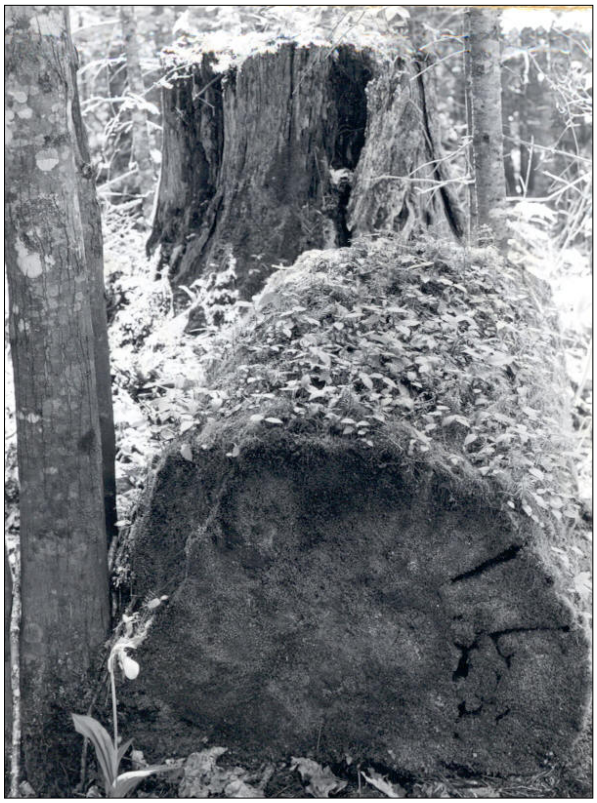
Guidelines:

1. Recreation use should be incidental to management area objectives.
2. Motorized trails should not be located in this management area.
3. Construction of non-motorized trails should be consistent with management area objectives.

2400 Vegetation Management

Guidelines:

1. Vegetation management may include any method, depending on the research objectives.



2600 Wildlife, Fish and Sensitive Plant Habitat Management

Guidelines:

1. Wildlife management practices should occur only where compatible with the goals and objectives of the Experimental Forest.

2700 Land Uses Management

Guidelines:

1. Permit only utility corridors that are required to serve administrative facilities.

2800 Minerals and Geology

Guidelines:

1. Common variety mineral use should not be developed.

Management Area 8.3

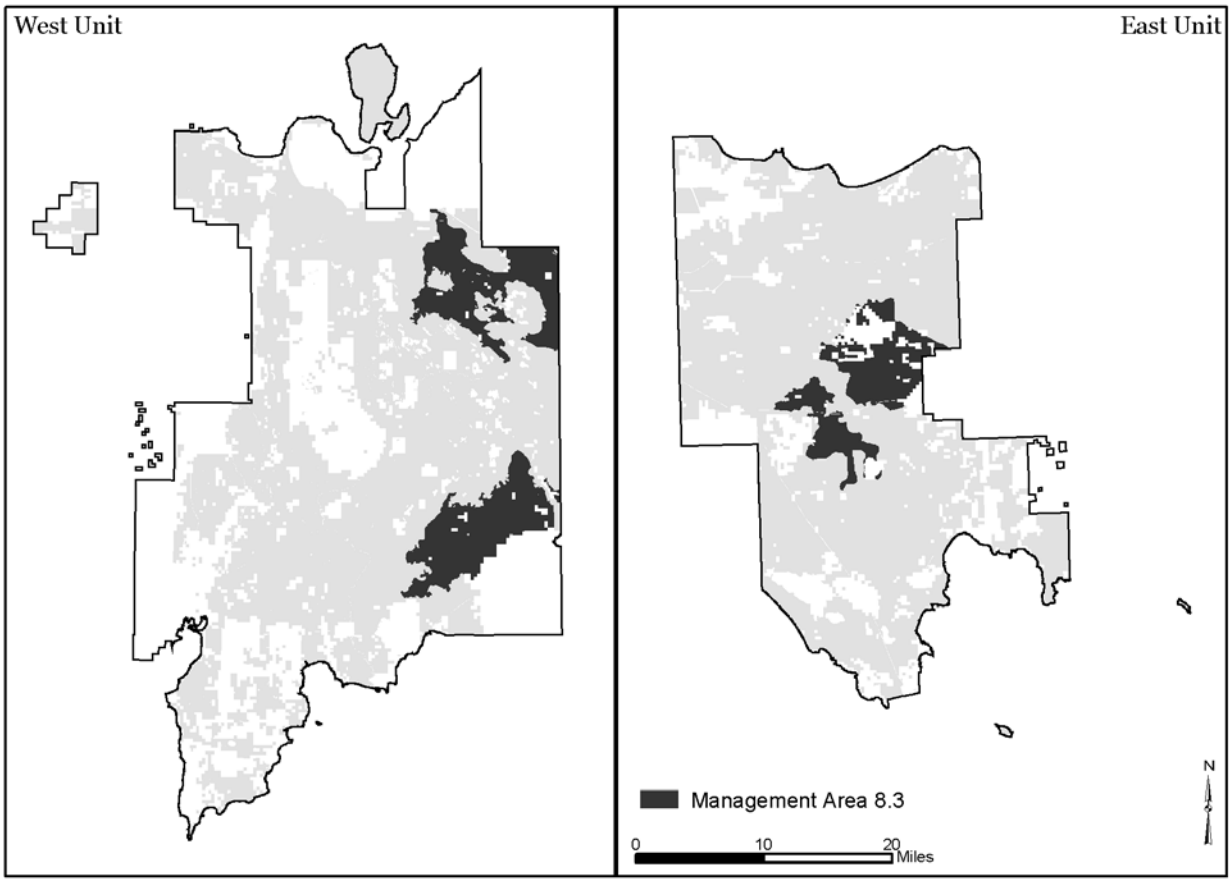


Figure 3-16. The locations of Management Area 8.3 are shown in dark gray.

Suited Uses: To supply forest products to the regional economy. To manage for older, secluded forests that provide remote habitats for wildlife such as gray wolf, American marten, moose, bobcat and snowshoe hare. To provide dispersed recreation activities.

Landscape Description: This area consists primarily of nearly level to rolling topography. Slopes are typically between 5 percent to 20 percent gradient. It lies primarily on outwash plain lowlands, outwash plains, lake plains, clay lake plains and on dune capped lake plains landforms.

The soils are dominantly wet outwash sands and lake deposits. Wetlands occupy about 64 percent of the area. It lies on four landtype associations: Shingleton Fen, West Branch Manistique, Sand/Clay Transition South and Interior Wetlands.

Desired Conditions: Cedar, black spruce, hemlock, tamarack, white pine, lowland hardwoods and open wetlands dominate this area, which is also interspersed with old dunes and low rolling hills. Lowland brush, marshes and sedge meadows may cover vast areas.

Management will retain the remote, secluded setting. Older mature forests will provide the isolation needed for wildlife species such as the gray wolf, American marten, bobcat, black bear and Canada lynx.

Vegetative management will provide diversity in forest structure and composition. Inclusions of early seral species may be present to provide wildlife habitat. Some wetland areas may be managed for wetland associated species. Timber harvest and thinning operations are generally small scale, with infrequent entries, short duration.

Motorized use occurs in this area, however there are large blocks that remain non-motorized. Recreation activities include fishing, berry picking, hiking and hunting. Some local roads may be closed to protect wildlife habitat.

Vegetation Composition Goals: These goals reflect the desired condition over the planning horizon (100-150 years). The Hiawatha National Forest will manage vegetation using ecological landtype (ELT) classifications. An ELT is a framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management.

Table 3-10 provides the vegetation composition and structure goals for this management area. Vegetation goals apply to suited for timber production.

For some vegetation classes, Decades 1 and 2 vegetative objectives will exceed the desired condition goals for that vegetation class. These short-term deviations are necessary to create conditions to move vegetation into other condition classes. Some vegetation conditions will require several decades to achieve desired conditions because of the time it takes for forests to grow and succeed to other seral conditions.

Upland openings are classified as unsuited; however the goals for upland openings are expressed as a percentage of suited land. If an ELT had less than 1,000 acres, no vegetation goals were developed. Any management activities in these ELTs should focus on moving toward the desired condition.

The table is divided into three major sections: ecological landtype classes, tree size classes and species groups. The figures in the boxes are the minimum and maximum percentages of each species by size class that will comprise the ELT. These ranges set the goals for managing species composition and structure.

Standards & Guidelines

2300 Recreation Management

Guidelines:

1. Recreation facilities should only be constructed for safety or resource protection.

2400 Vegetation Management

Guidelines:

1. The maximum size of temporary openings should not exceed 25 acres.

2700 Land Uses Management

Guidelines:

1. Special uses should only be permitted for those uses that do not detract from the semi-primitive environment. Permits may also be allowed for access needed to supply utilities to private land, recreational facilities or administrative sites.

7700 Transportation System

Guidelines:

1. Maintenance Level 2 roads in this management area should be closed when not needed to provide access for management activities.

Table 3-10. MA 8.3 Vegetation Composition and Size Goals by Ecological Land Types

ELT	Size Class	Openings		Aspen		Jack Pine		Mid Seral		Late Seral	
		Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %	Min %	Max %
10 20	0	1	5								
	1			0	2	1	5	0	5	2	10
	2			2	4	2	5	0	5	4	10
	3			3	5	3	7	0	5	4	10
	4			1	3	0	5	0	5	15	20
	5							0	5	15	25
30	0	0	3								
	1			1	5			1	7	1	5
	2			4	10			3	10	2	10
	3			5	10			4	10	2	10
	4			1	3			7	15	3	10
	5							20	30	15	25
40 50 90	0	0	1								
	1			1	5					2	3
	2			3	7					4	8
	3			4	7					4	8
	4			1	5					30	40
	5									30	70
60	0	0	2								
	1			2	5			1	10	2	10
	2			8	15			2	10	6	15
	3			10	18			3	10	8	20
	4			1	5			4	15	20	30
	5							6	15	4	10
70A	0										
	1			1	3					1	10
	2			5	10					3	10
	3			3	10			5	20	10	20
	4			1	2			5	20	25	40
	5									5	10
70B	0	0	1								
	1			1	5			1	5	1	7
	2			6	10			3	10	2	10
	3			7	13			7	20	5	10
	4			0	5			5	10	20	30
	5									1	5
80A	0	0	1								
	1							0	3	4	15
	2							1	5	7	15
	3							3	10	10	20
	4									5	10
	5										
80B	0	0	1								
	1							0	3	1	5
	2							1	5	2	10
	3							3	10	3	15
	4									10	50
	5										

Management Area 8.4
Designated Wild & Scenic and Study Rivers

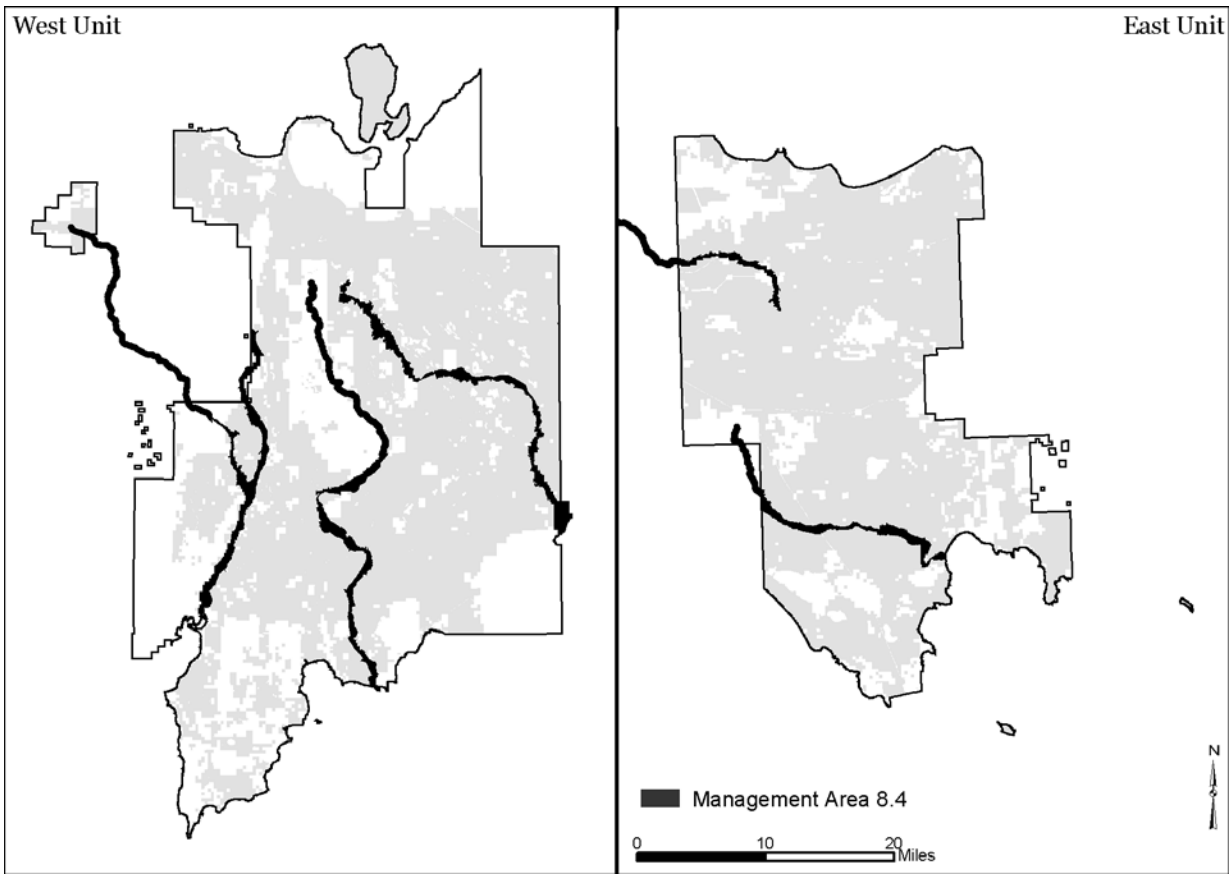


Figure 3-17. The locations of the designated and study segments of the five Congressionally-designated wild and scenic rivers are shown in dark gray.

Note: Unless stated specifically for a certain classification of river, the following standards and guidelines apply to all classifications (study, recreational, scenic or wild). Where management direction for certain river(s) supercedes the direction below, the appropriate direction is listed in that river's specific standards and guidelines.

River Corridor Acres:

MA 8.4.1 (Indian): 11,068 acres

MA 8.4.2 (Carp): 6,019 acres

MA 8.4.3 (Whitefish): 10,281 acres

MA 8.4.4 (Sturgeon): 8,268 acres

MA 8.4.5 (East Branch Tahquamenon): 3,007 acres

Suited Uses: Protect and perpetuate wild and scenic river values (and study river eligibility) while allowing the use and enjoyment of these rivers for current and future generations.

Vegetation Composition Goals: There are no vegetation management goals for MAs 8.4; 8.4.1; 8.4.2; 8.4.3; 8.4.4; 8.4.5.

Visual Quality Objectives: In this planning period, increase the amount of NFS lands meeting these visual quality objectives:

- In recreational and study segments: Modification
- In scenic segments: Partial Retention
- In wild segments: Retention

Standards & Guidelines

1600 Information Services

Guidelines:

1. An education, information and signing plan should be developed with the objectives of:
   a. Improving awareness and understanding of low impact behaviors and recreation activities
   b. Implementing "leave no trace" practices and outdoor ethics behaviors
   c. Improving understanding of and visitors' expectations about the recreation experiences, activities and opportunities they are likely to encounter in the river corridor
   d. Developing an understanding of and appreciation for natural bio-physical river processes
   e. Discouraging collection or disturbance of sensitive plant and animal species and archaeological resources
2. Interpretation of river values, the natural environment, heritage resources and management activities at developed river accesses and in recreational information guides should be permitted.

1900 Planning

Guidelines:

1. State, county and local regulations apply on private lands. The Forest should continue to work with counties to enact or apply comprehensive zoning regulations that are compatible with river management objectives.

2300 Recreation Management

Standards:

1. User-developed river access sites where resource damage is occurring will be rehabilitated or closed.
2. Facilities will be constructed using designs, materials and tones that blend with the natural setting (e.g. simple forms, low silhouette, muted earth tone colors and dark roof areas).

Guidelines:

1. Recreation developments should be managed with priority given to:
   a. Correcting health and safety problems
   b. Protecting threatened, endangered and sensitive plant and wildlife communities and archaeological resources
   c. Protecting the environment
   d. Complementing prescribed recreation opportunities
   e. Easing maintenance, site durability, etc.
   f. Protecting streambank integrity
   g. Protecting water quality.
2. The Recreational Opportunity Spectrum (ROS), Forest Service policy and design guides should guide opportunities for accessibility.
3. River recreational use levels should be managed to maintain the prescribed (ROS) and within carrying capacity allocations.
4. Facilities should be screened with native vegetation to make them less evident.

Developed Camping Standards:

1. No new developed recreation areas (e.g. campgrounds) will be constructed in the river corridor.

Dispersed Camping Standards:

1. Dispersed camping will be allowed throughout the corridor in accordance with forest policy.
2. Camping will be restricted where needed to prevent resource damage and to encourage use of designated campsites within the corridor.
3. At designated sites, 2 vehicles and a total of 8 persons are permitted at each site.

Dispersed Camping Guidelines:

1. In recreational, study and scenic segments, minimal amenities, such as fire rings and primitive toilets, may be constructed where compatible with ROS and needed resource protection.

Canoe Trails Guidelines:

1. A canoe trail should not be maintained except as noted in individual river management direction.
2. Cutting of debris and canoe slots in large woody debris should be permitted to meet forest management objectives and to allow canoe passage.

River Access Guidelines:

1. Priority should be placed on rehabilitating and correcting areas where resource damage may be occurring over the construction of new access sites.

Recreation Facilities Guidelines:

1. In recreational, scenic and study segments, simple recreation facilities should be provided for user comfort and convenience at developed campgrounds; for resource protection at developed access points; or to protect the outstandingly remarkable values and to prevent site deterioration.

Trails Standards:

1. In recreational, study, scenic and wild segments, existing or user-developed trails will be reconstructed, obliterated and/or realigned as necessary, to prevent resource damage or for safety considerations.

Motorized Use Standards

Personal Watercraft:

1. In all river segments, launching or retrieving of personal watercraft (jet skis), jet boats, or air boats from federal lands within the corridor is prohibited.

Off-highway vehicles (OHVs):

1. In recreational, study and scenic segments, OHVs are permitted on designated routes and on forest roads in accordance with forest policy.
2. In recreational, study and scenic segments, roads and trails will be posted and/or closed to OHV use within the corridor where negative effects to the river values occur.
3. In wild segments, OHV use is prohibited.

Snowmobiles:

1. In recreational, study and scenic segments, snowmobiles are permitted on designated routes and on forest roads in accordance with forest policy.
2. In recreational, study and scenic segments, post and/or close snowmobile trails within the corridor where negative effects to the river values may occur.
3. In wild segments, snowmobile use is prohibited.

2400 Vegetation Management

Guidelines for Recreational, Study and Scenic Segments:

1. The ecological characteristics of the landscape should guide the location, scale, frequency and intensity of vegetation management.
2. Vegetation management activities should be designed to minimize disruptions to recreation uses.
3. Compartment inventory should be performed as needed to gather information supporting ecosystem management activities, such as the enhancement of public recreation, scenic quality, game and non-game wildlife, fisheries and the protection and enhancement of biodiversity and TES species.
4. Non-native invasive plants within the river corridor should be eliminated or controlled.
5. Vegetation should be managed primarily for late successional communities such as hemlock, white pine, red pine, northern hardwoods, cedar and white spruce.
6. Openings and early successional communities may be managed to achieve other objectives based on the ecological characteristics of the corridor landscape.
7. White birch should be managed, where appropriate, to enhance visual quality.
8. Salvage treatments should be used to reduce fire hazard and to manage insect and disease infestations so that the river values are maintained or enhanced.
9. Pine plantations throughout the corridor should be managed to achieve a more naturally-appearing condition.

Timber Management Standards:

1. In study, recreational and scenic segments, activities will be designed to move stands toward larger, long-lived species or to enhance the visual quality of the corridor. Individual trees may be cut for public safety or for incorporating large woody debris (LWD) into the river.
2. In wild segments, timber management activities will not occur.

Open Lands Standards:

1. New permanent openings will not be created.

Open Lands Guidelines:

1. Existing openings should not be maintained except for those associated with recreation sites or for user safety and resource protection.
2. Existing openings should be allowed to naturally succeed.

Reforestation Standards:

1. In study, recreational and scenic segments, native species will be planted in conjunction with streambank stabilization and habitat improvement projects. These projects will be used to enhance visual quality and/or to restore components of the ecosystem which are in decline or absent.
2. In wild segments, reforestation activities will not be allowed.

Reforestation Guidelines:

1. Reforestation of harvested areas should emphasize natural regeneration or seeding.
2. Underplanting should occur to restore components of the ecosystem which are in decline or are absent.

Forest Health Guidelines – Recreational, Study and Scenic Segments:

1. Pests should be managed by integrated methods to minimize the effects or prevent the spread of insect or disease infestations throughout the corridor.
2. Native insects and diseases should be recognized and tolerated as part of the natural cycle unless outstandingly remarkable values or lands outside the corridor are threatened.
3. Pest management should be utilized more aggressively when exotic species are encountered.
4. Spatial diversity of vegetation and age classes should be promoted and guided by the ecological characteristics of the landscape in order to reduce the risk of insect and disease damage.

Forest Health Guidelines – Wild Segments:

1. Insect or disease outbreaks should not be controlled unless to prevent unacceptable damage to resources on lands outside the boundary or an unnatural loss to resources due to exotic pests.

2500 Watershed Management

Guidelines:

1. Seeps, springs, wetlands and other water influence zones important to fish, rare plant communities and management of the wild and scenic river, should be protected.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Standards for all Segments:

1. Habitat improvement structures will be designed to maintain the free-flowing character of the river.

Guidelines for Recreational and Scenic Segments:

1. Habitat improvement projects to protect, rehabilitate or enhance river area resources should be allowed.
2. Aquatic and riparian habitat projects should consider river morphology and free flowing characteristics.
3. Projects should be located and designed to complement natural river characteristics and function.
4. Habitat improvement projects should be allowed at a location, scale, intensity and frequency guided by the ecological characteristics of the landscape.

5. Habitat improvement structures should not substantially interfere with existing or reasonably anticipated recreational use of the river.
6. Important habitat for riparian-dependent wildlife species should be maintained throughout the corridor. When planning habitat improvement projects, consideration should be given to the habitat needs of riparian dependent species. Certain eroded streambanks which provide quality nesting habitat should be left untreated or treated less intensively.
7. Beaver dam removal should occur to protect or enhance the outstandingly remarkable values of the river.
8. In the absence of natural nesting structures, artificial nest structures such as nest boxes should be placed in suitable habitat. Attention should be given to the appropriate densities for the species and to maintaining the visual quality of the river corridor.

Aquatic Ecosystem Management Guidelines:

1. The Forest should coordinate with the Michigan DNR to set levels of fish stocking and to develop a self-sustaining coldwater fishery.

Large Woody Debris Standards:

1. Placement of large woody debris (LWD) throughout the river will be permitted where sparse. If adequate vegetation is not available for incorporation immediately adjacent to the site, use of species from off-site or nearby locations will be permitted.
2. The use of tree drops and other LWD recruitment methods will be allowed.
3. Large woody debris will be secured to the streambank or streambed to prevent transport during normal high water events.
4. Placement of LWD will accommodate canoe passage on the river.
5. In wild segments, placement of LWD in the river will not be allowed. Accumulation of LWD will occur naturally.

Sediment Basins Standards:

1. Construction of new sediment basins will not be allowed within the river corridor.

Streambank Stabilization Standards:

1. In wilderness segments, streambank stabilization will not occur.

Streambank Stabilization Guidelines:

1. Native vegetation should be used to establish ground cover on stabilized streambanks. Weed-free annual grasses may be used to establish ground cover where necessary to prevent erosion.
2. Stabilization of eroded streambanks should occur only on moderately to severely eroded stream banks corridor and/or to protect existing structures or developments in recreational and scenic segments.

Placement of Spawning Gravel and Boulder Groups Standards:

1. Placement of spawning gravel and boulder groups in the mainstem and tributaries throughout the corridor where channel gradient, substrate, VQO and morphology supports this activity will occur.
2. In wild segments, placement of spawning gravel in the mainstem or tributaries in the river corridor will not occur.

2700 Land Uses Management

Utility Corridor Standards:

1. New or expanded existing utility corridors will be permitted only if there are no other feasible alternatives available and the effects on management area objectives can be mitigated to protect the outstandingly remarkable values.

Utility Corridor Guidelines:

1. Permittees should be required to use underground construction methods for all new communication lines and power lines up to and including 34.5 kilovolts except where burying is proven to be infeasible because of bedrock.
2. Maximum use should be made of existing rights-of-way along roads, bridges, railroads, utility lines, etc.

3. Special use permittees should submit a vegetation management plan for existing and future projects. Manage vegetation for wildlife habitat, visual quality and other resources where compatible with the objectives of the management area.
4. Open cut construction across the river channel should not be allowed.
5. Upgrades and replacement of existing distribution systems should be considered new construction and be required to be constructed underground, except where infeasible because of bedrock.
6. Existing towers and poles should be removed when eliminating existing above-ground facilities.
7. Directional boring should be the preferred method for executing river crossing construction.

Other Special Uses Standards:

1. When issuing special-use road permits to property owners, require maintenance of the road surface commensurate with the permittee's use and to Forest Service standards.

Other Special Uses Guidelines:

1. Special use permits should not be issued for satellite dishes, outbuildings, fences, landfills and/or other similar uses that do not enhance the values of the river.
2. Consideration should be given to acquiring reciprocal rights-of-ways for landowners and public access to National Forest System lands along the river where feasible.
3. All other special-use requests should be considered only if no other feasible alternative exists on private lands or on public lands outside the river corridor.

Outfitting and Guiding Guidelines:

1. Outfitting and guiding services should be permitted to meet a demonstrated public need for services within established carrying capacities and in accordance with Forest Service policy.
2. Outfitting and guiding should be permitted to the lowest level of service day capacity.

2800 Minerals and Geology

Standards:

1. New common variety mineral pits will not be developed within the river corridor.
2. Common variety mineral pits within the corridor will be closed and rehabilitated where conflicts with the river values and effects cannot be mitigated and/or the pits are not needed to meet resource management objectives.
3. In recreational and scenic segments, surface mineral extraction activities will be managed to minimize and/or prevent negative effects to the river values.

Guidelines:

1. Reserved and outstanding mineral rights should be acquired when opportunities arise.
2. Surface-disturbing exploration (including core drilling) should be permitted in areas where reserved and outstanding mineral rights exist. Exploration on federally administered mineral rights should be permitted on a case-by-case basis and where rights have been previously granted.
3. Mineral "withdrawal from entry and exploration" requests for developed recreation sites within the river corridor where mineral rights ownership is within the public domain and subject to claim of prospect should be completed and submitted.

4063 Research Natural Areas (RNAs) and Candidate RNAs

Reference MA 8.1 section for additional RNA and cRNA management direction.

Standards:

1. If conflicting management direction exists between MA8.4 direction and the RNA or cRNA direction, then the most restrictive management of the two applies.

5100 Fire Management

Guidelines:

1. Prescribed fire should be used as an opportunity to introduce a simulated natural disturbance process into the landscape.
2. Restoration or maintenance of vegetation in the recreational segment should be accomplished with fire after the ecological characteristics and fire effects on the outstandingly remarkable river values have been evaluated.
3. Suppression strategies, practices and activities should be limited to those with minimal effects on the outstandingly remarkable river values. Protection of highly visible areas associated with roads, trails, recreational developments, outstandingly remarkable river values, riparian vegetation diversity, and sensitive, threatened and endangered species should be considered during all suppression activities, including an escaped fire situation analysis.
4. Roads and natural features such as wet areas, ridges and changes in vegetation type should be used as fire breaks.
5. Light-handed tactics of fire suppression should be used whenever possible. Fire retardants should be directed in a manner that prevents entry of chemicals into the river and associated wetlands.
6. Any land alterations created with fire suppression activities (such as firelines, safety zones, staging areas, helispots, etc.), should be discouraged within the river corridor. However, if no other alternatives are available, they should be rehabilitated to blend closely with the surrounding landscape.

7. Activity fuels should be treated to a level commensurate with the allowable fire intensity, rate of spread and fire effects that meet management area objectives.

5400 Land Ownership

Standards:

1. Land ownership adjustments within designated river corridors, cannot result in a decrease in National Forest System land ownership within the corridor.
2. Land acquisition will not exceed an average of 100 acres per river mile acquisition in fee title to lands within the river corridor.

Guidelines:

1. Highest priority acquisitions are for those tracts that:
   a. Are inconsistent with the goals and objectives of the wild & scenic rivers corridors
   b. Would enhance river values
   c. Are needed for, or enhance, the recreational use and enjoyment of the river
   d. Would jeopardize the free-flowing condition of the river
2. Scenic easements on private lands within the corridor should be purchased or acquired when/if development or activities would substantially benefit or detriment the maintenance and protection of the river values, water quality or free-flowing condition.
3. First priority for acquisition should be on a willing seller, willing buyer basis.
4. Acquire through exchange subsurface mineral rights with the State where feasible. Establish federal claims based on the State Dormant Minerals Act where the law can be applied to free leasable minerals. Acquire subsurface mineral rights in other cases.

5500 Landownership Title Mgmt.

Guidelines:

1. Encroachments should be resolved through permit, removal or exchange for other lands within the river corridor where there will be no net loss of total acres in National Forest land ownership within the wild and scenic river corridor. Only the minimum land (with zoning setbacks) possible in the corridor should be exchanged.

7100 Engineering Operations

Guidelines:

1. When conducting landline surveys, priority should be given to visual quality when cutting and marking landlines, by limiting clearing for site distance and removing flagging within view of the river.
2. Where possible, survey lines should be offset in the riparian zone to mitigate the linear viewshed along the survey line.

7400 Public Health and Pollution Control Facilities

Standards:

1. Lands within the river corridor will not be considered for landfills or waste disposal sites.

Guidelines:

1. Restrooms, vault toilets, wilderness toilets and/or trash collection facilities should be placed at high use areas within the corridor. High use sites include trailheads, access sites and high use campsites.
2. The Forest should work with local health authorities to ensure all septic systems meet permit and local code regulations within the river corridor.

3. All toilets should be located a minimum of 100 feet from the high water mark of any waterbody within the corridor.

7700 Transportation System

Standards:

1. Roads will be closed or obliterated and revegetated where resource damage is occurring or the road is not necessary for resource management or river access. All structures such as culverts and fill material will be removed.

Guidelines:

1. Within the recreational segment, roads open to public travel (passenger cars) should be maintained to maintenance levels 3, 4 or 5 dependent on existing or planned traffic volume, vehicle mix and road surface.
2. Within the scenic segment, most roads should be maintained to maintenance level 2, to permit passage of high clearance vehicles. Higher levels of maintenance may occur when consistent with existing traffic.
3. Emphasize erosion and sediment control on all open and closed roads.
4. Traffic restrictions should be applied and seasonal and extended closure may occur for sediment and erosion control, protection of special areas, protection of the roadbed and to reduce user conflicts during the recreation season.
5. The Forest should coordinate and cooperate with the counties, state and private landowners to eliminate resource damage (such as sedimentation into the river or tributaries) and to assure long-term protection and enhancement of river values.

River Crossings Standards:

1. Additional permanent river crossings will not be permitted in wild segments .
2. Existing culverts and structures will be removed when roads or trails are abandoned.

River Crossings Guidelines for Study, Recreational and Scenic Segments:

1. When replacement is necessary, bridges should be designed as single span structures and span bankfull width where feasible.
2. Wooden structure (such as glue laminated members) should be used where feasible to enhance the visual quality of the river corridor. Concrete bridge abutments are permitted.
3. All bridges should be evaluated as to their necessity as part of the overall area transportation system prior to replacement or reconstruction.
4. When replacing existing culverts, the design should provide for a natural streambed under the culvert. The diameter should approximate bankfull width.
5. Bridges or open bottom structures are preferable; however, pipes may be used provided they are set below the streambed elevation to allow accumulation of native material in the bottom of the pipe.
6. Additional permanent river crossings should not be permitted.

Road Construction Standards:

1. For scenic segments, no permanent road construction will occur.
2. For wild segments, no permanent or temporary road construction will occur.

Road Construction Guidelines:

1. In recreational and study segments, permanent road construction should occur commensurate with the resource management goals and objectives for the river.
2. In recreational, study and scenic segments, temporary road construction should occur in association with resource management activities.
3. In recreational, study and scenic segments, temporary roads should be closed and obliterated following resource management activities.
4. In recreational, study and scenic segments, roads should be located in well-screened and as inconspicuous areas as possible, as seen from the river.

Road Reconstruction Guidelines:

1. Road reconstruction should occur with emphasis placed on controlling erosion, and stream sedimentation, enhancing free-flow characteristics and/or supporting resource management activities.
2. In wild segments, no road reconstruction should occur.

Signing Guidelines:

1. The number of signs throughout the corridor should be minimized, commensurate with the specified ROS class. Signs should provide information for resource protection, travel management, and information dissemination (e.g. identifies designated campsites, portages, access sites, etc.).
2. All signs should have a consistent style and color.
3. Additional signing should be provided to interpret key heritage resource sites and opportunities.
4. Signing associated with wild and scenic rivers should be integrated with the forest travel management program.
5. Wild and Scenic River designator signs should be placed at the boundaries of the corridor where they intersect with major access roads.

Management Area 8.4.1
Indian Wild & Scenic River

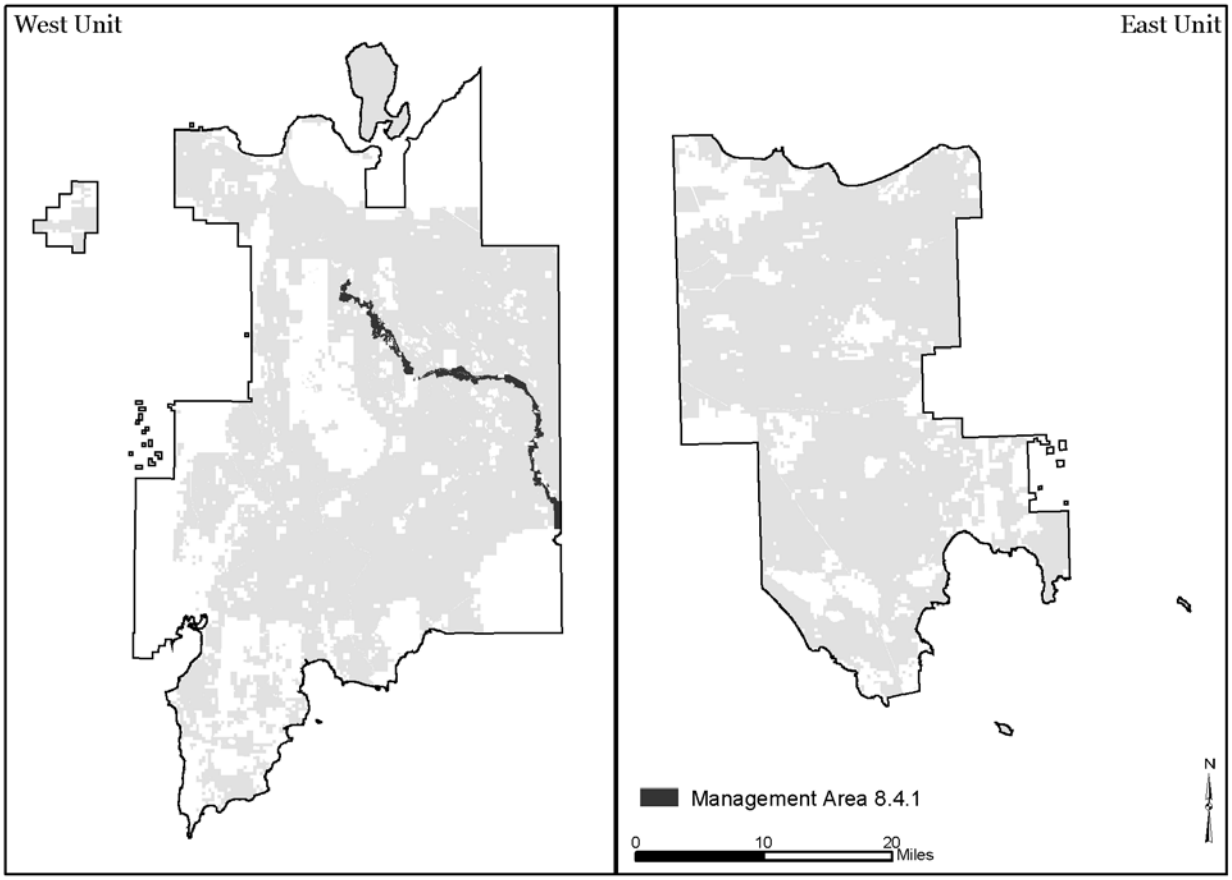


Figure 3-18. The location of the Indian Wild and Scenic River corridor is shown in dark gray.

Landscape Description: This area consists of the Indian River and its riparian area. The topography consists of nearly level outwash plains but includes some steeply dissected riparian slopes. Most of the area is nearly level but slopes range up to 60 percent along the banks of the river.

Landforms bisected by the river corridor include pitted outwash plain, disintegration moraine, perched outwash plain, outwash plain lowlands and lake plains. Soils are dominantly sandy and well-drained and the soil moisture regime is dry mesic.

The high infiltration rates of the soils contribute to the cold groundwater recharge that feeds the river and is one of the outstandingly remarkable values. Wetlands occupy about 38 percent of the area. The landtype associations bisected by the river include: the Wetmore Outwash, Wetmore Outwash 2, Steuben Segment, Steuben Outwash, Beaton Lake Outwash, Indian River Uplands and Camp Eleven Ridge-Swale.

Desired Conditions: This statement describes a future vision of the Indian River corridor. It was developed using current Forest Plan direction, issues identified during the public involvement process and by analyzing the corridor landscape.

For ease of review this section is divided into resource categories, however, many of these resources are interdependent.

Alternatives for managing the Wild and Scenic River corridor represent varying levels and combinations of proposed activities that address issues and move the existing condition toward the desired condition.

Collaboration between the Forest Service and local, state and federal agencies may be required to achieve some elements found in the desired condition.

As required by the Wild and Scenic River Act, all management activities within the wild and scenic river corridor will protect, maintain or enhance the outstanding remarkable values (river values) identified for the river corridor.

Corridor Ecosystem — Ecological: Natural disturbance patterns (fire, insects and disease, windthrow, erosion), or management activities which mimic natural disturbance, are based on the landscape context (moraine, outwash plain, lake plain, ridge-swale complex) in which the vegetation community is found.

Late successional communities with long-lived species such as sugar maple, cedar, hemlock, red pine and white pine are dominant but include areas of early successional communities, with short-lived species such as jack pine, aspen, white birch and balsam fir as an integral part of the corridor landscape. Noxious weeds are absent or present at very low levels.

Populations of game species are at levels which balance ecological and recreational needs. Several rare, threatened or sensitive species, such as bald eagle, American marten, wolf, common loon, osprey or wood turtle, find quality habitat within the corridor. The river corridor serves as a linkage between areas outside the corridor that are managed as habitat for species requiring seclusion.

Water quality in the Indian River is an important component of the riparian ecosystem. In general, water quality meets or exceeds the standards set by the Michigan Water Resources Commission.

The river provides quality habitat for resident trout populations that are maintained primarily by natural reproduction. The amount of sand the river transports is in equilibrium with the ability of the stream to move it. Healthy aquatic invertebrate populations, more spawning areas and pools, and greater habitat diversity to support all components of the aquatic ecosystem are present.

Large woody debris is common throughout the corridor providing channel stability, structure and habitat complexity that enhances aquatic and riparian habitats. A healthy and diverse riparian plant community maintains stable river banks, and provides thermal cover to the riparian system.

The Indian River is in a state of dynamic equilibrium with continuing natural erosional and depositional processes at the local scale. Natural changes in the stream channel occur, resulting in eroding streambanks which provide habitat for those species dependent on such disturbance, and keep the energy of the river in balance with its gradient and channel morphology. Stabilization and other aquatic habitat management allow natural river processes to continue and are designed to blend with natural landscape.

Social: The river provides for a social setting where individuals, families and groups experience the sights and sounds of nature. Traditional use by local residents such as hunting, fishing, trapping, canoeing, picking berries and mushrooms, and recreating exists in the river corridor. Family “camps” along the river are important gathering places for family and friends and blend in with the natural character of the river.

Numerous opportunities exist in the Indian River corridor for the recreationist. Camping, canoeing, fishing, hunting, hiking, snowmobiling, and pleasure driving are important activities in the river corridor. Visitors perceive the Indian River corridor as an area to “get away from it all,” where the sights and sounds of nature dominate.

Economic: Management activities associated with the river corridor (e.g. camping and other recreational opportunities) provide for contributions to the local economy. Visitors help support small family-run retail stores and resorts. These businesses supply gas, food, boat rentals, lodging, etc. Local residents benefit economically through subsistence gathering and gathering of incidental forest products such as mushrooms, berries and firewood. Limited timber harvest, designed to protect or enhance the outstanding river values, provide a minor benefit to the regional economy.

Recreation: Visitors to the Indian River corridor enjoy a variety of recreational experiences in natural appearing settings. Recreation activities, management practices, access, use levels, and development are consistent with the identified Recreation Opportunity Spectrum (ROS) classification. Visitors may encounter both motorized, and non-motorized use on land and lakes within the corridor while predominately non-motorized recreation use is encountered on the river channel.

Subtle on-site visitor management controls and regulations help protect the recreation facilities, sensitive areas, and ORV features from excessive use and degradation and minimize visitor conflicts.

Recreational activities are directed away from areas of known sensitive plants and animals to minimize disruption to their life cycles or habitat. Certain activities (such as watercraft use and camping) and commercial uses may be limited or controlled. Education, marketing and visitor information play an important role in influencing visitor behavior, enhancing the recreational experience, and protecting river resources.

Due to more river access and development in the recreation segment (Fish Lake to Indian Lake), the likelihood of encounters with other users is higher than in the scenic segment. (Hovey Lake to Fish Lake).

Facilities in the corridor are limited to those necessary for protecting river values while providing a degree of comfort and convenience for visitors at access points. All facilities appear rustic, and are designed to compliment the natural setting. Natural materials and colors that blend in with the surrounding natural landscape predominate.

Privately owned facilities and resorts outside the corridor may provide a much wider range of amenities and a more developed recreation experience.

Developed Forest Service campgrounds and dispersed sites provide opportunities for camping within the river corridor. Developed campgrounds may have amenities (such as running water, toilet buildings, hardened paths, etc.) designed to provide for sanitation and protection of the river resources.

Dispersed sites, with some sites accessible only by water or trail, provide visitors with a more primitive, isolated camping experience. Dispersed campsites maintain ground vegetation and site characteristics which do not increase sedimentation, erosion, or negatively affect the outstanding river values.

Fishing within the Indian River and associated lakes is a popular recreational activity. Much of the river offers a good, self-sustaining fishery for trout. Lakes in the system provide a good fishery for a wide variety of warm water fish such as panfish, bass, pike, and walleye.

Conflicts between anglers and other recreationists are minimal. The Forest Service and Michigan Department of Natural Resources cooperatively manage the fishery resource and habitat of the Indian River in accordance with existing policy and agreements.

Canoeing and other watercraft use is an important recreational activity on the Indian River. The Indian River is moderately challenging for canoeists. Minimal clearing of large woody debris allows for canoe passage in

many areas. Encounters with other canoeists may be frequent, particularly on weekends and holidays, but the sights and sounds of nature rather than humans dominate the experience. The length of floatable water throughout the year provides opportunities for multi-day canoe trips.

Other recreation activities such as hiking, hunting, trapping, sight-seeing, picnicking, bicycling, watching wildlife, and socializing are commonly enjoyed by visitors. In the winter visitors enjoy Nordic skiing, ice fishing and snowshoeing, while snowmobilers pass through the corridor on designated trails, or unplowed forest roads not designated closed. Commercial outfitting and guiding is regulated through special use permits. These activities are such that the desired social setting is maintained or enhanced, as well as protection of other river values.

Access/Transportation System: County and Forest Service roads and bridges are maintained to protect river resource values and allow safe passage to river access points, camping areas, and private lands. Travel routes in the corridor not necessary to the above needs or resource management may be closed and restored. The effects of sediment entering the river at bridge and culvert approaches are minimized. Key access points are located throughout the corridor and are developed to a level commensurate with use.

Bruno's Run and Pine Marten are popular non-motorized trails that pass through the corridor. Existing trails are maintained and new trails are designed to minimize resource impacts, avoid user conflicts, and protect and enhance the outstanding river values. Designated trails for motorized recreational use pass through the corridor, but do not parallel the river.

Scenic Quality: The Indian River is known for its outstanding and diverse riverine scenery. Throughout the corridor, large older hardwoods, hemlock, cedar and pine are predominant in the riparian zone visible from the river but may be interspersed with early and mid successional communities.

Visitors may experience evidence of human development, however the natural appearing characteristics of the landscape dominate. Visitors will experience more human development and modification of the landscape in the recreation segment than in the scenic segment.

Viewers continue to see some eroded streambanks as the natural erosion process continues. Stabilized streambanks are revegetated and blend in with the surrounding landscape. Recreational and residential developments scattered throughout the corridor blend in with the natural appearing landscape and are mostly screened from the view of recreationists on the river or lakes. Management activities, including signing, are subordinate to the natural appearing landscape.

Heritage Resources: Historic and prehistoric sites within the Indian River corridor are protected from degradation and impacts caused by recreational or management activities. On site interpretation of sites is minimal, with interpretation being accomplished through river guidebooks, brochures and Forest Recreational Opportunity Guides (ROGs). Traditional sites used by Native Americans on federal and ceded lands are managed consistent with Forest policy.

Traditional treaty rights are respected and consistent with forest or region wide agreements with the Tribes. The Forest Service and the Tribes work cooperatively to assure that the outstandingly remarkable values of the river are protected. The Indian River retains a high level of cultural significance for local residents. Individuals, groups, and communities maintain traditions and strong ties to the river and its setting.

Private Property: Private property rights are recognized and respected. Information is provided to private landowners, upon request, to assist them in managing their lands to better protect the river's values. Private holdings that adversely affect (or potentially affect) the river values may be acquired on a willing seller, willing buyer basis.

National Forest lands are consolidated as opportunities arise. Zoning by local units of government is supportive and complimentary to river protection and management, while allowing for a range of traditional uses on private lands within the river corridor.

Vegetation Composition Goals: There are no vegetation management goals for MA 8.4.1.

Visual Quality Objectives: In this planning period increase the amount of national forest land meeting these visual quality objectives:

- In recreational segment: Partial Retention
- In scenic segment: Retention

Standards & Guidelines

2300 Recreation Management

Developed Camping Guidelines:

1. At the Widewater Campground:
   a. Reconstruct/rehabilitate Widewater Campground and provide 35–40 campsites
   b. Design shoreline area to enhance visual quality
   c. Develop 1–2 walk-in campsites
   d. Consider group campsites in campground design
   e. Consider rustic play equipment in campground design
   f. ROS class is Roaded Natural
   g. Development level #3
   h. Evaluate and stabilize user-developed river access from individual campsites
   i. Discourage user damage to riparian vegetation
2. At the Indian River Campground and Picnic Area:
   a. Convert campground to dispersed camping area within 10 years
   b. Provide 5–11 dispersed campsites
   c. Obliterate Indian River Picnic Area within 10 years
   d. Retain and enhance river access. Provide small (4-5) car parking area for river users
   e. ROS Class should be Roaded Natural

Dispersed Camping Guidelines:

1. Throughout the river corridor, 12–16 dispersed campsites should be designated. Use of these sites should be encouraged.
2. In key or popular areas, designated campsites within the river corridor should be located adjacent to the river or lakes.
3. One-quarter of the designated dispersed sites should be accessed only by water or by trail.
4. Non-designated sites should be obliterated when use within the corridor shifts to designated campsites.

Canoe Trails Standards:

1. Maintain a canoe trail from Fish Lake to CR 449 (8-Mile) bridge access.

Canoe Trails Guidelines:

1. Clearing and cutting of channel obstructions for canoe passage along the designated canoe trail should be managed to achieve a level consistent with novice to intermediate canoeing skills and provides a low to moderate level or risk, adventure and self-reliance.
2. The canoe trail should be managed for the novice level from Fish Lake to Forest Highway 43 and intermediate level from FH-43 to County Road 449 (8-Mile).
3. Large woody debris should not be cleared or cut in areas outside the designated canoe trail except for minor clearing to allow canoe passage where resource damage is occurring (e.g. erosion from portages or leftovers).

River Access Sites Standards:

1. No more than 15 designated canoe/boat launch sites will be provided throughout the river corridor.
2. The river access sites at Fish Lake, FR-2258, FH-43, Indian River Campground and CR 449 will be rehabilitated/ reconstructed to provide user conveniences such as parking, canoe launches/takeouts and sanitation facilities commensurate with use.

River Access Sites Guidelines:

1. Existing access sites should be retained within the scenic segment.
2. The East and West Pine Marten Run trailheads should be combined with river access sites at FR-2258 and FH-43.

3. Fish Lake and Widewater boat launch sites should be reconstructed to prevent erosion.
4. River access should be discouraged at FR-2213 bridge in Steuben.

Trails Standards:

1. No new motorized trails will be constructed within the river corridor.

Trails Guidelines:

1. New non-motorized trails may be constructed within the river corridor, but should not to exceed a trail density of 3 miles per square mile.
2. New trails may be developed in conjunction with campground reconstruction.
3. Non-motorized trail uses within the river corridor should be maintained and monitored for user conflicts and/or resource damage.

Motorized Use Standards:

1. OHV use will be prohibited on trails and closed forest roads within the river corridor (with the exception of the Haywire Grade).

Motorized Use Guidelines:

1. Efforts to establish state or local regulations that would prohibit the use of personal watercraft (jet skis), airboats and/or air boats on waters throughout the corridor should be pursued.
2. A Semi-primitive Motorized ROS setting should be maintained from Hovey Lake to Fish Lake (scenic segment) and from Indian River Campground to Indian Lake (recreational segment).
3. A Roaded Natural ROS setting should be maintained from Fish Lake to Indian River Campground (recreational segment).

2400 Vegetation Management

Guidelines:

1. Individual trees may be cut to enhance public safety or for incorporating large woody debris (LWD) into the river.
2. Temporary openings should not exceed 5 acres in areas with retention VQO or 10 acres in areas with partial retention VQO.
3. Uneven-aged management silvicultural systems should be favored for northern hardwoods.
4. Timber harvest will emphasize individual tree selection, group selection, thinning, shelterwood, seedtree, and smaller patch clearcuts as appropriate to manage the desired vegetational communities in the river corridor. Stand clearcutting will be used where it is appropriate and when it is the optimal method to enhance river values.

Open Lands Standards:

1. New permanent openings will not be created in the scenic segment.

Open Lands Guidelines:

1. Permanent or temporary openings in the recreational segment should be managed at a frequency and intensity that is consistent with the natural disturbance regimes of the landtype. There should be a maximum of 5 acres in areas of retention VQO and 10 acres in areas of partial retention VQO.
2. Existing upland openings that are consistent with the ecological characteristics of the landscape should be maintained using fire, hand or mechanical methods at a frequency and intensity that is consistent with the natural disturbance regimes of the landtype.
3. Permanent openings should be located along stand type lines.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Guidelines:

1. Surveys for potential wood turtle nesting sites should occur when designing projects and management activities in the corridor. Mitigation or relocation of activities may be needed.

Streambank Stabilization Standards:

1. Streambank stabilization will be accomplished using wood structures, bioengineering and vegetation.
2. The use of rock for streambank stabilizations will be limited to maintenance of existing rock structures or to protect culverts or bridges in the river corridor.

Streambank Stabilization Guidelines:

1. Streambank stabilization structures should be designed to blend visually with the surroundings.
2. Streambank stabilization structures should be periodically maintained to prevent them from becoming visually obtrusive or safety hazards. Existing structures that have fallen into a state of disrepair should be rehabilitated. Repair should be done in a manner that maintains the scenic character of the river and does not contribute to future streambank erosion.

Sediment Basins Guidelines:

1. Existing sediment basins should be maintained on the mainstem and tributaries within the corridor.

Lake Structures Standards:

1. New spawning reefs will not be constructed within the river corridor.
2. The structures will be constructed of native materials but may be anchored using non-native materials.

Lake Structures Guidelines:

1. Fish habitat structures should be allowed in lakes in the corridor.

2700 Land Uses Management

Standards:

1. No new structures will be allowed in recreation residence (summer home) special use permit areas. Allow only for the expansion, external remodeling or reconstruction of existing structures consistent with maintaining the rustic, natural and historic character of the corridor.

Outfitting and Guiding Guidelines:

1. Outfitting and guiding permits for water-based services (e.g. canoeing and fishing) should not be permitted within the scenic river segment.

5100 Fire Management

Guidelines:

1. Fuel breaks should not be constructed or maintained in the river corridor except in high risk areas, where timber sale area design may provide for natural fuel breaks to be created in conifer inclusions.

7700 Transportation System

Guidelines:

1. The Forest should work with Schoolcraft County Road Commission to prevent erosion problems on FH-43 between Steuben and the Indian River.

Management Area 8.4.2
Carp Wild & Scenic River

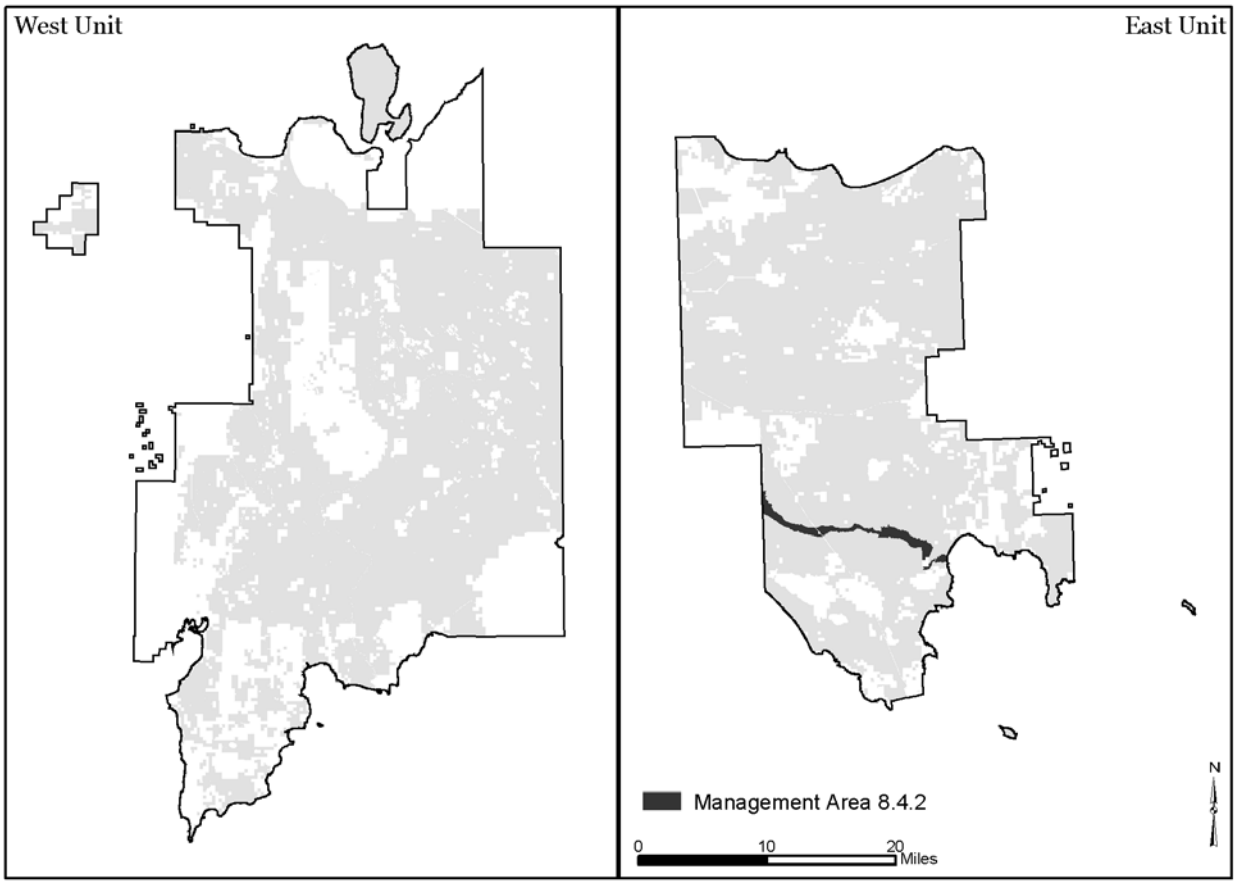


Figure 3-19. The location of the Carp Wild and Scenic River corridor is shown in dark gray.

Landscape Description: This area consists of the Carp River and its riparian area. The topography is gently rolling and slopes typically range from 2 percent to 15 percent. The river corridor bisects the outwash plain lowlands and the clay lake plain landforms. The soils range from sandy to clayey and the soil moisture regime is wet mesic. Wetlands occupy about 52 percent of the area. The area bisects five LTAs: Carp/Ozark Creek Wetlands, Niagara South, Lower Carp River Complex, Huron Lake Beds and St. Martin Bay Wetlands.

Desired Conditions: This statement describes a future vision of the Carp River corridor. It was developed using current Forest Plan direction, issues identified during the public involvement process and by analyzing the corridor landscape. For ease of review this section is divided into resource categories, however, many of these resources are interdependent. As required by the Wild and Scenic River Act all management activities within the Wild and Scenic River corridor will protect, maintain, or enhance the outstanding remarkable values (river values) identified for the river corridor.

Ecological: Natural disturbance patterns (windthrow, insects and disease, erosion, fire), or management activities which mimic natural disturbance, are based on the landscape context in which the vegetative community is found. Late successional communities with long-lived communities such as cedar, mixed swamp conifer and mixed swamp hardwood, northern hardwood and conifer are dominant.

It also includes some areas of early and mid successional communities, with short-lived species such as tamarack, aspen, white

birch, and balsam fir as an integral part of the corridor landscape. Components such as hemlock and white pine are restored to the ecosystem where appropriate. Noxious weeds are absent or present at low levels. Management activities are directed away from areas of known sensitive plants and animals where possible to minimize disruption to their life cycles or habitat.

Game species populations are at levels which balance ecological and recreational needs. Several rare, threatened or sensitive species, such as bald eagle, American marten, wolf and osprey, find quality habitat within the corridor. The river corridor serves as a linkage between areas outside the corridor that are managed as habitat for species requiring seclusion. Forest structure includes large woody debris which is an important habitat component for small mammals.

Water quality in the Carp River is an important component of the riparian ecosystem. In general, water quality meets or exceeds the standards set by the Michigan Water Resources Commission.

The Carp River provides quality habitat for anadromous salmonids and resident trout populations that are maintained primarily by natural reproduction. Healthy aquatic invertebrate populations, spawning areas and pools and habitat diversity to support all components of the aquatic ecosystem are present. Sea lamprey are absent or present at low levels. Large woody debris is common in the river to provide channel stability, structure and habitat complexity that enhances aquatic and riparian habitats.

A healthy and diverse riparian plant community maintains stable river banks, and provides shade to the river.

The Carp River is in a state of dynamic equilibrium with continuing natural erosional and depositional processes at the local scale. Natural changes in the stream channel occur, resulting in eroding streambanks which provide habitat for those species dependent on such disturbance and keep the energy of the river in balance with its gradient and channel morphology.

Bank stabilization and other aquatic habitat management allow natural river processes to continue and are designed to blend with natural landscape.

Social: The river provides a social setting where individuals, families and groups experience the sights and sounds of nature. Traditional use by local residents such as hunting, fishing, smelting, trapping, canoeing, picking berries and mushrooms and recreating with family and friends exists in the river corridor. Numerous opportunities exist in the Carp River corridor for the recreationist.

Fishing, hunting, camping, canoeing and hiking are important activities in the river corridor. Visitors perceive the Carp River corridor as an area to "get away from it all," where the sights and sounds of nature dominate. The river provides the primary means of access to the Mackinac Wilderness Area. River users do not degrade the Wilderness resource.

Dispersed, non-motorized recreation activities are predominant in Segments A-E (from the Forest boundary to McDonald Rapids). Developed, motorized recreation activities tend to be concentrated in Segment F (from McDonald Rapids to the mouth). Due to more river access and development in the recreational segment (McDonald Rapids to the mouth), encounters with other users is likely to be higher than in the rest of the river (Segments A-E).

Economic: Management activities (e.g. camping and other recreational opportunities) may provide for contributions to the local economy. In general, businesses are located outside the river corridor but management of the river may enhance these businesses.

Visitors to the area help support small family-run retail stores and resorts which supply gas, food, boat rentals, lodging, etc. Local residents benefit economically through subsistence gathering and gathering of incidental forest products such as mushrooms, berries and firewood. Limited timber harvest, designed to protect or enhance the outstanding river values, provides a minor benefit to the regional economy.

Recreation: Visitors enjoy a variety of recreational experiences in natural-appearing settings. Recreation activities, management practices, access, use levels and development are consistent with the identified Recreation Opportunity Spectrum (ROS) classification.

Dispersed, non-motorized recreation activities are predominant in Segments A-E (from the Forest boundary to McDonald Rapids). Recreationists in Segments A-E experience more challenge and risk and higher levels of self-reliance. Developed, motorized recreation activities tend to be concentrated in Segment F (from McDonald Rapids to the mouth). Recreationists in Segment F experience less challenge and risk than in Segments A-E and are provided with more user services, facilities and opportunities to socialize. Interpretive services are concentrated in Segment F.

Visitors may encounter both motorized and non-motorized use in segments A/B, D and F. Non-motorized recreation use is primarily encountered in segment E and only non-motorized use is allowed in segment C (Mackinac Wilderness).

Subtle on-site visitor management controls and regulations help protect the recreation facilities, sensitive areas and outstandingly remarkable features from excessive use and degradation and minimize visitor conflicts in segments A–D. In segment F, visitor management controls and regulations may be evident. Certain activities such as watercraft use, camping and commercial uses may be limited or controlled to maintain a quality recreational experience or to maintain and/or protect the ORVs.

Education, marketing and visitor information play an important role in influencing visitor behavior, enhancing the recreational experience and protecting river resources.

Facilities in segments A-E are limited to those necessary for protecting river values while providing a degree of comfort and convenience for visitors at access points. Facilities in segment F may be upgraded to accommodate existing and increasing use.

All facilities are designed to appear rustic and complement the natural setting. However, paved roads, parking areas or other facilities necessary to manage increased use may be evident in segment F. Natural materials and colors that blend in with the surrounding natural landscape predominate.

Privately-owned facilities and resorts outside the corridor may provide a much wider range of amenities and a more developed recreation experience.

The Carp River Campground and dispersed sites provide opportunities for overnight camping within the river corridor. The Carp River Campground may have amenities (such as running water, toilet buildings, hardened paths, etc.) designed to provide for sanitation and protection of the river resources. Dispersed sites, with some sites accessible only by water or trail, provide visitors with a more primitive, isolated camping experience.

Dispersed campsites maintain ground vegetation and site characteristics which do not increase sedimentation, erosion or negatively affect the outstanding river values.

Fishing is a popular recreational activity. Much of the river offers a good, self-sustaining fishery for anadromous salmonids and resident trout. More fishing pressure is expected in segment F due to smelting opportunities at the mouth and steelhead fishing at McDonald Rapids. Conflicts between anglers and other recreationists are minimal. The Forest Service and Michigan Department of Natural Resources cooperatively manage the fishery resource and habitat of the Carp River in accordance with existing policy and agreements.

Canoeing and kayaking are important recreational activities. The Carp River is moderately challenging for canoeists. Water flows during spring runoff provide the most challenging canoeing. Low water flows during some years make canoeing difficult during the summer and fall. Minimal clearing of large woody debris allows for canoe passage in many areas. Encounters with other canoeists on the river is infrequent in segments A-E, but may be frequent, particularly on weekends and holidays in segment F. The sights and sounds of nature rather than humans dominate the experience. The River provides opportunities for multi-day canoe/camping trips.

Heritage Resources: Historic and prehistoric sites within the Carp River corridor are protected from degradation and impacts caused by recreational or management activities.In segments A-E, on site interpretation of the sites is minimal. Interpretation is accomplished through river guidebooks, brochures and forest recreational opportunity guides (ROGs). Interpretation of heritage resources such as signs or displays may be evident in segment F.

Traditional sites used by Native Americans on federal and ceded lands are managed consistent with Forest policy. Traditional treaty rights are respected and consistent with forest or region wide agreements with the Tribes. The Forest Service and the Tribes work cooperatively to assure that the outstandingly remarkable values of the river are protected. The Carp River retains a high level of cultural significance for local residents. Individuals, groups and communities maintain traditions and strong ties to the river and its setting.

Private Property rights are recognized and respected. Information is provided to private landowners, upon request, to assist them in managing their lands to better protect the river's values. Private holdings that adversely affect (or potentially affect) the river values may be acquired on a willing seller, willing buyer basis. National Forest lands are consolidated as opportunities arise. Zoning by local government units is supportive and complementary to river protection and management, while allowing for a range of traditional uses on private lands within the river corridor.

Vegetation Composition Goals: There are no vegetation management goals for MA 8.4.2.

Visual Quality Objectives: In this planning period, increase the amount of national forest lands meeting these visual quality objective:

- In the Mackinac Wilderness segment: Preservation.

Standards & Guidelines

2300 Recreation Management

Developed Camping Guidelines:

1. The rehabilitation of the Carp River Campground should include:
   a. Developing 1-2 walk-in sites
   b. Considering group campsites in design
   c. Considering rustic play equipment in design
   d. Assigning a Roaded Natural ROS
   e. Assigning a Development Level 3
   f. Designing rustic-appearing campground facilities

Dispersed Camping Standards:

1. At designated sites, two tents or one RV/trailer and one tent maximum with a total of eight persons will be permitted at each sites.

Dispersed Camping Guidelines:

1. Up to six dispersed campsites throughout the river corridor should be designated and use of these sites should be encouraged.

2. Designated campsites within the river corridor should be located adjacent to the river or lakes in key/popular areas, and at least 50 feet from the water's edge.

Canoe Trails Standards:

1. In the recreational segment, a canoe trail will be designated from M-123 to St. Martin Bay.
2. In the Mackinac Wilderness, only non-motorized methods will be used to clear canoe passage through channel obstructions.

Canoe Trails Guidelines:

1. In the recreational segment, clearing and cutting of channel obstructions for canoe passage along the designated canoe trail should be managed to achieve a level consistent with novice to intermediate canoeing skills. It should provide a low to moderate level or risk, adventure and self-reliance during non-peak flows.

2. In the scenic and wild segments, clearing and cutting of channel obstructions should be managed for canoeists with intermediate to advanced skills along the canoe trail. It should provide a moderate level of risk, adventure and self-reliance during non-peak flows.

River Access Sites Standards:

1. In the recreational and scenic segments, designated canoe/boat launch sites will be established at: M-123; East Lake Road; McDonald Rapids Access; Carp River Campground (FR 3445 bridge); Mackinac Trail Bridge and at the fishing access site at the mouth.

River Access Sites Guidelines:

1. In recreational and scenic segments, the existing access sites within the river corridor should be retained with the following improvements:
   a. Define the access at M-123
   b. Define the access at the Mackinac Trail Bridge
2. In wild segments, no new access points should be developed.

Recreation Facilities Standards:

1. In scenic and wild segments simple recreation facilities area permitted to protect the values of the river area and prevent site deterioration from current use and expected use. Facility location , design and construction will be compatible with the designated ROS.
2. In the Mackinac Wilderness recreation improvement and/or site modification is permitted only as needed to protect Wilderness and environmental quality or public health and safety.

Trails Guidelines:

1. A new snowmobile trail that passes through the corridor in the recreational segment and an OHV trail on the old railroad grade adjacent to M-123, are the only new motorized trails that should be developed in the corridor.
2. New trails may be developed in conjunction with the Carp River Campground reconstruction.
3. Non-motorized trail uses within the river corridor should be maintained and monitored for user conflicts and/or resource damage.
4. The Old Carp River Road between McDonald Rapids and the East Lake Road should not be designated as a trail.
5. In the Mackinac Wilderness, the Carp River Trail through the Wilderness should be maintained and signed to Wilderness trail management level 1.

Motorized Use Standards:

1. In scenic segments, the launching and retrieving of motorized watercraft will be prohibited from federal lands within the corridor.
2. In the Mackinac Wilderness, the use and operation of motorized equipment and watercraft is prohibited.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Guidelines:

1. Beaver dam removal should not occur within the Mackinac Wilderness.

Streambank Stabilization Guidelines:

1. In recreational and wild segments, stabilization of eroded streambanks should occur only in areas where there is ongoing human activity exacerbating erosion and/or to protect existing structures or developments.
2. On the Mackinac Wilderness, streambank stabilization is not permitted.

Sediment Basins Standards:

1. Sediment basin maintenance will not be permitted in the Mackinac Wilderness.

Sediment Basins Guidelines:

1. In recreational and scenic segments, existing sediment basins within the upper valley segment should be maintained when analysis of sediment transport and biological effects indicate that maintenance is beneficial.

Placement of Spawning Gravel and Boulder Groups Standards:

1. In the recreational and wild segments, placement of spawning gravel will not be permitted in the mainstem or tributaries within the river corridor.

2700 Land Uses Management

Outfitting and Guiding Guidelines:

1. Outfitter and guiding permits for fishing should not be issued within the wild and scenic river corridor.

Lamprey Weir Note: All management direction within the Carp Wild and Scenic River Management Plan document has been accomplished.

5400 Land Ownership

Guidelines:

1. Land adjustment activities should strive to meet four basic objectives:
   a. Consolidate ownership to provide blocks of national forest land of sufficient size to meet management area objectives
   b. Reduce amount of property lines
   c. Improve legal access to national forest lands
   d. Acquire parcels needed for specific management purposes

7700 Transportation System

Guidelines:

1. No new permanent road construction should occur within the recreational segment of the river.

River Crossings Note: The need for an additional snowmobile river crossing has been addressed through the I-75/M-134 Red Creek snowmobile bridge project.

Management Area 8.4.3
Whitefish Wild & Scenic River

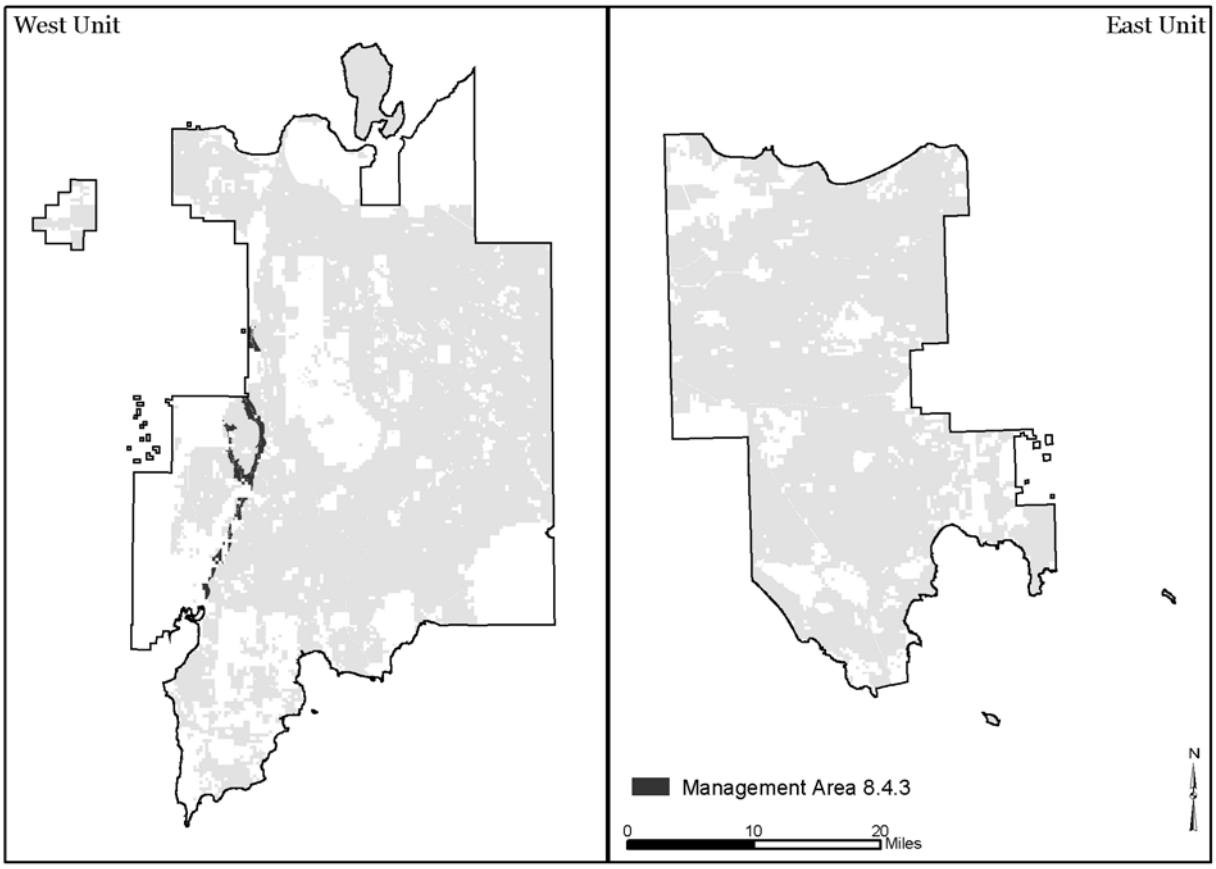


Figure 3-20. The location of the Whitefish Wild and Scenic River corridor is shown in dark gray.

Landscape Description: This management area consists of the Whitefish River and its riparian corridor. The topography is gently rolling in the valley bottom, but the eastern sideslope is typically steep. Slopes range up to 15 percent on the valley floor and up to 45 percent on the eastern sideslope. The landform is a glacial drainage channel.

The soils on the valley floor are typically loamy and shallow to bedrock. The eastern slope soils are typically sandy. Wetlands occupy about 63 percent of the area. This area is located entirely within the Whitefish-Au Train Lowland LTA.

Desired Conditions: This statement describes a future vision of the Whitefish River corridor. It was developed using issues identified during the Forest Plan revision public involvement process, the Whitefish River Resource Assessment (January 1999) and by analyzing the river corridor landscape. For ease of review, this section is divided into resource categories; however, many of these resources are interdependent.

As required by the Wild and Scenic Rivers Act, all management activities within the wild and scenic river corridor will protect, or enhance the outstandingly remarkable values (river values) identified for the river corridor.

Collaboration between the Forest Service and local, state and federal agencies may be required to achieve some elements found in the desired condition.

Ecological: Natural disturbance patterns (windthrow, insects and disease, erosion, fire), or management which mimic natural disturbance, are based on the landscape context in which the vegetational community

is found. Late successional communities with long-lived species are dominant. It includes areas of early successional communities, with short-lived species, as an integral part of the corridor landscape. Non-native invasive species are absent or present at very low levels.

Game species populations are at levels which balance ecological and recreational needs. The river is recognized as an important producer of resident trout in its upper reaches and warm water species downstream. The river hosts one of the better runs of wild steelhead and chinook salmon on the forest.

Steelhead reproduction is occasionally supplemented by stocking hatchery-reared fish. Several rare, threatened or sensitive species such as bald eagle, American marten, wolf, moose (infrequently), osprey, or wood turtle find quality habitat within the corridor. The corridor serves as a linkage between areas outside the corridor.

Water quality is an important component of the riparian and aquatic ecosystem and is also important for supporting the outstandingly remarkable values. In general, water quality meets or exceeds the standards set by the Michigan Water Resources Commission.

Healthy aquatic invertebrate populations, spawning areas and pools and habitat diversity to support all components of the aquatic ecosystem are present. Large woody debris, though not common, provides channel stability, structure and habitat complexity that enhances aquatic and riparian habitats.

A healthy and diverse riparian plant community maintains stable river banks and provides thermal cover to the riparian system. Biotic and aquatic habitats are suitable for sustaining lake whitefish runs.

The river is in a state of dynamic equilibrium with minor amounts of natural erosion and deposition occurring at the local scale. Natural changes in the stream channel occur, resulting in eroding streambanks which provide habitat for those species dependant on such disturbance, and keep the energy of the river in balance with its gradient and channel morphology. Bank stabilization and other aquatic habitat management allow natural river processes to continue and are designed to blend with the natural landscape.

Social: The river provides for a social setting in which individuals, families and groups experience the sights and sounds of nature. Traditional use by local residents such as hunting, fishing, trapping boating and canoeing, picking berries and mushrooms and recreating with family and friends exists in the river corridor. Opportunities exist in the Whitefish River corridor for the recreationist. Dispersed camping, canoeing, fishing, hunting, hiking and snowmobiling are important activities in the river corridor.

Economic: Activities associated with the Whitefish River (e.g. driving for pleasure, hunting and fishing) provide minor contributions to the local economy. Visitors to the area help support small family-run retail stores and resorts, which supply gas, food, fish and hunting licenses, lodging, etc. Local residents benefit through subsistence gathering of incidental forest products such as mushrooms, berries, boughs and firewood. Limited timber harvest, designed to protect or enhance the outstanding river values, provides a minor benefit to the economy.

Recreation: Visitors to the Whitefish River enjoy a variety of recreational experiences in natural appearing settings. Recreation activities, management practices, access, use levels and development are consistent with the identified Recreation Opportunity Spectrum (ROS) classification.

Subtle on-site visitor management controls and regulations, help protect the recreation facilities and sensitive areas from excessive use and degradation, and minimize visitor conflicts. Recreational activities are directed away from areas of known sensitive plants and animals to minimize disruptions to their life cycles or habitat. Certain activities such as watercraft use, camping and commercial uses may be limited or controlled.

Facilities in the corridor are limited to those necessary for protecting river values while providing a degree of comfort and convenience for visitors at access points. All facilities appear rustic and are designed to complement the natural setting. Privately-owned facilities and resorts outside of the corridor may provide a much wider range of amenities and a more developed recreation experience.

Dispersed camping opportunities exist within the river corridor. Dispersed sites, with some sites accessible by water or by trail, provide visitors with a more primitive, isolated camping experience. Dispersed campsites maintain ground vegetation and site characteristics which do not increase sedimentation, erosion or negatively affect the outstanding river values.

Fishing within the Whitefish River corridor is a popular recreational activity. Much of the upper reaches of the river offer a good, self-sustaining and hatchery supplemented fishery for trout. The lower section offers a quality warm water fishery. Steelhead and salmon provide good seasonal fisheries throughout the river. Conflicts between anglers and other recreationists are minimal. The Forest Service and Michigan Department of Natural Resources cooperatively manage the fishery resource and habitat of the Whitefish River in accordance with existing policy and agreements.

Canoeing and kayaking are important boating activities on the Whitefish River. Recreational opportunities are significant during the spring months, with flows augmented by runoff. The Whitefish River provides challenges for canoeists of moderate to advanced levels. Motorized boating is primarily confined to the recreational segment of the river. The Whitefish provides opportunities for multi-day canoe/camping trips, dependant on water levels.

Other recreational activities such as hunting and trapping, sightseeing, picnicking, bicycling, hiking, OHV use, watching wildlife and socializing are commonly enjoyed by visitors on the Whitefish River. In the winter, visitors enjoy Nordic skiing and snowshoeing, while snowmobilers pass through the corridor on designated trails or unplowed forest roads that are not designated closed.

Commercial outfitting and guiding is regulated through issuance of special use permits. Outfitter/guide activities provide a public service and are such that the desired social setting is maintained or enhanced, as well as protection of the outstandingly remarkable values.

Access/Transportation System: County, state and Forest Service system roads and bridges are maintained to protect river resource values and to allow safe passage to river access points, camping areas and private lands. Travel routes in the corridor not necessary to the above needs or resource management may be closed and restored. The effects of sediment entering the river at bridge and culvert approaches are minimized.

Key access points are located within the corridor and are developed to a level commensurate with the ROS and resource protection. The Bay de Noc-Grand Island Trail is a popular non-motorized trail which passes through the corridor. Existing trails are maintained and new trails are designed to minimize resource impacts, avoid user conflicts and protect and enhance the outstanding river values.

Scenic Quality: The Whitefish River is known for its outstanding and diverse riverine scenery. Visitors may experience evidence of human development, however the natural-appearing characteristics of the landscape dominate.

Heritage Resources: Prehistoric and heritage sites within the Whitefish River corridor are protected from degradation and impacts caused by recreational or management activities. On-site interpretation is minimal, with interpretation being accomplished through river guidebooks, brochures and Forest Recreational Opportunity Guides.

Traditional sites used by Native Americans on federal and ceded lands are managed consistent with forest policy. Treaty rights are protected. The Forest Service and the Tribes work cooperatively to assure that the outstandingly remarkable values of the river are protected.

The Whitefish River retains a high level of cultural significance for local residents. Individuals, groups and communities maintain traditions and strong ties to the river and its setting.

Private Property rights are maintained. Information is provided to private landowners, upon request, to assist them in managing their lands or to better protect the river's values. Private holdings that adversely affect (or potentially affect) the river values may be acquired on a willing seller-willing buyer basis. National Forest lands are consolidated as opportunities arise. Zoning by local units of government is supportive and complementary to river protection and management, while allowing for a range of traditional uses on private lands within the river corridor.

Vegetation Composition Goals: There are no vegetation management goals.

Standards & Guidelines

2300 Recreation Management

River Access Sites Guidelines:

1. Provide river access sites on the East Branch at CR 00-3 at Trout Lake, two sites at FR 2236 (one for each the east and west branch), at U.S. Highway 2 or at the end of CR I-15. Construct access site at or near the vicinity of the Haymeadow gravel pit.

Recreation Facilities Guidelines:

1. All vault toilets should be located a minimum of 100 feet from the high water mark of any waterbody within the corridor.
2. Primitive toilets with no vaults should be a minimum of 200 feet from the high water mark.

Trails Standards:

1. In scenic segments, no new motorized trails will be constructed within the corridor.

Trails Guidelines:

1. Trails within the river corridor should be monitored for user conflicts and resource damage.
2. In recreational segments, a new snowmobile trail crossing over the river (near U.S. Highway 2) may be constructed within the corridor, commensurate with the requirements of protecting and/or enhancing the river values.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Streambank Stabilization Guidelines:

1. Streambank stabilization should be accomplished using wood structures and bioengineering techniques whenever possible.
2. Streambank stabilization structures should be periodically maintained to prevent them from becoming visually obtrusive or safety hazards.

Streambank Stabilization Guidelines for Scenic Segment:

1. Streambank stabilization should be permitted on moderately to severely eroded streambanks and/or to protect the outstandingly remarkable values. Consideration should be given to sediment transport.
2. Streambank projects should be designed to enhance or preserve stable river morphology.

Sediment Basins Guidelines:

1. Existing sediment basins should be maintained on tributaries within the corridor.
2. The spoils should be disposed of and revegetated in a manner that meets the visual quality standards (VQO) and permit requirements.

7700 Transportation System

River Crossings Guidelines:

1. A new snowmobile bridge crossing over the river (near US-2), may be constructed within the corridor, in accordance with the requirements of protecting and/or enhancing the river values.

Management Area 8.4.4
Sturgeon Wild & Scenic River

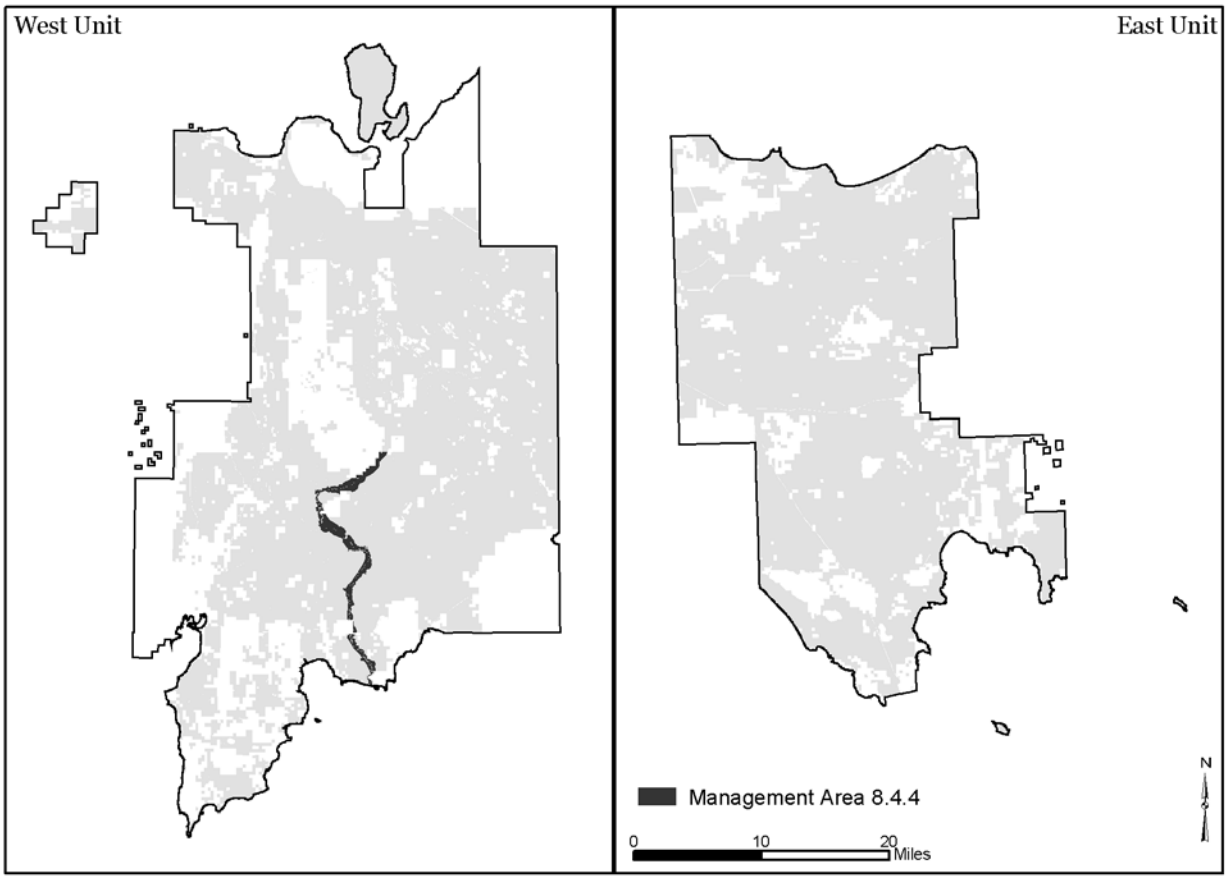


Figure 3-21. The location of the Sturgeon Wild and Scenic River corridor is shown in dark gray.

Landscape Description: This area consists of the Sturgeon River and its riparian area. The topography is typically gently rolling with slopes ranging from 2 percent to 15 percent. It is within the glacial drainageway, outwash plain and lake plain landforms. The soils in the corridor are commonly sandy but include finer textures in some areas that are remnants of a glacial drainage feature. Wetlands occupy about 63 percent of the area. The area lies with these LTAs: Mid-Sturgeon Moraine/ Wetland, Steuben Segment, Steuben Outwash Moraine and Nahma Lowlands.

Desired Conditions: The desired condition statement describes a future vision of the Sturgeon River corridor. It was developed using the issues identified during the Forest Plan revision public involvement process, the Sturgeon River Resource Assessment (January 1999) and by analyzing the river corridor landscape. For ease of review, this section is divided into resource categories; however, many of these resources are interdependent.

As required by the Wild and Scenic Rivers Act, all management activities within the wild and scenic river corridor will protect, or enhance the outstandingly remarkable values (river values) identified for the river corridor. Collaboration between the Forest Service and local, state, and federal agencies may be required to achieve some elements found in the desired condition.

Ecological: Natural disturbance patterns (windthrow, insects and disease, erosion, fire), or management which mimic natural disturbances, are based on the landscape context in which the vegetational community

is found. Late successional communities with long-lived species are dominant, but include areas of early successional communities, with short-lived species as an integral part of the corridor landscape. Non-native invasive plants are absent or present at very low levels.

Populations of game species are at levels that balance ecological and recreational needs. The river is recognized as an important producer of resident trout and also hosts an annual steelhead trout and salmon run. Several rare, threatened or sensitive species such as bald eagle, American marten, wolf, osprey or wood turtle find quality habitat within the corridor. The river supports lake sturgeon. The river corridor serves as a linkage between areas outside the corridor.

Water quality in the river is an important component of the riparian ecosystem. In general, water quality meets or exceeds the standards set by the Michigan Water Resources Commission. The river provides quality habitat for anadromous salmonids and resident trout populations that are maintained through natural reproduction and stocking. The amount of sand transported by the river is in equilibrium with the ability of the stream to move it.

Healthy aquatic invertebrate populations, spawning areas and pools and habitat diversity to support all components of the aquatic ecosystem are present. Large woody debris is common in the river providing channel stability, structure and habitat complexity that enhances aquatic and riparian habitats. A healthy and diverse riparian plant community maintains stable river banks and provides thermal cover to the riparian system.

The Sturgeon River is in a state of dynamic equilibrium with continuing natural erosional and depositional processes at the local scale. Natural changes in the stream channel occur, resulting in eroding streambanks which provide habitat for those species dependant on such disturbance, and keep the energy of the river in balance with its gradient and channel morphology. Bank stabilization and other aquatic habitat management allow natural river processes to continue and are designed to blend with the natural landscape.

Social: Traditional use by local residents such as hunting, fishing, trapping, canoeing, driving for pleasure and recreating with family and friends exists in the river corridor. Numerous recreation opportunities exist in the Sturgeon River corridor. Camping, fishing, hunting, canoeing and snowmobiling are important activities. Dispersed, non-motorized recreation opportunities can be found primarily in the scenic segment. More developed, motorized recreation activities tend to be concentrated in the recreational segment below the Fourteen Mile Bridge.

Economic: Activities associated with the Sturgeon River (e.g. camping, driving for pleasure, fishing, hunting and other recreational opportunities) provide minor contributions to the local economy. Visitors to the area help support small family-run retail stores and resorts, which supply gas, food, game and fishing licenses, lodging, etc. Local residents benefit through subsistence gathering of incidental forest products such as firewood, mushrooms and berries. Limited timber harvest, designed to protect or enhance the outstanding river values, provides a minor benefit to the economy.

Recreation: Visitors to the Sturgeon River enjoy a variety of recreational experiences in natural appearing settings. Recreation activities, management practices, access, use levels and development are consistent with the identified Recreation Opportunity Spectrum (ROS).

Subtle on-site visitor management controls and regulations help protect the recreation facilities and sensitive areas from excessive use and degradation and minimize visitor conflicts. Recreational activities are directed away from areas of known sensitive plants and animals to minimize disruptions to their life cycles or habitat. Certain activities such as camping and commercial uses may be limited or controlled.

Due to lesser channel obstruction and more river access between the 14 Mile Bridge and Flowing Well, the likelihood of encounters with other users is higher than in other sections of the river.

Facilities in the corridor are limited to those necessary for protecting river values while providing a degree of comfort and

convenience for visitors at access points. All facilities appear rustic and are designed to complement the natural setting.

Privately-owned facilities and resorts outside of the corridor may provide a much wider range of amenities and a more developed recreation experience.

The Flowing Well Campground and other dispersed sites along the river, provide opportunities for overnight camping within the river corridor. The Flowing Well Campground may have amenities (such as running water, toilet buildings, hardened paths, etc.) designed to provide for sanitation and protection of the river resources. Dispersed sites, with some sites accessible only by water or trail, provide visitors with a more primitive, isolated camping experience. Dispersed campsites maintain ground vegetation and site characteristics which do not increase sedimentation, erosion or negatively affect the river values.

Fishing within the Sturgeon River corridor is a popular recreational activity. Much of the river offers a quality, self-sustaining fishery for anadromous salmonids and resident trout. Conflicts between anglers and other recreationists are minimal. The Forest Service and Michigan Department of Natural Resources cooperatively manage the fishery resource and habitat of the Sturgeon River in accordance with existing policy and agreements.

Canoeing on the Sturgeon River occurs but is infrequent and only practical during high water conditions in the early spring and possibly in the fall, following significant rain events. Logjams are always present in almost all sections of the river. Numerous logjams require considerable effort to canoe, due to the number of liftovers and portages. The frequent logjams combined with very limited access require that paddlers be highly skilled and self-reliant. In return, they can experience a fairly remote and primitive setting.

Other recreational activities such as hunting, fishing and trapping, sightseeing, picnicking, bicycling, hiking, off-highway vehicle use, watching wildlife and socializing are commonly enjoyed by visitors. In the winter, snowmobilers pass through the corridor on designated trails or unplowed forest roads. Dog sledders can also be found using the many forest roads and trails.

Commercial outfitting and guiding is regulated through issuance of special use permits. Outfitter/guide activities are such that the desired social setting is maintained or enhanced, as well as protection of other river resources.

Access/Transportation System: County, state and Forest Service system roads and bridges are maintained to protect river resource values and to allow safe passage to river access points, camping areas and private lands. Travel routes in the corridor that are not necessary to the above needs or resource management, may be closed and restored. The effects of sediment entering the river at bridge and culvert approaches are minimized.

Key access points are located throughout the corridor and are developed to a level commensurate with use. The Nahma Grade and Big Bay de Noc snowmobile trails pass through the corridor. Existing trails are maintained and new trails are designed to minimize resource impacts, avoid user conflicts and protect and enhance the outstanding river values.

Scenic Quality: Viewsheds along the Sturgeon River are very confined due to the heavy streambank vegetation. Consequently, the natural-appearing characteristics of the landscape dominate. Visitors experience minimal evidence of human development in the scenic segment and slightly more human development and modification of the landscape in the recreational segment. Visitors continue to see some eroded streambanks as the natural erosion process continues. Stabilized streambanks are revegetated and blend in with the surrounding landscape.

Heritage Resources: Heritage and prehistoric sites within the Sturgeon River corridor are protected from degradation and impacts caused by recreational or management activities. On-site interpretation occurs, with additional interpretation being accomplished through river guidebooks, maps and brochures, and Forest Recreational Opportunity Guides (ROGs).

Traditional sites used by Native Americans on federal and ceded lands are managed consistent with forest policy. Treaty rights are maintained. The Forest Service and the Tribes work cooperatively to assure that the outstandingly remarkable values of the river are protected. The Sturgeon River retains a high level of cultural significance for local residents. Individuals, groups and communities maintain traditions and strong ties to the river and its setting.

Private Property: Private property rights are recognized and respected. Information is provided to private landowners, upon request, to assist them in managing their lands to better protect the river's values. Private holdings that adversely affect (or potentially affect) the river values may be acquired on a willing seller-willing buyer basis. National Forest lands are consolidated as opportunities arise. Zoning by local units of government is supportive and complementary to river protection and management, while allowing for a range of traditional uses on private lands within the river corridor.

Vegetation Composition Goals: There are no vegetation management goals for Management Area 8.4.4.

Standards & Guidelines

2300 Recreation Management

Developed Camping Guidelines:

1. At the Flowing Well Campground:
   a. Future site improvements should focus on accessibility (50% of sites will be accessible), remedying health and safety concerns and resource protection.
   b. Retain the day use area for picnickers and canoe/angler access to and from the river.
   c. Reduce the number of campsites from 10 to 7.
   d. Manage for Roaded Natural ROS.
   e. Manage the campground at the lower end of development level 3.
   f. All campground facilities should be rustic appearing.
   g. Evaluate and stabilize user-developed river access from individual campsites. Steps may be constructed to provide access and to protect the streambanks, as well as bank stabilization structures to reduce erosion into the river.
   h. Encourage longer-lived tree species. Open up the canopy to provide more sunlight into the campground while retaining adequate vegetation to screen the campsites and other recreation facilities from the river.
   i. Discourage user damage to riparian vegetation.

Canoe Trails Guidelines:

1. Clearing or cutting wood should not occur within the channel except for minor clearing to allow canoe passage on the river and where resource damage is occurring (e.g. erosion from portaging or liftovers).

River Access Sites Guidelines:

1. Provide river access sites at the CR 442 bridge; FR 2229 (Hayes Dam) and/or Fourteen Mile Bridge; the Tenmile Rapids pull-off; the Flowing Well Campground; U.S. Highway 2 (south of the highway), and at the CR 499 bridge (west of the river).

Recreation Facilities Guidelines:

1. All vault toilets should be located a minimum of 100 feet from the high water mark of any waterbody within the corridor.
2. Primitive toilets with no vaults should be located at a minimum of 200 feet from the high water mark.

Trails Standards:

1. In scenic segments, no new motorized trails will be constructed within the corridor.

Trails Guidelines for Recreational and Scenic Segments:

1. In recreational and scenic segments, construction of new, non-motorized trails should be permitted.
2. In recreational and scenic segments, trails should be monitored for user conflicts and resource damage.
3. In recreational segment, new motorized trails may be constructed.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Streambank Stabilization Guidelines:

1. Streambank stabilization should be accomplished using wood structures, bioengineering and vegetation whenever possible.
2. Streambank stabilization structures should be periodically maintained to prevent them from becoming visually obtrusive or safety hazards. Streambank stabilization should be permitted on moderately to severely eroded streambanks and/or to protect the outstandingly remarkable values.
3. Consideration should be given to sediment transport relative to oxbow formation.
4. Streambank projects should be designed to enhance or preserve stable river morphology.

Sediment Basins Guidelines:

1. Existing sediment basins should be maintained on tributaries within the corridor.
2. The spoils should be disposed of or revegetated in a manner that meets the visual quality standards (VQO) and permit requirements.

2700 Land Uses Management

Other Special Uses Standards:

1. No new structures will be allowed in recreation residence (summer home) special use permit areas.
2. The expansion, external remodeling or reconstruction of existing structures will be consistent with maintaining the rustic, natural and historic character of the corridor.

7700 Transportation System

Road Construction Guidelines:

1. Additional permanent river crossings should not occur within the corridor.

Management Area 8.4.5
East Branch Tahquamenon Wild & Scenic River

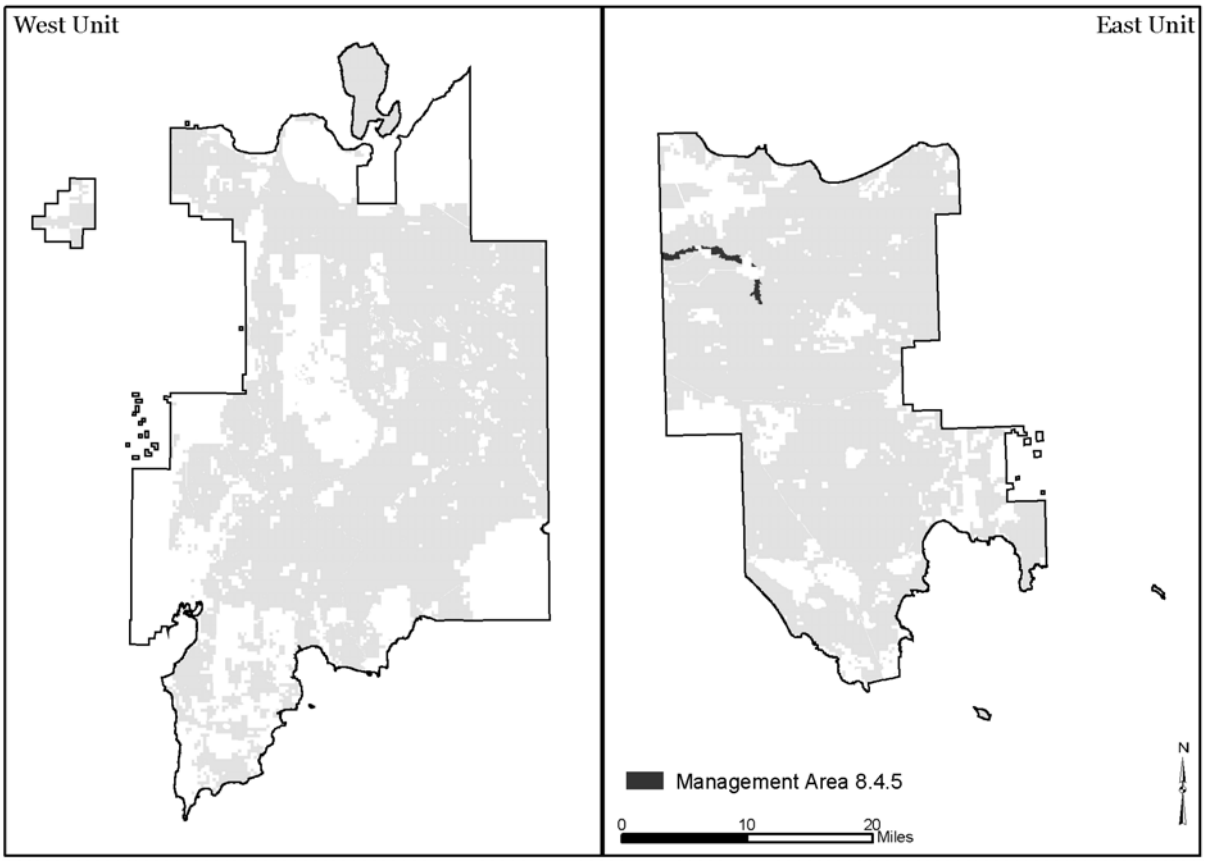


Figure 3-22. The location of the East Branch Tahquamenon Wild and Scenic River corridor is shown in dark gray.

Landscape Description: This area consists of the upper reaches of the East Branch Tahquamenon River and its riparian area. The topography is nearly level with slopes predominantly less than 5 percent gradient. The dominant landforms are lake plain and outwash plain. Soils are dominantly poorly drained sands and organics. Wetlands occupy about 57 percent of the area. It falls within the East Tahquamenon River Drainage and the Lake Superior Highlands LTAs.

Desired Condition: This statement describes a future vision of the East Branch Tahquamenon River corridor. It was developed using the issues identified during public involvement efforts, and by analyzing the corridor landscape.

For ease of review, this section is divided into resource categories; however, many of these resources are interdependent.

Collaboration between the Forest Service and local, state, and federal agencies may be required to achieve some elements found in the desired condition. As required by the Wild and Scenic River Act, all management activities within the wild and scenic river corridor will protect, maintain or enhance the fisheries and hydrologic outstandingly remarkable values (river values) and the free-flowing condition of the river.

Ecological: Natural disturbance patterns (windthrow, insects and disease, erosion, fire), or management which mimic natural disturbances, are based on the landscape context in which the vegetational community

is found. Late successional communities with long-lived species such as cedar, mixed swamp conifer and mixed swamp hardwood are dominant along the river, but include areas of early successional communities, with short-lived species such as tamarack, aspen and balsam fir as an integral part of the landscape.

Beyond the floodplain and outside the banks of the river, communities of hardwoods, softwoods and mixed swamp conifer species may be found. Non-native invasive plants are absent or present at low levels.

Populations of terrestrial game species are at levels that balance ecological and recreational needs. The river corridor provides habitat for species such as timber wolf, white-tailed deer, bobcat, sandhill cranes and black bear. The river corridor provides seclusion habitat and serves as a linkage to areas outside the corridor. Beaver activities are to a minimum, in order to maintain water temperatures needed for the outstandingly remarkable fisheries resource.

Water quality meets or exceeds the standards set by the Michigan Water Resources Commission. Water temperature, pH, hydro-geological source and productivity of the river are important components of the aquatic ecosystem.

Healthy aquatic invertebrate populations, spawning areas, pools and habitat diversity to support all components of the aquatic ecosystem are present. Large woody debris is common in the river and provides channel stability, structure and habitat complexity that enhances aquatic and riparian habitats. A healthy and diverse riparian plant community maintains stable river banks and provides thermal cover to the riparian system.

The river is in a state of dynamic equilibrium with continuing natural erosional and depositional processes at the local scale. Aquatic habitat management allows natural river processes to continue and is designed to blend with the natural landscape. Riparian management is designed to maintain chemical and physical water characteristics in support of the outstandingly remarkable values.

Social: The river provides for a social setting in which individuals experience relative seclusion on forest lands. Along the river, the sights and sounds of nature dominate however the sounds from nearby roads and private lands are sometimes audible. Visitors perceive the river corridor (outside the private lands) as relatively undeveloped and an area to "get away from it all," where the sights and sounds of nature dominate.

Economic: Management activities associated with the East Branch Tahquamenon River (e.g. fishing and other recreational opportunities) provide for limited contributions to the local economy. Local residents benefit economically through subsistence gathering and gathering of incidental forest products such as mushrooms, berries and firewood. Limited timber harvest, designed to protect or enhance the outstanding river values, provides a minor benefit to the economy.

Recreation: Traditional use such as hunting, fishing and trapping occur in the river corridor and are the primary recreation activities along the river. Snowmobiles in winter months cross through the river corridor and continue on the designated snowmobile route. Visitors to the East Branch Tahquamenon River enjoy a natural appearing setting. Recreation activities, management practices, access, use levels and development are consistent with the identified classification of the river and the desired ROS setting. Subtle on-site visitor management controls and regulations help protect sensitive areas from excessive use and degradation and minimize visitor conflicts.

Facilities in the corridor are limited to those necessary for protecting river values while providing a degree of comfort and

convenience for visitors at access points. Facilities appear rustic, and are designed to complement the natural setting. Dispersed campsites may provide visitors with a more primitive, isolated camping experience. Dispersed campsites and angler trails maintain ground vegetation and site characteristics which do not increase sedimentation, erosion or negatively affect the outstanding river values.

The Forest Service and Michigan DNR cooperatively manage the river's fishery resource and habitat in accordance with existing policy and agreements. Commercial outfitting and guiding does not occur within the river corridor.

Access/Transportation System: County, state and Forest Service system roads and bridges are maintained to protect river resource values and allow safe passage to river access points and private lands. Travel routes in the corridor that are not necessary to the above needs or resource management, may be closed and restored. The effects of sediment entering the river at bridge and culvert approaches are minimized.

Scenic Quality: Visitors may experience evidence of human development on private lands and within the recreational segment, however the natural-appearing characteristics of the landscape dominate.

Heritage Resources: Heritage and prehistoric sites within the East Branch Tahquamenon River corridor are protected from degradation and impacts caused by recreational or management activities. On site interpretation of sites is minimal, with interpretation being accomplished through river guidebooks, brochures, and Forest Recreational Opportunity Guides (ROGs).

Private Property rights are recognized and respected. Information is provided to private landowners, upon request, to assist them in managing their lands to better protect the river's values. Private holdings that adversely affect (or potentially affect) the river values may be acquired on a willing seller-willing buyer basis. National Forest lands are consolidated as opportunities arise.

Zoning by local units of government is supportive and complimentary to river protection and management, while allowing for a range of traditional uses on private lands within the river corridor.

Vegetation Composition Goals: There are no vegetation management goals for Management Area 8.4.5.

Standards & Guidelines

2300 Recreation Management

Dispersed Camping Standards for Recreational Segment:

1. A maximum of two tents should be permitted at designated sites, with a maximum total of eight persons at each site.

Dispersed Camping Guidelines for Recreational Segment:

1. A maximum of six designated dispersed campsites should be developed within the corridor to protect river resources.
2. Designated campsites should be located away from private lands in key/popular areas within view of the river, yet set back from the shoreline.

River Access Standards:

1. In the wild segment, no new recreation access will be developed.

River Access Guidelines for Recreational Segment:

1. Easements from private landowners for river access at M-123 (Eckerman Road) and H83 should be acquired.
2. Parking, signing and improved access should be developed to the river, consistent with the ROS setting in the recreational segment.

Recreation Facilities Standards:

1. In the wild segment, no recreation facilities will be developed.

Trails Standards:

1. In the wild segment, do not construct new motorized or non-motorized trail access.

Trails Guidelines for the Recreational Segment:

1. No new motorized trails should be constructed within the corridor.
2. Non-motorized trail access should be maintained and monitored for user conflicts or resource damage.

2400 Vegetation Management

Guidelines:

1. In recreational segments, vegetation treatment activities should be designed to maintain the river's water temperature so it does not fall below the critical temperatures for brook trout production.

7700 Transportation System

Standards for Recreational Segment:

1. Additional permanent river crossings will not occur within the corridor.

Management Area 8.5
Grand Island National Recreation Area

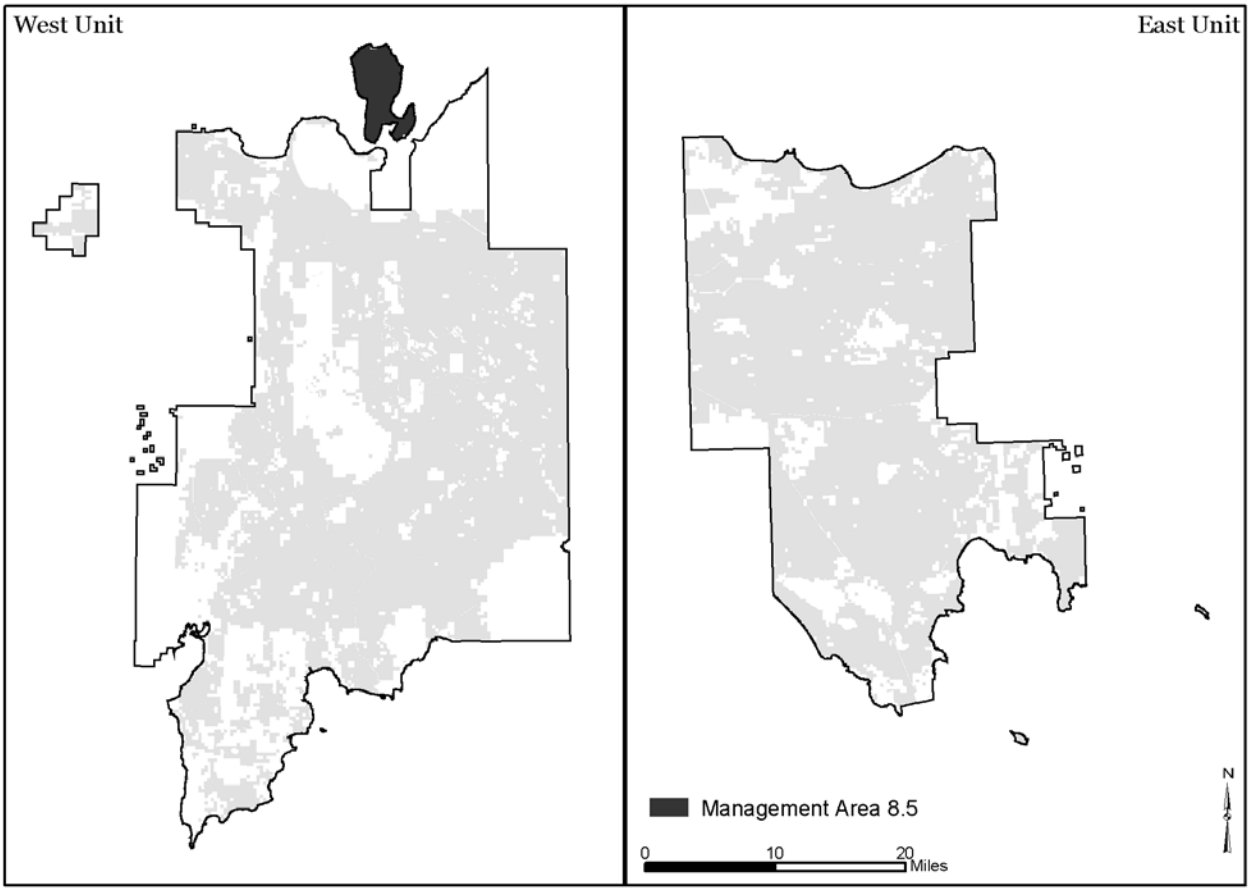


Figure 3-23. The location of the Grand Island National Recreation Area is shown in dark gray.

Suited Uses: Provide a range of recreational opportunities while protecting threatened and endangered species and other natural and cultural resources.

Landscape Description: This area consists of Grand Island. The topography is gently rolling to steep with cliffs up to 200 feet high forming the northeast shore of the island. Slopes range from 10% to 7 % gradient. Soils are dominantly loamy and depth to bedrock varies from a few inches to several feet. Wetlands occupy about 10% of the area. The entire area falls within the Grand Island-Au Train-Wood Island-Williams Island Bedrock Controlled Moraines landtype association.

Desired Conditions — Summer: Feature primarily those activities and facilities generally compatible with the roaded natural ROS class on the main island south of Echo Lake; with the semi-primitive motorized ROS class northwest of Echo Lake; and with the semi-primitive non-motorized ROS class northeast of Echo Lake and on the Thumb.

Winter: Feature primarily those activities and facilities generally compatible with the semi-primitive motorized ROS class on the main island and tombolo; and semi-primitive non-motorized ROS class on the Thumb.

Vegetation Composition Goals: There are no vegetation management goals.

Visual Quality Objectives: In this planning period increase the amount of national forest land meeting these VQOs:

- Retention VQO for all areas of Grand Island that are visible from Lake Superior or the mainland (off-island views).

- For on-island views (not visible from Lake Superior): Retention VQO in semi-primitive non-motorized areas;

  Partial retention VQO in semi-primitive motorized and roaded natural areas.

Standards & Guidelines

1600 Information Services

Guidelines:

1. A visitor contact station near the ferry landing, consistent with the roaded natural recreation opportunity spectrum class, should be allowed.
2. Interpretive signing, programs and development, commensurate with the summer recreation opportunity spectrum class, should be allowed.
3. A moderate level of interpretative programming should be allowed.

1900 Planning

Guidelines:

1. Vegetation should be managed to protect and/or enhance:
   a. Endangered, threatened and sensitive species
   b. Recreation, wildlife, visual and cultural resources
   c. Facilities and private property from pests and fire

2300 Recreation Management

Heritage Resources Standards:

1. Metal detectors will not be allowed except for authorized use.

Heritage Resources Guidelines:

1. A moderate level of interpretation of cultural resources consistent with the summer recreation opportunity spectrum class should be allowed.
2. Up to 30 acres of permanent openings on the main island should be rehabilitated and/or maintained for cultural resource management.

Recreation Development Standards:

1. Domestic animals will be on a leash or otherwise confined, except while being used for hunting.
2. All recreation developments will be planned and executed in accordance with the Design Criteria described in the Grand Island Record of Decision.
3. Only one carry-in boat landing at Echo Lake and one carry-in boat landing at Duck Lake will be allowed. Construction of back-in boat landings will not be allowed.
4. An overnight boat docking facility with no more than 14 slips will be allowed.
5. Personal watercraft will not be permitted to land on or be transported across Grand Island.
6. No more than seven designated shoreline access points will be developed.
7. Rock climbing, horses and rappelling will not be allowed. Ice climbing and rappelling on ice during the winter will be permitted.
8. Portable generators will not be allowed, except for use by islanders or for medical needs.
9. Firewood collection will be prohibited on the tombolo.
10. Fires will be allowed only in Forest Service provided fire rings.
11. A shelter near the public ferry landing for people waiting for the ferry/public transportation will be provided.

Recreation Development Guidelines:

1. Toilet facilities should be made available for designated sites, group campsites, the rustic campground and primitive cabins.
2. Low impact vistas should be developed.
3. Recreation opportunities and facilities should be made accessible in accordance with the development level, character and experience of the setting (ROS class).

Camping Standards:

1. **Designated Campsites**: No more than 25 designated campsites will be allowed. At designated sites, no more than 2 tents and 6 persons will be permitted.
   a. Simple shelters (primitive Adirondack style, for example), will be substituted for the designated campsites if they are appropriate. If shelters are used, they will accommodate no more than 6 persons.

b. All designated campsites and group campsites will be at least 100 feet from the waters of Lake Superior or cliff edges, unless it is necessary to locate such sites closer to protect resources.
c. Designated campsites (single site), designated group campsites and primitive cabins will be separated by at least 150 feet in semi-primitive non-motorized areas; 100 feet in semi-primitive motorized areas; and 75 feet in roaded natural areas.
d. When camping at a designated site, equipment will be kept within 15 feet of the number post designating that site.

2. **Murray Bay:** No more than 3 designated campsites or no more than 2 designated campsites and 1 group campsite will be allowed. The designated campsites will contribute toward the limit of 25 designate campsites; the group site will contribute toward the limit of 2 group campsites.
3. **Tombolo:** No more than 4 designated campsites, each with a maximum of 2 tents and 4 persons will be allowed. The designated campsites will contribute toward the limit of 25 designated campsites. Group campsites will not be permitted.
4. **Group Camping:** No more than 2 designated group campsites accommodating up to 25 people each, located in the summer semi-primitive motorized or road natural ROS classes will be allowed. Designated group campsites will not contribute toward the limit of 25 designated campsites. Designated group campsites will not be permitted on the tombolo.
5. **Rustic Camping:** One rustic campground with no more than 10 walk-in sites, each site accommodating no more than 6 persons will be allowed. The rustic campground may be located in the summer roaded natural ROS class only, but not at Murray or Trout Bays. No vehicles will be allowed except those with accessible vehicle parking permits.
6. **Primitive Cabins:** No more than 7 primitive cabins with occupancy for no more than 8 persons each will be allowed. No more than two such cabins will be located in the summer semi-primitive non-motorized ROS class and none will be located on tombolo.
7. **Random Camping:** No more than six persons and two tents per random campsite will be allowed except during the winter when there is at least six inches of snow. Random camping will not be allowed on the tombolo and less than 100 ft. from:
   a. The waters of Lake Superior or cliff edges
   b. Other campsites and recreation development
   c. Private property
   d. Trials and roads
   e. Inland lakes
   f. Named creeks
   g. Research Natural Area

Camping Guidelines:

1. Permits for all camping should be required. A limit on the number of permits should be established if the need arises.
2. A campsite reservation should be developed if the need arises
3. Campsite location and design should consider access for kayakers and boaters.

Trails Standards:

1. No more than 18 miles of hiking-only trails island-wide and no more than 30 miles of combined hiking/bicycling trails on the main island and tombolo only will be allowed.
2. Public use of bicycle trails on the Thumb will not be allowed.
3. Bicycles will not be ridden off trails.
4. Other than islanders, the public will be allowed use of special use roads for hiking and bicycling only, unless posted otherwise for resource protection, islander privacy or administrative reasons.

Trails Guidelines:

1. Hiking-only and hiking/bicycling trails should be native surfaced. Other trail surfacing should be used as needed for interpretive trails, or where necessary for resource protection and safety.

2. Existing old road and trail corridors should be used when siting the proposed trail system.

Hunting, Fishing and Trapping Standards:

1. The use of non-native, vegetative agricultural products (e.g. apples, beets, carrots) for attracting wildlife will be prohibited. The use of vegetative agricultural products for trapping fur bearers is allowed.
2. Dragging of roads connected with tracking and hunting is prohibited.

Hunting, Fishing and Trapping Guidelines:

1. The Forest should consult with the Michigan DNR to address hunting bears with dogs.
2. Areas of the island may be closed to hunting, trapping and fishing by Forest Service order for reasons of public safety, administration, the protection of non-game species and their habitats, or public use and enjoyment. Michigan DNR will be consulted prior to implementing such closures.

Snowmobiles Standards:

1. Allow no more than 50 miles of designated ungroomed snowmobile trails on the main island and tombolo.
2. Snowmobiles will not be allowed on the Thumb.
3. Snowmobile trails will not be groomed.
4. Snowmobiles will be allowed on designated trails only.

Snowmobile Guidelines:

1. Administrative use of snowmobiles off designated trails should not be allowed.

2400 Vegetation Management

Timber Management Standards:

1. Vegetation management will be used to enhance recreation, scenic quality, wildlife habitat and protection and enhancement of threatened, endangered and sensitive species.

Timber Management Guidelines:

1. Use, salvage, or removal of trees damaged or downed due to natural disturbance, should be allowed to further the purposes of the National Recreation Area.
2. Administrative use of the island's timber resources for the construction of facilities should be allowed.
3. Removal of hazard trees by the Forest Service is allowed.
4. Property owners should be permitted to gather firewood (dead and down material) for personal use primarily from vegetative management projects.
5. Allowable timber removal should be carried out using the prescriptions for individual tree selection and group selection.
6. Reforestation should be primarily through natural regeneration.

Openings Standards:

1. Temporary openings for purposes other than those listed under 2400 Vegetation Management will not be created.
2. Temporary openings will not exceed 5 acres in size.
3. The cumulative amount of temporary openings (both human-created and natural), will not exceed 230 acres.
4. Temporary openings on the tombolo or immediately adjacent to the Research Natural Area, will not be allowed.

Openings Guidelines:

1. Temporary openings should be separated by a minimum of 660 feet.

2600 Wildlife, Fish and Sensitive Plant Habitat Management

Standards:

1. No more than 15 acres of open canopy along roads and trails will be maintained for the management of rare plant habitat.
2. A five chain (330 feet), no activity buffer zone will be created around known, above-ground stems of goblin fern (*Botrychium mormo*).
3. Permanent openings will not be maintained to achieve wildlife objectives.

Guidelines:

1. A strategy should be developed for managing the conflicts between visitors and bears.

2700 Land Uses Management

Other Special Uses Standards:

1. Revegetation or rehabilitation of areas disturbed by the construction or maintenance of special use roads will be required.
2. Property owners will be required to maintain their special use permit roads if these access routes are closed to public motorized transportation.

Other Special Uses Guidelines:

1. Gated access should be allowed to reduce the impact of use on the area.

Recreation Residences on Federal Land Standards:

1. External construction, reconstruction or modification of structures (including surface treatments), will be authorized by the District Ranger prior to commencing work.
2. Design Criteria described in the Grand Island Record of Decision will be used to determine consistency with the rustic, natural and historic character of the island.
3. New structures will not be allowed in recreation residence special use permit areas. Only the expansion, external remodeling or reconstruction of existing structures, consistent with the Design Criteria described in the Grand Island Record of Decision will be allowed.
4. Construction of a community storage facility for permit holders on the island will not be allowed.
5. Recreation residence permits will be re-issued for successive 20-year periods as long as the applicant is in compliance with Section 3(b)(8) of Public Law 101-292.
6. Only non-commercial recreation occupancy will be permitted.

Private Landowners Guidelines:

1. The Forest should work closely with the Alger County Zoning Commission or appropriate authority on any developments on private land to ensure that developments are compatible with the Design Criteria described in the Grand Island Record of Decision.

Allowable Developments Standards:

1. Dumping or fueling services for docking facilities will not be allowed.
2. Economic development will not be allowed on the tombolo.
3. Concessionaire-owned, operated and maintained facilities will be allowed, but must be consistent with the Design Criteria described in the Grand Island Record of Decision.
4. The following concessionaire-owned, operated and maintained developments will be allowed:
   a. Rustic lodge with no more than 10 sleeping rooms if located at the feasible site near Williams Landing or the feasible site near Mather Lodge, or with no more than 20 sleeping rooms if located at a feasible inland site in the summer roaded natural ROS class. (See Grand Island FEIS, Appendix C for feasible sites identified thus far). In addition, no more than two existing, government-owned structures may be used for lodging with a combined total of more than 10 sleeping rooms from such structures.
   b. No more than one restaurant attached to or adjacent to the lodge and with seating capacity of no more than 30 persons.
   c. Store will be located in the lodge or at an inland site in the summer roaded natural ROS setting out of view from Pictured Rocks National Lakeshore.
   d. Motorized and non-motorized equipment rental located at an inland site in the summer roaded natural ROS setting out of view from Pictured Rocks National Lakeshore.
5. Motorized equipment rental will include a maximum of three OHVs and a limit of four horsepower motors for watercraft. Off highway vehicles will only be rented during those time periods specified in Traffic Management (7700).

Guidelines:

1. Public transportation system:
   a. The public transportation system should operate on Forest Service System roads only.
   b. The public transportation system should operate scheduled trips only. No separate chartered shuttle services will be allowed.
   c. No more than 8 scheduled trips daily in the summer roaded natural ROS class and no more than 2 scheduled trips daily to the north end of the island will be allowed. (A trip is defined such that if two vehicles traveled together on the road, it would still be counted as two trips, one per vehicle.)
   d. Public transportation vehicles should be no longer than 21 feet, plus capacity to haul equipment.
2. Gasoline storage facilities on the island should be allowed only in conjunction with a public transportation system, for rental equipment and administrative use.
3. Reasonable storage facilities required for equipment rental and public transportation should be allowed.
4. Minimum requirements for "rustic lodging" should include:
   a. Potable running water (a hand pump is not enough, but showers are not required)
   b. Heat and light sources
   c. Two sleeping rooms with locking doors
   d. A bed, but not necessarily bedding
   e. Furniture (table and chairs)
   f. Food service or accommodations for cooking
   g. Sanitary facilities
5. Use of public address or other sound amplification systems on the public transportation system should be allowed only if the Forest Service deems that the vehicles provide adequate soundproofing.

2800 Minerals and Geology

Guidelines:

1. The Forest Service may allow lessees and permit holders to use small amounts of stockpiled sand and gravel for use in their lease and permit areas.

5100 Fire Management

Standards:

1. The Forest Service will be responsible for wildland fire suppression, but not for the fire protection of privately-owned structures.

Guidelines:

1. Prescribed fire should be used if it is ecologically and/or historically consistent and if it meets the purpose of the National Recreation Area.

5400 Landownership

Guidelines:

1. The Forest Service should acquire all property on a willing seller basis following the right of first refusal outlined in Public Law 101-292.

7300 Buildings & Other Structures

Standards:

1. All buildings and structures constructed by the Forest Service, must meet the design criteria (Grand Island NRA ROD, Appendix E).

Guidelines:

1. Buildings and structures should be constructed and/or maintained by the Forest Service in order to support resource management objectives.
2. Existing historic structures under government ownership should be renovated to provide sites for interpretive opportunities, public use, public lodging and/or administrative use.

7700 Transportation System

Roads (General) Standards:

1. No more than 22 miles of designated Forest Service System road will be allowed in the summer roaded natural and semi-primitive motorized ROS classes.
2. No more than 8 miles of special use roads will be allowed.
3. In the summer semi-primitive motorized ROS class, roads closer than ¼ mile from the edge of the island will not be constructed or reconstructed, except as necessary for access to private property. Also, no more than two spur roads off the north/south corridor road in the summer semi-primitive motorized ROS class, ending no closer than 500 feet from the island's perimeter will be allowed.
4. In the summer roaded natural ROS class, no more than 4 miles of road closer than ¼ mile from the edge of the island will be allowed. These 4 miles will contribute toward the 22 miles of designated Forest System road.

Roads (General) Guidelines:

1. Roads should not be cleared of snow, except as necessary for operation of the lodge concession.

Road Maintenance Standards:

1. At a maximum, roads will be maintained to maintenance level three and traffic service level C if passenger car travel is intended.

Road Maintenance Guidelines:

1. Except for open canopy along roads maintained for management of rare plant habitat [2600(I)], all roads should be allowed to develop closed canopies. A few exceptions may be made for scenic overlooks.
2. When closing or obliterating roads or trails, native species and material should be used for revegetation.

Road Design & Construction Guidelines:

1. At a maximum, roads should be single lane, primarily native surfaced, with turn-outs. Gravel should be used where necessary for resource protection.
2. Minimum standards should be used when construction, reconstruction or relocation of roads is required.
3. Temporary roads should be allowed for purposes specified in Section 2400.
4. To the extent feasible, construction, reconstruction and maintenance activities should be scheduled during times of the year that minimize impacts on islanders, recreation users and plant and animal populations.

Traffic Management Standards:

1. No cars or trucks will be permitted on the island from January 1 to April 15 during the following times:
   a. Prior to the initiation of the public transportation system
   b. If no such concession ever develops
   c. During the operational off-season of the public transportation concession
2. No more than 10 cars and trucks will be permitted at any one time and no OHVs on the island from April 16 to September 30 during the following times:
   a. Prior to the initiation of the public transportation system
   b. If no such concession ever develops
   c. During the operational off-season of the public transportation concession
3. No more than 10 cars, trucks and OHVs will be permitted on the island at any one time between October 1 and December 31 during the following times:
   a. Prior to the initiation of the public transportation system
   b. If no such concession ever develops
   c. During the operational off-season of the public transportation concession

   Cars and trucks will be permitted on designated Forest Service system roads only. OHVs will be allowed on designated Forest Service system roads.
4. Private cars, trucks and/or OHVs will not be permitted during the on-season operation of the public transportation concession on the island, except snowmobiles, vehicles allowed by permit or contract, and vehicles needed for administrative purposes.

5. OHVs (no limit) will be permitted from January 1 to April 15 for access to Trout Bay only.
6. The tombolo and Thumb will be closed to public OHV use and the Thumb will be closed to public bicycle and snowmobile use – except that property owners on a bicycle or snowmobile, or with a daily motor vehicle permit (daily permit), may travel the special use roads on the tombolo and Thumb in order to reach the main island roads and trails.
7. Motorized watercraft will not be permitted on T47N, R19W, Sections 14 (NW corner and NE corner) and 11 (Duck Lake).
8. Watercraft with motors over 4 horsepower will not be permitted on T47N, R19W, Section 3; and T48N, R19W, Section 34 (Echo Lake).
9. Property owners will only be allowed use of special use roads and the designated Forest Service system roads for access to their property and to visit other property owners. A Property Owners Seasonal Permit will be issued annually for these types of access, and use of these permits will not be applied toward the limit on the number of vehicles allowed on the island at any one time. For other vehicle travel (e.g. car, truck, OHV), such as that in pursuit of recreation or hunting opportunities, property owners will be required to get a Daily Motor Vehicle Permit (Daily Permit). In these situations, islanders will be allowed use of special use roads only to access the Forest Service system roads; special use roads are not available for recreational driving. Use of Daily Permits by property owners will apply toward the vehicle limit.
10. Access for property owners' caretakers will be formalized in an agreement included in their special use permit.
11. Guests of property owners will be allowed the same privileges as the general public in terms of motor vehicle use; however, guests may use hosts' permitted vehicle to access the residence only upon arrival and when departing.

Traffic Management Guidelines:

1. Existing roads may be gated, barricaded or obliterated to provide more remote areas, to protect wildlife or fragile resources from disturbance by motor vehicles, OHVs, snowmobiles, bicyclists or hikers and for public safety.
2. Administrative use of motor vehicles beyond the designated road system for management and law enforcement uses, year-round should be permitted.
3. Road and trail use should be restricted as needed for resource protection or for public safety.
4. Vehicle access for contractors and other workers associated with the maintenance of property owners' property should be allowed.
5. A designated area should be provided near the ferry landing where property owners can park their vehicles while on the mainland.

Access (General) Standards:

1. Through concessionaire or otherwise, water-based passenger and vehicle ferry transportation to and from Grand Island will be provided as the primary means of public access, unless, and until, it is deemed unsafe because of weather or water conditions, or it is not operationally or economically reasonable. Fees may be charged for providing the service.
2. Construction and maintenance of no more than two docks for administrative purposes in addition to the one used as landing by the passenger/vehicle ferry will be permitted.
3. Dredging around the ferry and/or barge dock will be permitted in accordance with permits and law.

Access (General) Guidelines:

1. A concessionaire or Forest Service docking facility for ferry and/or barge required for public access should be allowed where and as feasible.
2. The ferry and/or barge landing should be signed to indicate that private boaters are allowed to use that landing for loading and unloading only.

CHAPTER 4

Monitoring and Evaluation

Sandhill Crane

"A major determinant of how well American forestry prepares for the 21st century will be cooperation in resources management. This means cooperation among federal, state, and private ownerships... and cooperation with new and different arrangements of people and organizations."

John R. McGuire
Forest Service Chief (1972-1979)

Monitoring Plan

Introduction

Monitoring and evaluation determines how well the Forest Plan is working. It is designed to answer the following questions:

- **Did we do what we said we were going to do?** This question addresses how well the Forest Plan direction is being implemented. Collected information is compared to objectives, standards, guidelines and management area direction.
- **Did it work how we said it would?** This question addresses whether the application of standards and guidelines is achieving objectives; and whether objectives are achieving goals.
- **Is our understanding and science correct?** This question addresses whether the assumptions and predicted effects used to formulate the goals and objectives are valid.

The aim of monitoring is to be able to respond to current conditions or to make appropriate changes based on new information or technology. Depending on the answers to the above questions, the Forest Plan may be amended or revised to adapt to new information and changed conditions.

This chapter provides programmatic direction for monitoring and evaluating Forest Plan implementation.

Monitoring and Evaluation Strategy

Monitoring and evaluation are separate activities. Monitoring is the process of collecting data and information. Evaluation analyzes and interprets the information and data collected from monitoring.

A key requirement of a monitoring strategy is that the public be given timely, accurate information about Forest Plan implementation. This is done through the release of an annual monitoring and evaluation report.

The monitoring program must be efficient, practical and affordable, and not duplicate the collection of data already underway for other purposes. Monitoring tasks are scaled to the Forest Plan, program or project to be monitored. Each of these entails different objectives and requirements.

Monitoring is not performed on every single activity, nor does it need to meet the statistical rigor of formal research. Budgetary constraints will affect the level of monitoring that can be done in a particular fiscal year. If budget levels limit the Forest's ability to perform all monitoring tasks, then those items specifically required by law would be given the highest priority.

Monitoring Methods and Questions

Monitoring methods categorize how precisely and reliably we measure monitoring items. Monitoring questions were developed by an interdisciplinary team to address Forest Plan management goals, objectives, standards, guidelines, assumptions and science. The annual monitoring plan identifies which items will be measured and how the monitoring questions will be answered. The monitoring and evaluation report analyzes and summarizes the monitoring results.

Monitoring is divided into two methods which are based on their relative precision and reliability:

Method A: These methods are well-accepted for modeling or measuring the resource or condition. The methods are appropriate for modeling or quantitative measurements. Results have a high degree of repeatability, reliability, accuracy and precision. The cost of conducting these measurements is higher than other methods.

Method B: These methods or measurement tools are based on a variety of techniques. Tools include project records, communications, on-site visual estimates or less formal measurements such as informal visitor surveys, air photo interpretation and other similar types of assessments.

Method B is often qualitative in nature, but still provides valuable information on the status of resource conditions. Reliability, accuracy and precision are lower than Class A methods, but still provide valuable information.

Monitoring Guidelines and Components

Monitoring Framework: Monitoring and evaluation is a complex process that takes on many forms and applies to many programs. Deciding what resources to monitor, how, why, how often and by whom, requires consideration of several important guidelines.

In addition, monitoring must also:

1. Meet the legal requirements of the planning regulations;
2. Be consistent with corporate data standards and protocols;
3. Be developed by an interdisciplinary team that addresses the ecological, social and economic dimensions of forest management in an integrated manner.

Table 4-1 identifies the four components that the Hiawatha National Forest will use as part of the monitoring framework.

Table 4-1. Monitoring Framework

Forest Plan Monitoring	Monitoring and Evaluation Implementation Guide	Annual Monitoring Schedule	Annual Monitoring Evaluation Review
Broad and strategic ■ Provides the monitoring requirements in the Forest Plan itself. ■ Focuses on what is needed to monitor the Forest Plan. ■ Provides the overall monitoring strategy including specific questions that need to be answered; what will be monitored; timetables for reporting and other information.	***Focused & technical*** ■ Describes how, where and when to accomplish the monitoring prescribed in the Plan. ■ Provides the specific methods, protocols and analytical procedures. ■ Is flexible and can be modified in response to new information, updated procedures, emerging issues and budgetary considerations without amending the Plan.	***Specific, technical and prescriptive*** ■ Identifies precisely what will be monitored, where, when and by whom for the current or upcoming year. ■ Is tied to the Forest Plan and Monitoring Guide.	***Specific, technical and prescriptive*** ■ The Forest Interdisciplinary Team will review the current year's monitoring and evaluation results at the end of each calendar year. ■ The ID team will recommend to the Forest Leadership Team necessary changes (if any) to the Forest Plan or Monitoring Guide.

Monitoring Prioritization

The level and intensity of monitoring and analysis will vary with the budget, information gained during previous years and other forest priorities. The following list of potential criteria may be used to set monitoring priorities:

- Is monitoring of a particular question or resource mandated by regulation or court order?
- Will monitoring respond to a key issue?
- Is there a high degree of uncertainty associated with management assumptions? (management significance).
- Is there a high degree of disparity between existing and desired conditions?
- Are proposed management activities likely to affect resources of concern? (ecological significance).
- How do monitoring items fit into national and regional priorities?
- What are the consequences of not knowing resource conditions?

Evaluation and Interpretation of Data: Evaluation is the process of transforming data into information. It is a process that brings together values, judgement and reason with monitoring information, to answer selected questions. Successful adaptive management depends on this information to move the Forest towards desired conditions.

The Forest interdisciplinary team will review the current year's monitoring and evaluation results at the end of each calendar year and make recommendations for changes to the Forest Plan or changes to the Monitoring Guide.

Monitoring and Evaluation Report: This report provides an opportunity to track progress towards the implementation of the revised forest plan decisions and the effectiveness of specific management practices. The focus of the evaluation is more internal to the Forest Service in providing immediate guidance to ongoing management. This evaluation is tied specifically to the questions identified for each monitoring element.

Monitoring Matrix

Monitoring direction is outlined in the matrix. The more prescriptive standards and guides will be addressed in the Monitoring and Evaluation Guide. The focal point for each monitoring item will be the monitoring question. Each monitoring question is derived from one or more monitoring drivers (legal requirements, desired conditions. objectives etc.) Table 4-2 defines the components of the monitoring matrix. Not all monitoring drivers will be monitored each year. Drivers that best answer the monitoring question for each resource area will be identified during the annual monitoring schedule process.

Table 4-2. Definitions of Components in the Monitoring Matrix

Component	Definition
Resource Area	A quantitative or qualitative parameter that can be assessed.
Monitoring Question	Specific monitoring question(s) developed to ensure that monitoring and evaluation addresses information essential to measuring the Forest Plan. These questions relate to the different purposes and rationales for monitoring. There may be more than one monitoring question per resource area.
Measurement Frequency	Describes how often monitoring information is collected.
Evaluation and reporting Frequency.	Describes how often monitoring information is evaluated and reported.
Precision and Reliability	Two categories of precision and reliability are appropriate at the forest plan scale: **Class A:** Methods appropriate for modeling or quantitative measurement. Results have a high degree of repeatability, reliability, accuracy and precision. **Class B**: Methods based on project records, personal communications, ocular estimates, pace transects, informal visitor surveys and similar types of assessments. The degree of repeatability, reliability, accuracy and precision are not as high as Class A methods, but they still provide valuable information.

Table 4-3. Monitoring Items.

Resource Area	Monitoring Question(s)	Driver (Law, Forest Plan Management Direction)	Measurement Frequency	Evaluation/ Reporting Frequency	Precision and Reliability
All	How close are projected outputs and services to actual?	A quantitative estimate of performance, comparing outputs and services with those projected by the Forest Plan. Forest Plan Appendix A	1-5 years	1-5 years	A
All	How close are project costs with actual costs?	Documentation of costs associated with carrying out the planned management prescriptions compared with costs estimated in the Forest Plan.	1-5 years	1-5 years	A
Insects and Disease	Are insects and disease populations compatible with objectives for restoring or maintaining healthy forest conditions?	Destructive insects and disease organisms do not increase to potentially damaging levels following management activities. Vegetation Management desired condition 1; Forest Pest Management desired condition 1	1-5 years	1-5 years	A/B
Insects, Disease and Disturbance Processes	To what extent is Forest management managing undesirable occurrences of fire, insect & disease outbreaks?	Destructive insects and disease organisms do not increase to potentially damaging levels following management activities. Pest Management guidelines 1-4	1-5 years	1-5 years	A/B
Recreation Motor Vehicles	To what extent is the Forest providing OHV opportunities? What are the effects of OHVs on the physical, biological and social environment? How effective are Forest management practices in managing OHV use?	Off-road vehicle use shall be planned and implemented to protect land and other resources, promote public safety and minimize conflicts with other uses of the National Forest System lands. Forest planning shall evaluate the potential effects of vehicle use off roads and classify areas and trails of National Forest System lands as to whether or not off-road vehicle use may be permitted. Motorized/Non-Motorized Trails goals 1- 3; objectives 2 & 3	Annually	1-5 years	A/B
Social & Economic Stability	To what extent do output levels, location of timber harvest and mix of saw timber & pulpwood compare to those levels?	A quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan. Forest Plan Appendix A	1-5 years	1-5 years	A/B

Table 4-3. Monitoring Items.

Resource Area	Monitoring Question(s)	Driver (Law, Forest Plan Management Direction)	Measurement Frequency	Evaluation/ Reporting Frequency	Precision and Reliability
Soils	Are the effects of Forest management, including prescriptions, resulting in significant changes to the productivity of the land?	Documentation of the measured prescriptions and effects, including significant changes in land productivity. 2500 Watershed Management – Soil Resources goal #2	1-5 years	1-5 years	A/B
Timber	Are harvested lands adequately restocked after 5 years?	Lands are adequately restocked as specified in the Forest Plan.	1-5 years	1-5 years	A
Timber	To what extent is timber management occurring on lands suitable for such production?	Lands identified as not suited for timber production examined at least every 10 years to determine if they have become suited; and that, if determined suited, such lands are returned to timber production. Forest Plan Appendix A – Suitability	10 years	10 years	A
Timber	How much even-aged management (especially clear-cutting) should be used? In what forest types should it be used?	Maximum size limits for harvest areas are evaluated to determine whether such size limits should be continued. Forest Plan 2600 – Wildlife, Fish and Sensitive Plant Habitat Management. 2400 Vegetation Management guideline 1	Years 5 & 10	Years 5 & 10	B
Wildlife: Management Indicator Species	Are habitat trends of MIS consistent with Forest Plan expectations?	Management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies, to the extent practicable. Forest Plan Appendix B – Management Indicator Species	1-5 years	1-5 years	A/B
Treaty Rights	How are the MOUs between the Forest and Native American Tribes being implemented?	Nothing in this Plan or its implementation is intended to modify, abrogate, or otherwise adversely affect tribal reserved or treaty guaranteed rights applicable within the Hiawatha National Forest. 1500 – External Relations objective 1	1-5 years	1-5 years	B

Table 4-3. Monitoring Items.

Resource Area	Monitoring Question(s)	Driver (Law, Forest Plan Management Direction)	Measurement Frequency	Evaluation/ Reporting Frequency	Precision and Reliability
Transportation	To what extent is the Forest meeting its transportation system objectives?	To construct and/or decommission roads to bring all management area road densities in line with Forest Plan guidelines. Increase safety of Forest roads by accomplishing critical maintenance items, reconstructing segments which are below standards for safety and creating a more seamless system. 7700 – Transportation system guideline 1	1-5 years	Every 5 years	A/B
Wetlands	To what extent are wetlands being protected and wetland functions being restored?	Plan objectives to restore soil-hydrologic functions. EIS analysis that identifies a data gap in our understanding of the role of fire in wetland ecosystems.	1-5 years	1-5 years	A/B
Fish/Watershed	To what extent are ecologically healthy and productive aquatic ecosystems being restored?	Wildlife objectives 2, 3; Watershed goals 3-8; Watershed desired condition.	1-5 years	1-5 years	A/B
Non-native Invasive Species	How effective is the Forest at treating and controlling the spread of NNIS?	Watershed desired condition; Pest Management goals 1, 3, 4; objectives 1 & 2; guidelines 1, 2, 4; Eastern Region NNIS Strategy; HNF NNIS Strategy.	1-5 years	1-5 years	A/B
Water Quality	How is the Forest complying with the Clean Water Act requirements?	Clean Water Act Watershed desired condition.	1-5 years	1-5 years	A/B
Social and Economic Sustainability	Has public demand for commodity uses and non-commodity opportunities changed?	Vegetation Management, Forest Products goals 1-2; Land Uses Management goals 1-2; Minerals and Geology goals 1, 4; Recreation, Great Lakes and Inland Lakes Access goals 1, 3; Recreation Development and Recreation Facilities goal 1.	10 years	10 years	A/B

Table 4-3. Monitoring Items.

Resource Area	Monitoring Question(s)	Driver (Law, Forest Plan Management Direction)	Measurement Frequency	Evaluation/ Reporting Frequency	Precision and Reliability
Vegetation	To what extent is the Forest meeting the vegetative composition objectives?	Vegetation Management desired condition 1, 2; goals 1- 3	1–5 years	5 years	A/B
Vegetation Ecological Processes	To what extent is the Forest maintaining or restoring conditions that result from or emulate natural ecological processes ?	Vegetation Management desired condition 1-3; goals 1- 3; Fire Management desired condition 3;	5 years	5 years	A/B
Heritage	How are Heritage properties being protected from damage or disturbance?	36 CFR 79; 36 CFR 800; 43 CFR 3; 43 CFR 7; 43 CFR 10. Will also be used to comply with 36 CFR 219.11 (d) at 5-10 year intervals.	1-5 years	5 years	A/B
Inland Lakes: Access types and settings	To what extent is the Forest providing and maintaining a variety of inland lake watercraft accesses in motorized and non-motorized settings?	Great Lakes and Inland Lakes Access goal 1; objective 2.	1-5 years	5 years	A/B
Recreation Opportunity Spectrum (ROS)	To what extent are Forest management activities achieving semi-primitive ROS objectives?	Recreation Development and Recreation Facilities goal 1.	5 years	5 years	B
Wildlife: Diversity	To what extent is Forest management providing ecological conditions to maintain viable habitat of native and desired non-native species?	TES goals 1, 3; Vegetation Management guidelines 2, 3; Wildlife structural guidelines 1-3.	1-5 years	1-5 years	A/B
Threatened and Endangered Species	To what extent is the management of the Forest (HNF) contributing to the conservation of threatened and endangered and sensitive species?	Wildlife goal 5; TES goals 1, 3; standards 1, 2; guidelines 1-4; Land ownership goal 2; Eastern Region Sensitive Species Framework.	1-5 years	1-5 years	A/B

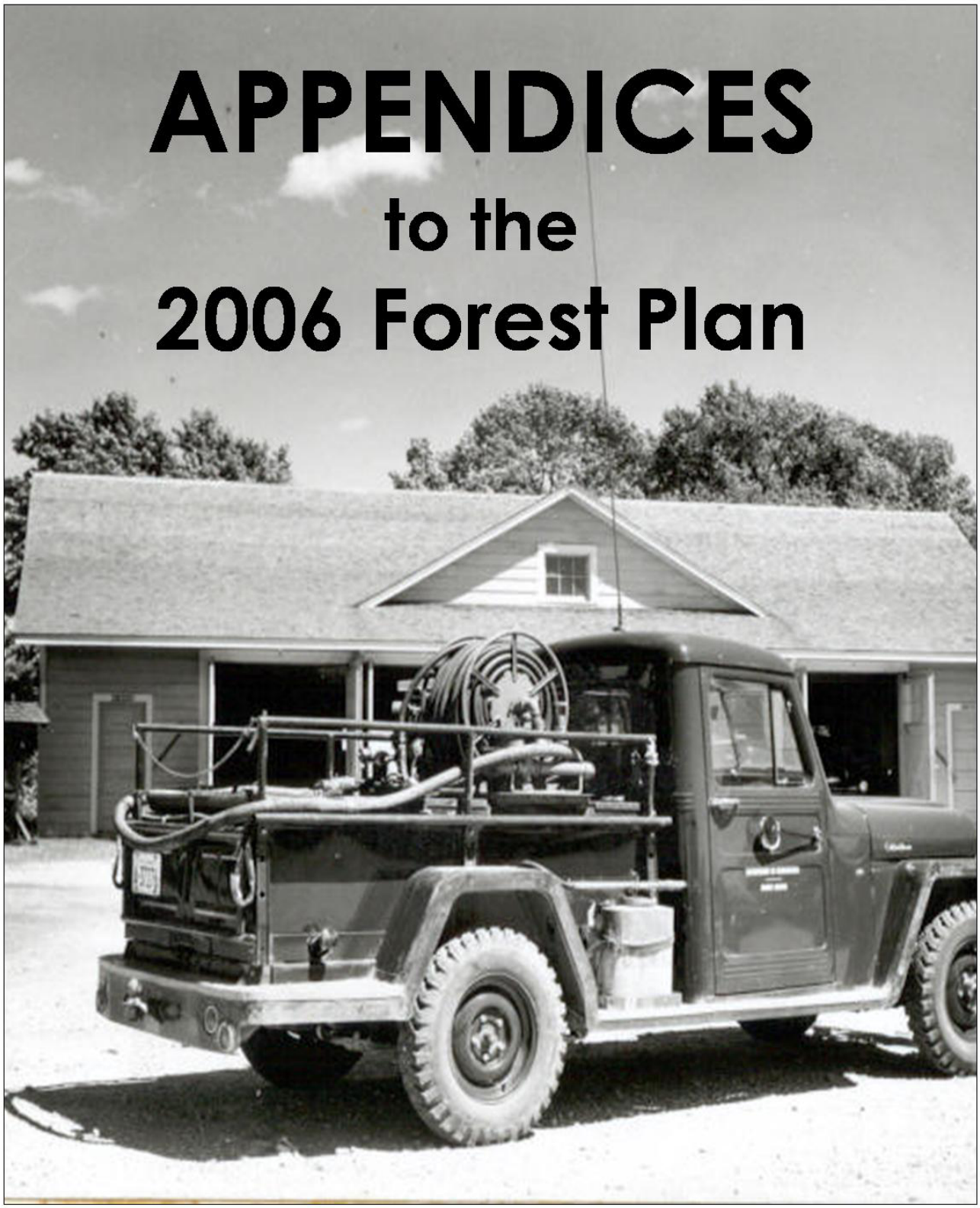
Table 4-3. Monitoring Items.

Resource Area	Monitoring Question(s)	Driver (Law, Forest Plan Management Direction)	Measurement Frequency	Evaluation/ Reporting Frequency	Precision and Reliability
Wildlife: Threatened and Endangered Species	To what extent is the Forest maintaining the amount and juxtaposition of Canada lynx foraging and denning habitats?	Wildlife goal 5; Canada lynx goal 1; guideline 1; TES standards 1, 2; guideline 4.	1-5 years	1-5 years	A/B
Coordination with other agencies	To what extent is the Forest working cooperatively with the U.S. Fish and Wildlife Service, state and other federal agencies to update and implement recovery plans and conservation assessments for TES?	Wildlife TES goals 3, 4; guideline 1.	1-5 years	1-5 years	B
Snowmobiles	To what extent is the Forest providing snowmobile opportunities? What are the effects of snowmobiles on the physical, biological and social environment? How effective are Forest management practices in managing snowmobile use?	Motorized/Non-Motorized Trails goals 1-3; objectives 2 & 4.	1-5 years	1-5 years	A/B
Research Natural Areas (RNAs) and Candidate Research Natural Areas (cRNAs)	To what extent are RNAs and cRNAs being managed to protect their unique values and how are they contributing to research?	Land ownership goal 2; Prescribed Natural Fire goal 1; objective 1; Land Ownership goal 2.	10 years	10 years	B

APPENDICES

to the

2006 Forest Plan



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APPENDIX A

Proposed and Probable Practices, Goods Produced and Other Information

Allowable Sale Quantity (ASQ)

The allowable sale quantity (ASQ) is the ***maximum*** amount of volume that may be offered and sold during a given decade of Forest Plan implementation from land identified as suited for timber management.

During Decades 1 and 2 (the first and second 10 years of Plan implementation), the ASQ is 1.09 billion board feet (1.90 billion cubic feet).

The amount of timber that may be sold annually may exceed 109 million board feet as long as the decadal ASQ is not exceeded. Figure A-1 shows the volumes that can be harvested in each decade on a long term, sustained yield capacity. Decadal volumes vary by less than five percent and differences are considered to be negligible because of the accuracy of data and yield estimates.

Figure A-1. Total Volumes that can be harvested on a long-term sustained yield capacity.

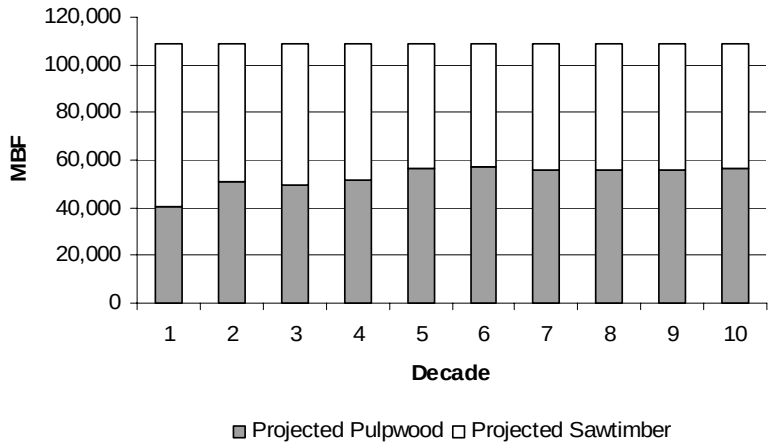


Table A-1. Timber Land Suitability

Land Classification[1]	Selected Alternative
1. National Forest Lands.	895,313
2. Non-Forest (includes water and permanent openings.	93,254
3. Lands withdrawn from timber production by Congress, the Secretary of Agriculture, or the Chief of the Forest Service. Includes wildernesses, Dukes Experimental Forest, research natural areas, Grand Island National Recreation Area, designated roadless areas and the wild segments of wild and scenic rivers.	57,178
4. Forest lands not capable of producing crops of industrial wood.	0
5. Forest lands physically unsuited.	o
6. Forest lands – inadequate information.	65,795
7. Tentatively suited forest lands.	679,086
8. Forest lands not appropriate for timber management. (Includes lands managed as openings, not cost-effective, candidate research natural areas, special areas, semi-primitive non-motorized areas, and designated old growth in Alternatives 2-4).	100,625
9. Unsuited Forest Lands (Items 2+3+4+5+6+8).	316,852
10. Total Suited Lands (items 1 – 9)	**578,461**

[1]Acres represent a top down approach to eliminated double counting.

Timber Land Suitability

Land identified as suitable for timber management includes producing timber as part of multiple use direction. These are lands that contribute to the timber sale program on a regularly scheduled basis. Table A-1 shows how acres of these lands compare to the total acreage of National Forest System land.

Proposed (Decade 1) and Probable (Decade 2) Management Practices

Tables A-2 and A-3 list the proposed and probable silvicultural practices that would be used to move toward the vegetative and other multiple-use desired conditions and objectives of the Forest Plan.

The tables display the amount of each harvest treatment for the first two decades of plan implementation based upon modeling. Actual treatments during plan implementation may vary from these modeled outputs.

Regeneration treatments set the tree stand back to age zero, meeting the seedling class objectives for each landscape ecosystem.

Uneven-aged treatments are intended to create and maintain an uneven-aged condition.

Table A-2 Forest Wide Harvest Treatments (acres)

Forest Cover Types & Harvest Treatments*	Summary	
	1st Decade	2nd Decade
Openings Maintenance		
Prescribed Fire	0	10,400
Aspen Treated		
Regeneration	18,900	6,000
Thinning	9,600	3,900
Jack Pine Treated		
Regeneration	12,100	9,000
Thinning	2,300	300
Mid Seral Treated		
Regeneration	2,500	10,300
Thinning	37,300	25,100
Late Seral Treated		
Regeneration	17,700	35,600
Thinning	44,200	28,300
Improvement/Selection	38,200	39,200
Totals Treated		
Regeneration	51,100	60,900
Thinning	93,400	57,600
Improvement/Selection	38,200	39,200

* Regeneration harvest treatment includes clear cuts, shelterwoods, shelterwood removal and seed tree methods.

Thinning harvest treatments in aspen and jack pine forest cover types remove the aspen and jack pine trees while retaining the mid or late seral tree component converting the forest to another type.

Table A-3 Forest Wide Harvest Treatments by ELT (acres)

Forest Cover Types & Harvest Treatments	Ecological Land Type (ELT)							
	10 / 20		30		40 / 50 / 90		60	
	1st Decade	2nd Decade	1st Decade	2nd Decade	1st Decade	2nd Decade	1st Decade	2nd Decade
Openings								
Prescribed Fire	0	10,300	0	300	0	100	0	0
Aspen								
Regeneration	5,600	1,200	2,600	400	4,900	3,200	2,800	0
Thinning	3,200	400	1,000	0	2,500	1,900	2,900	1,600
Jack Pine								
Regeneration	6,900	6,900	900	100	0	0	2,600	1,300
Thinning	0	0	400	0	0	0	1,500	300
Mid Seral								
Regeneration	0	0	400	5,500	300	700	1,500	3,400
Thinning	1,300	5,400	23,100	9,200	5,600	1,100	3,200	7,200
Late Seral								
Regeneration	7,200	20,100	2,300	1,100	4,000	8,100	600	1,700
Thinning	30,000	13,500	900	2,800	6,000	7,500	6,800	2,500
Improvement/Selection	3,300	1,500	200	700	33,700	33,400	800	2,800
Totals								
Regeneration	19,700	28,200	6,200	7,100	9,200	12,000	7,500	6,400
Thinning	34,500	19,300	25,400	12,000	14,100	10,500	14,400	11,600
Improvement/Selection	3,300	1,500	200	700	33,700	33,400	800	2,800

Table A-3 (cont.) Forest Wide Harvest Treatments by ELT (acres)

Forest Cover Types & Harvest Treatments	Ecological Land Type (ELT)							
	70 A		70 B		80 A		80 B	
	1st Decade	2nd Decade	1st Decade	2nd Decade	1st Decade	2nd Decade	1st Decade	2nd Decade
Openings								
Prescribed Fire	0	0	0	0	0	0	0	0
Aspen								
Regeneration	500	0	2,400	1,200	100	0	0	0
Thinning	0	0	0	0	0	0	0	0
Jack Pine								
Regeneration	1,700	700	0	0	0	0	0	0
Thinning	400	0	0	0	0	0	0	0
Mid Seral								
Regeneration	200	600	0	0	100	0	0	100
Thinning	100	100	4,000	2,100	0	0	0	0
Late Seral								
Regeneration	0	600	100	700	100	100	3,400	3,200
Thinning	300	300	200	1,700	0	0	0	0
Improvement/Selection	100	100	100	700	0	0	0	0
Totals								
Regeneration	2,400	1,900	2,500	1,900	200	100	3,400	3,300
Thinning	800	400	4,200	3,800	0	0	0	0
Improvement/Selection	100	100	100	700	0	0	0	0

APPENDIX B

Management Indicator Species and Habitats

This appendix lists Management Indicator Species, the habitat conditions they are an indicator for, and their associated species.

Management Indicators Species	Habitat Conditions and Species Associated with Management Indicators Species
Sharp-tailed grouse	**Habitats**: Open land and early-successional of jack pine **Associated Species**: black-backed woodpecker, eastern bluebird, Kirtland's warbler, meadow jumping mouse, short-eared owl
American marten	**Habitats:** Late-successional of northern hardwoods and conifer dominated forests **Associated Species:** eastern chipmunk, gray wolf, northern goshawk, pileated woodpecker, woodland jumping mouse
Ruffed grouse	**Habitats:** Early-successional of aspen **Associated Species:** American woodcock, golden-winged warbler, indigo bunting, snowshoe hare, white-tailed deer
Brook trout	**Habitats:** Coldwater stream **Associated Species:** blacknose dace, brook stickleback, longnose dace, mottled sculpin

APPENDIX C

Visual Quality Objectives

Maps C-1 and C-2 provide visual quality objectives for the Hiawatha National Forest.

Note: Individual stand changes to VQO are not reflected at this mapping scale. Please reference the Final EIS Visual Quality Section and specific stand database(s) for additional information.

Figure C-1. Hiawatha National Forest Visual Quality Objectives map for the East Unit

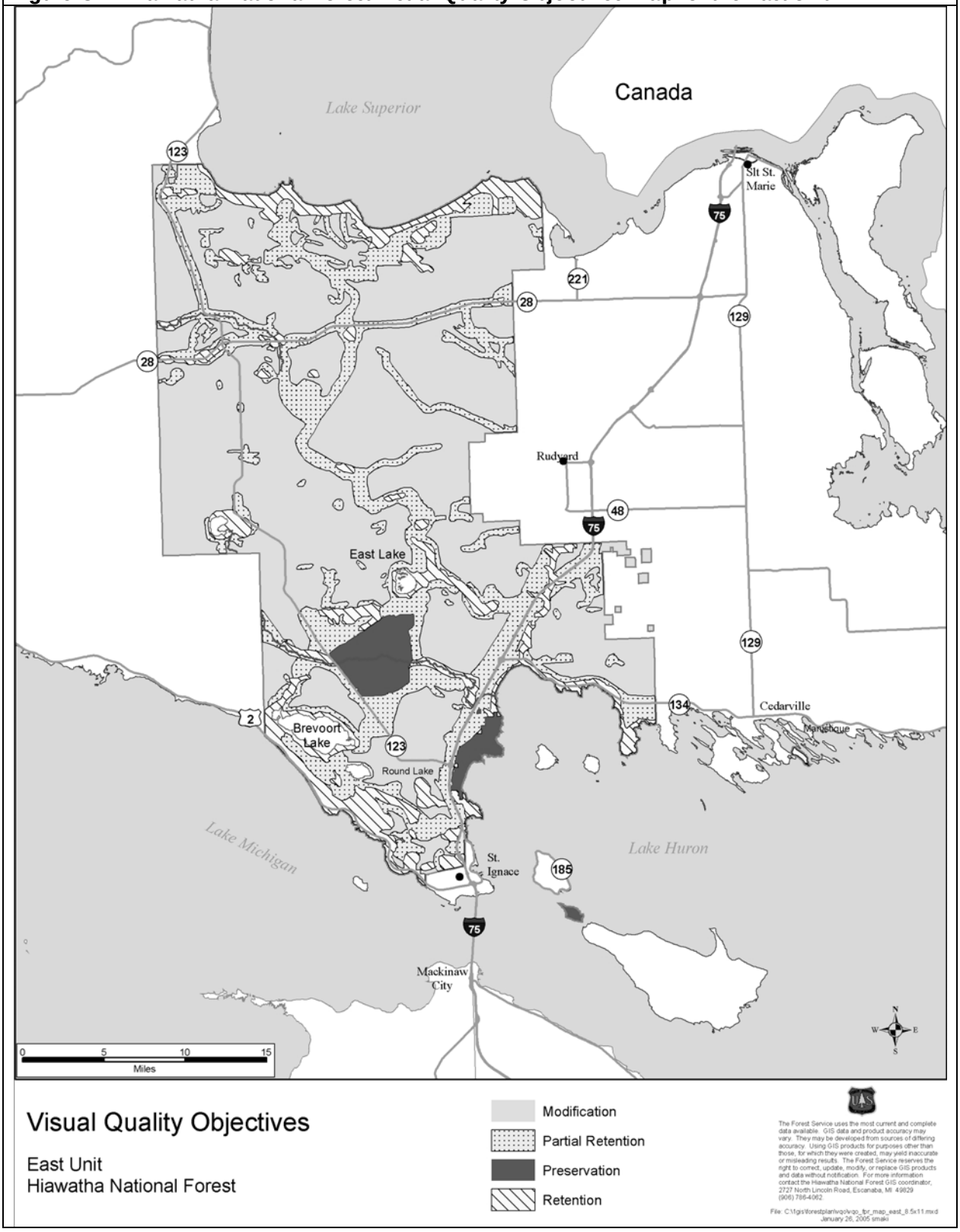
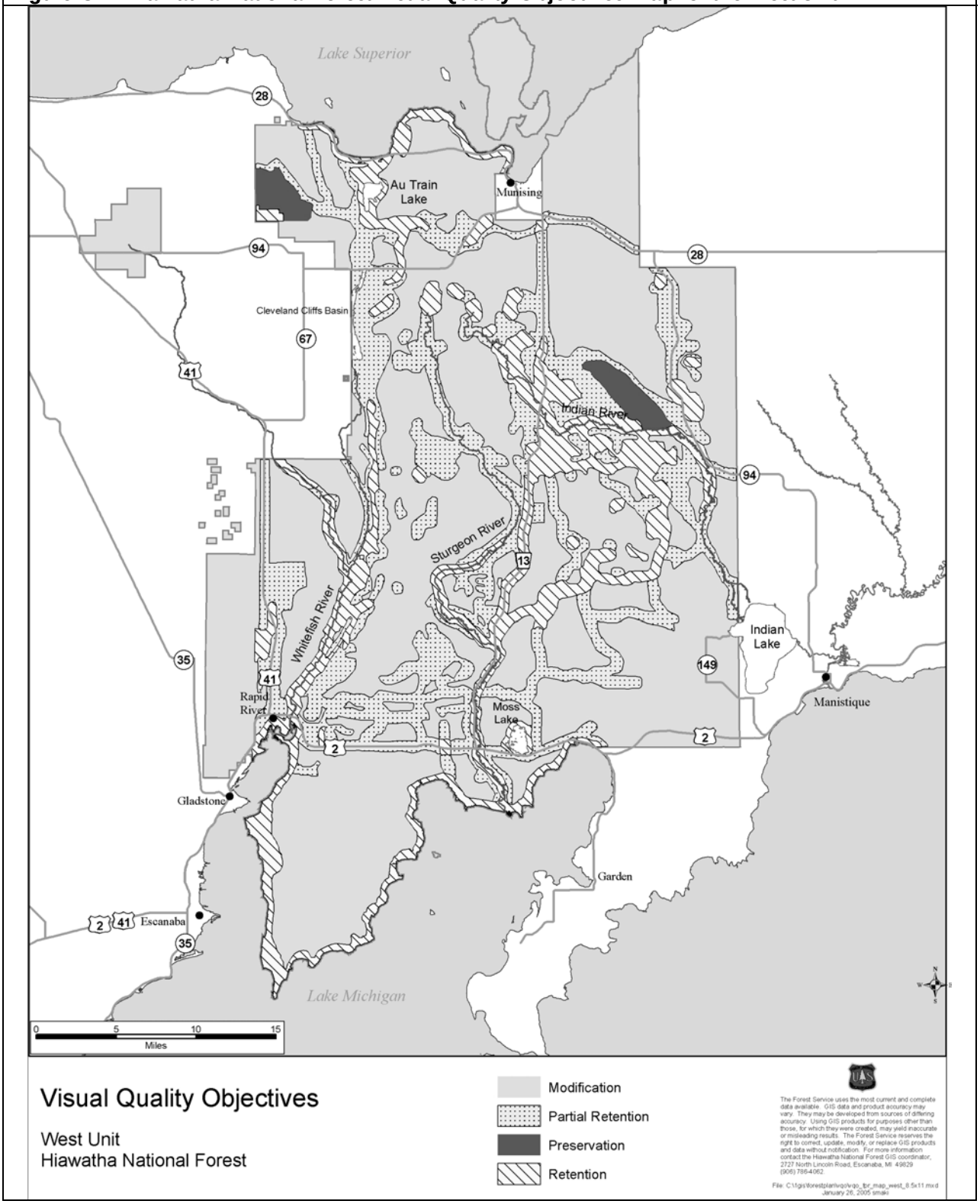


Figure C-2. Hiawatha National Forest Visual Quality Objectives map for the West Unit



APPENDIX D

Seral Class Definitions

Vegetation composition goals are based on ecological land type (ELT) and seral class. The five seral classes used on the Hiawatha are: open, aspen, jack pine, mid and late. Each ecological land type has a unique mix of species that define the seral classes within that ELT. Table D -1 provides a crosswalk between forest cover type and seral classes by ELT.

Table D-1. Forest Cover Types Representing Seral Classes by Ecological Land Type

ELT	Open	Aspen	Jack Pine	Mid Seral	Late Seral
10/20	98, 99	91, 92, 93, 94, 95	01	11, 16, 17, 18, 19, 41, 47, 48, 49, 55, 83	02, 03, 04, 05, 71, 76, 79, 81, 84, 85, 86, 89
30	98, 99	91, 92, 93, 94, 95	01	02, 11, 16, 41, 47, 48, 49, 55, 83	03, 04, 05, 76, 81, 82, 84, 85, 86, 89
40/50/90	98, 99	91, 92, 93, 94, 95	01	02, 03, 11, 16, 19, 41, 49, 55, 83	04, 05, 71, 76, 79, 81, 82, 84, 85, 86, 87, 89
60	97, 98, 99	91, 92, 93, 94	01	02, 11, 15, 16, 18, 19, 41, 48, 49, 55, 83, 95	03, 04, 05, 12, 14, 17, 71, 76, 79, 81, 82, 84, 85, 86, 87, 89
70A	97, 98, 99	91, 92, 93, 94	01	11, 15, 16, 18, 19, 95	03, 04, 05, 12, 14, 17, 71, 76, 79, 84
70B	97, 98, 99	91, 92, 93, 94	01	11, 15, 16, 18, 19, 95	03, 04, 05, 12, 14, 17, 71, 76, 79, 84
80A	97, 98, 99	N/A	N/A	01, 11, 18, 91, 92, 93, 94, 95	03, 04, 05, 12, 14, 15, 17, 19, 71
80B	97, 98, 99	N/A	N/A	11, 15, 16, 18, 19, 91, 92, 93, 94, 95	03, 04, 05, 12, 14, 15, 17, 19, 71, 79

The following forest cover type codes were used to define the seral classes:

Code Description

01 ---- Jack pine
02 ---- Red pine
03 ---- White pine
04 ---- White pine-hemlock
05 ---- Hemlock
11----- Balsam fir - aspen - paper birch
12----- Black spruce
14----- Northern white cedar
15----- Tamarack
16 ---- White spruce - balsam fir - Norway spruce
17----- Upland black spruce
18 ---- Mixed swamp conifer
19 ---- Cedar - aspen - paper birch
41----- White pine - northern red oak - white ash
48 ---- Jack pine - oak
49 ---- Red pine - oak
55 ---- Northern red oak
71----- Black ash - American elm - red maple
76 ---- Red maple (wet site)

Code Description

79 -----Mixed lowland hardwoods
81 -----Sugar maple - beech - yellow birch
82 -----Sugar maple - basswood
83 -----Black cherry - white ash - yellow poplar
84 -----Red maple (dry site)
85 -----Sugar maple
86 -----Beech
87 -----Sugar maple - beech - yellow birch - red spruce
89 -----Mixed hardwoods (maple, basswood, white ash and paper birch)
91 -----Quaking aspen
92 -----Paper birch
93 -----Bigtooth aspen
94 -----Balsam poplar
95 -----Aspen - white spruce - balsam fir
97 -----Lowland brush
98 -----Upland brush
99 -----Open

APPENDIX E

Glossary of Forest Terminology

The variety of technical terms and inevitable acronyms used in the planning process can make for some confusing reading and even more confusing conversations. The following collection of definitions and descriptions should clarify some of the terminology used in the planning documents. The descriptions and definitions are in alphabetical order.

A-B

ACCESS: The opportunity to approach, enter and make use of public or private land.

- **BACK-IN ACCESS:** Sites where vehicles carrying or towing a boat have to back into the water to unload. Back-in ramps are native vegetation, sand, gravel or concrete and generally include a single-lane ramp. Parking is provided.
- **CARRY-IN ACCESS:** Either a footpath or a canoe/boat slide is present. Parking may be available.
- **NO ACCESS:** No visible access for watercraft exists.

ACCESSIBILITY: Refers to striving to be in compliance with the Americans with Disabilities Act (ADA), section 504.

AIR QUALITY: The composition of air with respect to quantities of pollution therein. Used most frequently in connection with the standards of maximum acceptable pollution concentrations. Air quality classes (I, II or III) are designations for the level of protection given to geographic areas of the country. This classification denotes the increment above which deterioration of air quality would be regarded as significant and consequently not allowed.

- **Class I** allows the least deterioration. National parks, monuments and wildernesses larger than 5,000 acres in size are designated as Class I areas.
- **Class II** is much less restrictive than Class I. The Hiawatha National Forest has been designated as a Class II area
- **Class III** is the least restrictive

ALLOWABLE SALE QUANTITY (ASQ): The quantity of timber that may be sold from the suited lands identified in the Forest Plan for a specified time period. For the Hiawatha National Forest, the time period is 10 years. The ASQ is usually expressed on an annual basis as the "average annual allowable sale quantity." The quantity is a ceiling. It is not a future sales level projection or a target, and it does not reflect all of the factors that may influence future sale levels.

ALL TERRAIN VEHICLE (ATV): A type of off-highway vehicle that travels on three or more low-pressure tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator (FSH 2309.18 zero code).

ANALYSIS OF THE MANAGEMENT SITUATION (AMS): Using the resource assessments and the Forest Plan as background, the AMS:

- Documents existing Forest Plan direction for a particular resource concern
- Speculates on the expected results should the existing direction continue
- Evaluates the kinds of problems which may occur should the existing direction continue
- Discusses whether these problems need to be resolved
- Determines the potential to resolve them in a Plan revision. If the Plan revision can resolve the problems, the AMS proposes a range of values where a possible solution may occur

ARTERIAL ROADS: Roads that provide service to large land areas and usually connect with public highways or other forest arterial roads to form an integrated network of primary travel routes. The location and standard often are determined by a demand for maximum mobility and travel efficiency rather than specific resource management service. It is usually developed and operated for long-term land and resource management purposes and continual service.

ATTAINMENT AREA: A geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard) for the pollutant. An area may have on acceptable level for one criteria air pollutant, but may have unacceptable levels for others. Thus, an area could be both attainment and non-attainment at the same time. Attainment areas are defined using federal pollutant limits set by the Environmental Protection Agency (EPA).

BENCHMARK: A set of estimates used to establish standards to compare alternatives. Benchmarks include the minimum level, maximum timber harvest and maximum present net value (PNV).

BIOLOGICAL DIVERSITY: The variety of life forms and processes within an area. Included in the consideration of diversity are the complexities of genetic variation, the number and distribution of species, and the ways in which the variety of biologic communities interact and function.

BOAT SLIDE: A constructed surface to slide a boat along to access a lake or stream.

CANDIDATE RESEARCH NATURAL AREA (cRNA): An area which has the potential for designation as a Research Natural Area, but needs formal evaluation.

CANOE TRAIL: A identified/designated water route used by canoes and kayaks**.** The route may be on a stream, a river or on a lake.

CARRYING CAPACITY: In terms of recreation use, physical carrying capacity is the maximum amount of use that can take place without unacceptable ecological change, soil compaction, erosion, water pollution, littering and destruction of vegetation. Social carrying capacity is the maximum amount of use that can occur without unacceptable conflict and interface among visitors.

CDS (Combined Data System): Forest Service database system that contains information about stands in the Forest.

COMMERCIAL FOREST LAND: Forest land that is producing or is capable of producing crops of industrial wood and:

- Has not been withdrawn by Congress, the Secretary of Agriculture or the Chief of the Forest Service;
- Existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions;
- Existing technology and knowledge as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting.

COMMON VARIETY MINERALS: Generally common building materials including sand, stone and gravel.

CONNECTIVITY: Condition in which the spatial arrangement of land covertypes allows organisms and ecological processes (such as disturbance) to move across the landscape.

COUNCIL ON ENVIRONMENTAL QUALITY (CEQ): An Executive Office of the President whose members are appointed by the President. CEQ recommends national policies to promote the improvement of the quality of the environment.

COARSE WOODY DEBRIS: Stumps and fallen trunks and limbs of more than six-inch diameter at the large end.

CROSS-COUNTRY TRAVEL: The use of OHVs, horses, mountain bikes and snowmobiles, etc. off designated trails, roads or routes.

CULVERTS (Major): A culvert that provides an opening of more than 35 square feet (3.3 m^2) in a single or multiple installation. It may consist of a single round pipe, pipe arch, open or closed-bottom box, bottomless arch, or multiple installation of these structures placed adjacent or contiguous as a unit.

CULVERTS (Minor): Any culvert not classified as a major culvert.

DECISION CRITERIA: The primary rules or standards for evaluating alternatives and selecting a preferred alternative.

DEFERRED MAINTENANCE: Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period.

DESIGNATED: To reference or identify an area, facility, road, trail or travelway identified for specific use or uses by means of Forest Order, signing, recreation map, law, policy or regulation.

DESIGNATED ROAD, TRAIL OR AREA: A National Forest System road, trail, or an area on NFS lands that is designated for motor vehicle use pursuant to 212.51 on a motor vehicle use map.

DESIRED CONDITION: *See Goal/Desired Condition.*

DESIRED NON-NATIVE SPECIES: Species of plants or animals that are not indigenous to an area, but are wanted for their contribution to high social, economic or cultural value.

DEVELOPMENT LEVELS (RECREATION): A formally established criterion which prescribes the intensity of development (site modification) of an area. The recreation development levels used on the Hiawatha National Forest are:

- **Level 1:** Almost no site modification. Rustic or rudimentary improvements are designed for protection of the site rather than the comfort of the users. Use of synthetic materials is excluded. Minimum controls are subtle. There is no obvious regimentation of users. Spacing is informal and extended to minimize contacts between users. Primary access is usually over primitive roads.
- **Level 2:** Minimal site modification. Rustic or rudimentary improvements are designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials is avoided. Minimum controls are subtle. There is little obvious regimentation of users. Spacing is informal and extended to minimize contacts between users. Motorized access may be provided or permitted. Primary access is over primitive roads. Interpretive services is informal, almost subliminal.
- **Level 3:** Moderate site modification. Facilities are designed equally for protection of the site and for comfort of the users. Contemporary/ rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls are usually provided. Roads may be hard-surfaced and trails formalized. Development density is about 3 family units per acre. Primary access may be over high standard roads. Interpretive services is informal, but generally direct.
- **Level 4:** Rural setting with heavily modified sites. Some facilities are designed strictly for the comfort and convenience of users. Luxury facilities are not provided. Facility design may incorporate synthetic materials. Extensive use is made of artificial surfacing of roads or trails. Vehicular traffic control is usually obvious. Primary access is usually over paved roads. Development density is 3 to 5 family units per acre. Plant materials are usually native. Interpretive services are often formal or structured.
- **Level 5:** Urban setting with extensive site modification. Facilities are mostly designed for the comfort and convenience of the users and usually include flush toilets and may include showers, bathhouses, laundry facilities and electrical hook-ups. Synthetic materials are commonly used. Extensive use is made of formal walks or surfaced trails. Regimentation of users is obvious. Access is usually by high-speed highways. Development density is 5 or more family units per acre. Plant materials may be foreign to the environment. Formal interpretive services are usually available. Designs are formalized and architecture may be contemporary. Mowed lawns and clipped shrubs are not unusual.

DEVELOPED RECREATION ACTIVITIES: Outdoor recreation activities that occur in a relatively small but defined area where concentrations of users are evident such as picnic areas, campgrounds, trail heads and ski areas.

DEVELOPED RECREATION SITES: Improvements or facilities that provide recreation opportunities in a particular area. Facilities might include roads, parking lots, picnic tables, toilets, drinking water, ski lifts and buildings.

DIAMETER AT BREAST HEIGHT (DBH): The diameter of the stem of a tree measured at breast height (4.5 feet from the ground).

DISPERSED CAMPSITE (also, known as a primitive campsite or rustic campsite)**:** A campsite that is approximately 600-750 square feet in size. Development of a dispersed site may range from no site improvements to minimal improvements designed to protect the natural resources of the site or area.

DISPERSED RECREATION ACTIVITIES: Recreation that does not occur in a developed recreation site, such as hunting, backpacking, OHV trail riding and scenic driving. Dispersed recreation activities may require facilities for safeguarding visitors and protecting resources.

ECOLOGICAL LANDTYPES (ELTs): A framework that allows natural resource managers to identify, describe and map units of land with similar physical and biological characteristics at scales suitable for natural resources planning and management. (See Appendix I in the FEIS).

ECOSYSTEM: A community of living plants and animals interacting with each other and with their physical environment. A geographic area where it is meaningful to address the interrelationships with human social systems, sources of energy and the ecological processes that shape changes over time.

ECOSYSTEM RESTORATION: The process of reestablishing, to the extent possible, the structure, function and composition of ecosystems.

ELEMENT OCCURRENCE: Population of a species or an example of a natural community or natural feature occurring at a specific, ecologically appropriate location.

ENDANGERED SPECIES: Official designation by U.S. Fish &Wildlife Service applied to any species that is in danger of extinction throughout all or a significant portion of its range.

EPHEMERAL PONDS: Ponds that occur as the direct result of rainfall or snowmelt.

EPHEMERAL STREAMS: Streams that flow only as the direct result of rainfall or snowmelt. They have no permanent flow.

EVEN-AGED MANAGEMENT: The application of a combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size for regeneration, and is harvested.

EXTIRPATED SPECIES: Species that formerly occurred regularly in an area but have disappeared and are not expected to recur without human assistance. This differs from extinct species which have disappeared entirely from the planet.

F-G-H

FAUNA: The animal life of an area.

FLORA: The plant life of an area.

FOREST INVENTORY AND ANALYSIS (FIA): The FIA Program collects, analyzes, and reports information on the status and trends of America's forests: how much forest exists, where it exists, who owns it, and how it is changing, as well as how the trees and other forest vegetation are growing and how much has died or has been removed in recent years.

FOREST PLAN: The Land and Resource Management Plan is a document that guides all natural resource management activity and establishes management standards and guidelines for a national forest, embodying the provisions of the National Forest Management Act of 1976.

FOREST PLAN REVISION: A formal modification of a forest plan to address changes in the natural, social and economic environment; new information about resources on and off national forests; and new scientific knowledge which shed new light on the assumptions of the existing plan, and make the predicted impacts of the existing plan less accurate and/or acceptable. Federal planning regulations require the Forest Service to revise a forest plan every 10-15 years.

FOREST ROAD: A hard-surfaced travelway, gravel or dirt road, fire lane, abandoned railroad right-of-way, logging road, or a way capable of travel by a four-wheeled vehicle.

FOREST TRANSPORTATION ATLAS: A display of the system of roads, trails and airfields of an administrative unit.

FOREST TRANSPORTATION FACILITY: A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system.

FOUR-WHEEL DRIVE VEHICLE (4WD): A full-sized vehicle with four-wheel drive, which is registered with the state and is legal to operate on public highways. Any sport utility vehicle would fall in this class, although a 4WD may be a modified vehicle intended primarily for off-highway use.

FRAGMENTATION: Breaking up of contiguous areas into progressively smaller patches of increasing degrees of isolation from each other.

FS VEG (Field Sample Vegetation)**:** Forest Service database system that is replacing CDS. It contains plot information about forest stands.

FUTURE USE DETERMINATION: A facility evaluation of whether the use of a facility and/or its improvements should be continued; whether the facility or improvements should be made available for use by others, and if so, under what condition.

GAME SPECIES: Those wildlife species that are commonly hunted, trapped or fished.

GEOGRAPHICAL INFORMATION SYSTEMS (GIS): Computerized method used for inventory and analysis, which can overlay large volumes of spatial data to identify how features interrelate.

GOAL/DESIRED CONDITION: A statement that describes a desired condition to be achieved some time in the future (36 CFR 219.3). Goals address forest priorities and issues. They are broad and general in scope with no specific timeframe, and can be developed for the entire forest or for specific management areas. In either case, they set the context for management direction by providing a broad, user-friendly snapshot of what the forest or management area will look like when goals, objectives, standards and guidelines have been met.

GUIDELINE: Permissions and limitations that should be implemented in most situations. Deviation from a guideline does not require a forest plan amendment, but the rationale must be disclosed in the project decision documents.

HABITAT: The environment in which an organism (plant or animal) lives.

HARVEST METHODS:

- **Clearcut**: A regeneration cut where all merchantable trees in the stand are cut.
- **Improvement:** An intermediate cut to develop uneven-age structure in an even-aged or two-storied stand. The objective is to develop uneven-aged stands from even-aged stands.
- **Patch Clearcut**: A regeneration cut of all merchantable trees on areas from one-fifth of an acre to 10 acres. Patches are areas too small to be delineated as separated stands.
- **Removal Cut**: An intermediate cut to remove the overstory from an area regenerated by the shelterwood or seed tree method. The cutting activity should be used where the remaining overstory is to be removed in only one cut.
- **Seed Tree**: A regeneration cut to obtain natural regeneration by seeding from leave trees. The seed cut retains enough trees to provide about half or more shade on the ground.
- **Selection**: An uneven-aged regeneration cutting method where the objective is to maintain a multi-aged structure by removing some trees in all size classes either singly, in small groups or in strips.
- **Shelterwood**: A regeneration cut to obtain natural regeneration by seeding from leave trees and by providing shade from leave trees.
- **Strip Clearcut**: A regeneration cut of strips through the stand with widths not more than twice the general stand height.
- **Thinning:** An intermediate cut designed to enhance the growth and quality of the remaining trees.

HYDROLOGIC UNIT CODE (HUC): The United States is divided and subdivided into successively smaller hydrologic units which are classified into four levels: regions, sub-regions, accounting units and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.

The **first level** of classification divides the nation into 21 major geographic areas or regions. The Hiawatha is located in Region 4 - the Great Lakes Region: The drainage within the United States that ultimately discharges into (a) the Great Lakes system, including the lake surfaces, bays, and islands; and (b) the St. Lawrence River to the Riviere Richelieu drainage boundary.

The **second level** of classification divides the 21 regions into 222 sub-regions. A sub-region includes the area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage area.

The **third level** subdivides many of the sub-regions into accounting units. These 352 hydrologic accounting units nest within or are equivalent to the sub-regions.

The **fourth level** of classification is the cataloging unit, the smallest element in the hierarchy of hydrologic units. (Efforts are underway to add further levels of subdivisions.) A cataloging unit is a geographic area representing part of all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. These units subdivide the sub-regions and accounting units into smaller areas. There are 2,150 Cataloging Units (sometimes called watersheds) in the nation.

The **fifth level** HUC are watershed between 40,000 to 250,000 acres.

The **sixth level** HUC are watersheds between 10,000 to 40,000 acres.

INHOLDING: Non-federally owned lands or interest in lands located within the boundaries of a National Forest System Unit.

INTERIOR FOREST: An area of late successional or old growth forest that is large enough and of an appropriate shape to provide conditions that minimize predation, parasitism, and microclimate fluctuations associated with forest edges. Interior forest conditions provide habitat for a diversity of wildlife and plant species.

JET SKI: See personal watercraft (PWC).

KARST: Geological landforms most often characterized by caves, underground streams, steep valleys and sink holes.

LAND EXCHANGE: A discretionary, voluntary transition involving mutual transfer of land or interest in land between the Secretary of Agriculture acting through the Forest Service and a non-federal entity, for the conveyance of federal land and acquisition of non-federal land.

LAND TYPE ASSOCIATION (LTA): An ecological unit that describes areas of common ecosystem characteristics and generally (but not always) numbering in the thousands of acres. LTAs are defined by similarities in general topography, geomorphic process, geology, soil and potential plant community patterns.

LANDSCAPE PATTERN: The spatial arrangement of forest patches composed of different species or successional stages. It may also be applied to patches of different land uses, such as residential, commercial or agricultural. A landscape is a heterogeneous land area composed of a cluster of interacting ecosystems that is repeated in similar form throughout.

LARGE WOODY DEBRIS: Large pieces of wood in stream channels or on the ground, includes logs, pieces of logs and large chucks of wood; provides streambed stability and/or habitat complexity. Also called coarse woody debris or down woody debris.

LEASABLE MINERALS: These include deposits of zinc, copper, gold, coal, sulfur phosphates, oil shale, sodium potassium, oil and natural gas.

LEAVE NO TRACE: A program that promotes and inspires responsible outdoor recreation through education and research.

LONG-TERM SUSTAINED YIELD (LTSY) CAPACITY: The highest uniform wood yield from lands being managed for timber production that may be sustained under the goals and objectives of forest plans.

MAINTENANCE LEVELS (Roads): Each Forest System road is to be maintained to a level commensurate with the planned function and use of the road. The intended level of maintenance to be received by each road is termed the Objective Maintenance Level (OML), which are divided into five levels of maintenance intensity. OML-1 is the lowest level and OML-5 is the highest level.

- **ML-1:** Intermittent service roads during the time they are closed to vehicular traffic. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities.
- **ML-2:** Roads open for public uses or permitted by high clearance vehicles. Passenger car traffic is not a priority.
- **ML-3:** Roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
- **ML-4:** Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Some roads may be paved and/or dust-abated.
- **ML-5:** Roads that provide a high degree of user comfort and convenience. These roads are normally paved.

MANAGEMENT AREAS: A specific geographic location on the forest where specific management direction will be applied. The Hiawatha is divided into 21 potential management areas.

MANAGEMENT INDICATOR SPECIES (MIS): Species or habitats identified in the planning process that are used to monitor the effects of management activities on populations of wildlife and fish species, including those species that are ecologically, socially or economically important.

MAST PRODUCING TREES: Trees that provide nutrition in the form of fruit and nuts.

MITIGATION: Action taken for the purpose of eliminating, reducing or minimizing non-desirable impacts of management activities on the environment.

MONITORING: The process of collecting information to evaluate whether the objective and anticipated or assumed results of a management plan are being realized, or if implementation is proceeding as planned.

MOTORCYCLE: A two or three-wheeled motor vehicle, which has a gasoline engine with more than 50 cubic centimeters (cc) piston displacement and two brake horsepower and a top speed over 30 miles per hour. A motorized two or three-wheeled vehicle which meets or exceeds these specifications is classified as a motorcycle even if it has a working pedaling system.

MOTOR VEHICLE: Any vehicle which is self-propelled, other than: 1) a vehicle operated on rails; and 2) any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area.

MOTOR VEHICLE USE MAP: A map reflecting designated roads, trails and areas on an administrative unit or a Ranger District of the National Forest System.

MULTI-PASSENGER (UTILITY) ATV (MATV): Any motorized , off-highway vehicle 80 inches or less in width, having a dry weight of 1200 pounds or less that travels on 4 or more low pressure tires with multiple seating for up to 4 persons, and a 700 cc or less engine, as designed and sold by the manufacturer.

NATIONAL FOREST VISIT: The entry of one person upon a national forest to participate in recreation activities for an unspecified period of time. A national forest visit can be composed of multiple site visits.

NATIONAL FOREST VISITOR USE MONITORING (NVUM): A program designed to provide estimates of recreation and other visitor use on national forests.

NATIONAL TRAIL CLASS: A chronological classification of trail development on a scale ranging from Trail Class 1 to Trail Class 5. Each class is defined in terms of applicable tread and traffic flow, obstacles, constructed feature and trail elements, signs, typical recreation environment and experience:

- **Trail Class 1**: Minimal/undeveloped trail
- **Trail Class 2:** Simple/minor developed trail
- **Trail Class 3:** Developed/improved trail
- **Trail Class 4:** Highly developed trail
- **Trail Class 5:** Fully Developed trail

NATIVE SPECIES: With respect to a particular ecosystem, a species that historically occurs in that ecosystem. Native species do not include species introduced by humans.

NON-NATIVE INVASIVE SPECIES (NNIS): Any species that occupy an ecosystem outside its historical range. Invasive species are any non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive species are those species that spread from their original native habitat to one that is not their native habitat. NNIS explode in population because they are not in their original ecosystem where they were kept in check by many factors, such as parasites and predation. These species are frequently aggressive and difficult to manage. NNIS differ from noxious weeds in that NNIS can be animals or plants and they are strictly non-native species.

NOTICE OF INTENT (NOI): A formal statement by the Forest Service informing the public of its intent to revise the existing Land and Resource Management Plan. The NOI is published in the *Federal Register*.

NOXIOUS WEED: Any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health or the environment.

OBJECTIVE: A concise, time-specific statement of measurable planned results that respond to pre-established goals (36 CFR 219.3). Objectives are more specific and tangible than goals. Objectives are measurable, but they are not standards. They are budget-dependent and subject to forces beyond agency control.

OBLITERATION: The act of eliminating the functional characteristics of a travelway and re-establishing natural resource production capability. The intent is to make the corridor unusable as a road or a trail and stabilize it against soil loss.

OFF-HIGHWAY VEHICLE (OHV): Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain. Unless otherwise authorized on the Forest's Motor Vehicle Use Map, OHV use on the Hiawatha is restricted to ATVs, multi-passenger ATVs (MATV) and motorcycles.

OFF-HIGHWAY VEHICLE (OHV) AREA: A discrete, specifically delineated space that is designated for OHV use that is smaller, and in most cases much smaller, than a Ranger District.

OFF-ROAD VEHICLE (ORV) – any motorized vehicle designed for or capable of crossing cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (Travel Management Rule)

OLD GROWTH FOREST: Ecosystems where natural biological processes predominate and are characterized by older larger trees, native species, and minimal human disturbance. Old growth structural diversity includes multi-layered canopies, canopy gaps, tip-up mounds and an accumulation of dead woody material. Old growth tracts vary from small isolated forested areas to larger landscape complexes that may include ecologically important non-forested openings, younger patches produced by natural disturbances, wetlands and water bodies.

OPENINGS:

- **PERMANENT UPLAND OPENING**: A specific area where shrubs, forbs, grasses and/or sedges predominate and which is maintained in the open state either naturally or through active maintenance. A permanent opening would include maintained openings, small barrens communities, frost pockets and other natural openings.
- **TEMPORARY OPENING:** An area of grass/forbs and shrubs usually resulting from timber harvest that will be replaced by tree saplings over a period of a few years.

OUTSTANDINGLY REMARKABLE VALUES (ORV): River-related resource values that are rare, unique or exemplary, and are significant at a regional or national level. Usually associated with rivers that are part of the National Wild and Scenic Rivers program.

OVER SNOW VEHICLE: A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow.

PERSONAL WATERCRAFT (PWC): PWCs are commonly referred to as "jet skis," "air boats," etc. A PWC is an inboard boat that is less than 16 feet in length and powered by either a 2-stroke or 4-stroke engine. The engine drives a jet pump that pressurizes water to propel and steer the craft. With regard to management on the Hiawatha NF, "PWC" also includes amphibious machines (water to land and back) and hovercraft.

PESTS: Insects, diseases or animals that interfere with objectives for managing the forest.

PLANNING HORIZON: In the planning process, the overall time period that spans all activities covered in the analysis or plan, and all future conditions and effects of proposed actions that would influence the planning decisions.

PLANNING PERIOD: The time period before the Plan is reviewed for revision — 10 to 15 years. Management direction pertains to this timeframe.

PREFERRED ALTERNATIVE: The alternative favored for implementation by the Forest Service. It is selected by the deciding official as the best way to manage the forest. The decision is based on relative merits including physical, biological and economic considerations and agency statutory missions. The selected alternative then becomes the basis for the draft Forest Plan.

PRESENT NET VALUE (PNV): The measure of the economic value of a project when costs and revenues occur in different time periods. Future revenues and costs are "discounted" to the present by an interest rate that reflects the changing value of a dollar over time. PNV is used to compare project alternatives that have different cost and revenue flows.

PROBLEM STATEMENT: A concise summary of the management concerns for a particular resource area, as identified in the Analysis of the Management Situation (AMS). The problem statement identifies the specific concerns and a range of possible solutions. The Plan Revision establishes goals and objectives to resolve the problem statements; Plan Revision alternatives and the standards and guidelines identify the means to resolve the problem statements.

RARE II (ROADLESS AREA REVIEW AND EVALUATION): The national inventory of roadless and undeveloped areas within the national forests and grasslands which was completed in 1979.

RECREATION FACILITY: Any building, structure, trailhead, campground, parking area, Picnic ground, fishing pier or boat launch constructed and/or managed for the purpose of providing recreational use.

RECREATION RESIDENCE: House or cabin permitted on NFS land for recreational use of the owner, but not as a primary residence.

RECREATION OPPORTUNITY SPECTRUM (ROS): A formal Forest Service process designed to delineate, define and integrate outdoor recreation opportunities in land and resource management planning. ROS classes are used to describe all recreation opportunity areas – from natural, undisturbed and undeveloped to heavily used, modified and developed. ROS designations describe the kind of recreation experience one may have in a given part of the national forest. Classifications include:

- **PRIMITIVE (P):** An essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.
- **SEMI-PRIMITIVE MOTORIZED (SPM):** A predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Use of local, primitive, or collector roads with predominantly natural surfaces and trails suitable for motorbikes is permitted.
- **SEMI-PRIMITIVE NON-MOTORIZED (SPNM):** A predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Motorized recreation use is not permitted, but local roads used for other resource management may be present on a limited basis. Use of such roads is restricted to minimize impacts on recreational experience opportunities.
- **ROADED NATURAL (RN):** Predominantly natural-appearing environment with moderate evidence of the sights and sounds of humans. Such evidence usually harmonizes with the natural environment. Interactions between users may be moderate to high, with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities.
- **RURAL (R):** An area that is characterized by a natural environment, which has been substantially modified by development of structures, vegetative manipulation or pastoral agricultural development. Resource modification and utilization practices may be used to enhance specific recreation activities and maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate user densities are present away from developed sites. Facilities for intensified motorized use and parking are available.
- **URBAN (U):** The area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are often used to enhance specific recreation activities. Vegetation cover is often exotic and manicured. Sights and sounds of humans are predominant on site. Large numbers of users can be expected, both on site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

RECREATION VISITOR DAY (RVD): A recreation use measurement defined as one 12-hour visit for the purpose of a selected activity on the Forest. It may consist of one person for 12 hours, two people for 6 hours, or any combination that totals 12 hours.

RESEARCH NATURAL AREA (RNA): Areas which are permanently protected and maintained in a natural condition and which include:

- Unique ecosystems or ecological features
- Habitat for rare or sensitive species of plants and animals
- High-quality examples of common ecosystems

The national network of RNAs helps to protect genetic, species, ecosystem and landscape level biological diversity. RNAs that represent natural condition, common ecosystems, serve as a baseline or reference areas which can be compared with similar ecosystems undergoing silvicultural or other management prescriptions.

RESOURCE ASSESSMENT: A compilation of background material on the status of a particular resource area on a local, regional and national scale. The resource assessment describes the present condition of a particular resource, and speculates on the future condition of the resource based on current and expected trends.

RIPARIAN AREAS: Riparian areas include aquatic ecosystems, riparian ecosystems and wetlands. They are three-dimensional:

- **Longitudinal** (extending up and down streams and along the shores)
- **Lateral** (to the estimated boundary of land with direct land-water interactions)
- **Vertical** (from below the water table to above the canopy of mature site-potential trees)

RIPARIAN ECOSYSTEMS: Areas that are adjacent to aquatic ecosystems and extend away from the bank or shore to include lands with direct land-water interactions. Interactions may affect abiotic and biotic structure, function and composition. As a minimum, this will include all lands that are adjacent to surface water and which have hydric soils or distinctive vegetative communities that require free or unbound water.

RIPARIAN CORRIDORS: A site-specific area with boundaries established to define limits of management activities, and associated standards and guidelines, within riparian areas. Size and placement of riparian corridors will be determined by management objectives for riparian areas and may not include all of the riparian area.

ROAD: A motor vehicle travelway over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified or temporary (36 CFR 212.1).

CLASSIFIED ROADS: Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access. It includes state roads, county roads, privately-owned roads, NFS roads and other roads authorized by the Forest Service (36 CFR 212.1).

- **FOREST ROAD:** As defined in Title 23, Section 101 of the United States Code (23 USC 101), any road, wholly or partly within, or adjacent to and serving the NFS and which is necessary for the protection, administration and utilization of the National Forest System and the use and development of its resources.
- **NATIONAL FOREST SYSTEM ROAD:** A classified forest road under Forest Service jurisdiction. The term "National Forest System roads" is synonymous with the term "forest development roads" as used in 23 USC 205.
- **PUBLIC ROAD:** Any road or street under the jurisdiction of, and maintained by, a public authority and open to public travel (23 USC 101(a)).
- **PRIVATE ROAD:** A road under private ownership authorized by an easement to a private party or a road that provides access pursuant to a reserved or private right.
- **UNCLASSIFIED ROADS:** Roads on NFS lands that are not managed as part of the forest transportation system. It includes unplanned roads, abandoned travelways, off-road vehicle tracks that have not been designed and managed as a trail; and roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1).
- **TEMPORARY ROADS**: Roads authorized by contract, permit, lease, other written authorization or emergency operation not intended to be part of the forest transportation system and not necessary for long-term resource management (36 CFR 212.1) . Length is generally less than ½ mile.

ROAD CLOSURE: Process of closing a road to public vehicle traffic. Closures are used on system roads (roads intended for future use) to limit or prohibit particular types of travel.

ROAD CONSTRUCTION: Activity that results in the addition of forest classified or temporary road miles (36 CFR 212.1).

ROAD DECOMMISSIONING: Activities that result in the stabilization and restoration of unneeded roads to a more natural state.

ROAD DENSITY: Measure of the degree to which the length of road miles occupies a given land area. For example, one mile/square mile is one mile of road within a given square mile.

ROAD OBLITERATION: Process of removing a road from the landscape. Obliterations are used on system and temporary roads which are to be removed from service (decommissioned). It can include removing evidence of any access points; removing any structures from the roadbed (such as culverts, bridges, signs, guardrails, etc.) and restoring wetlands and riparian areas.

ROAD RECONSTRUCTION: Activity that results in improvement or realignment of an existing classified road as defined below:

- **ROAD IMPROVEMENT:** Activity that results in an increase of an existing road's traffic service level, expands its capacity or changes its original design function.
- **ROAD REALIGNMENT:** Activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway.

ROUTE/TRAVEL ROUTE: Used to specify a travelway for hiking, snowshoeing, dog sledding, horses, bikes, canoes, snowmobiles, OHVs, etc. "Trail" is used when there is a specifically constructed travelway for an assigned use/uses. "Route" is used when the travelway uses existing means such as rivers (for canoes), or OML 2-5 forest development roads and trails, in combination, for hiking, dog-sledding, horses, bikes, snowmobiles, OHVs, etc.

RUSTIC FACILITY: Facility designed to blend with the surroundings and prevent resource damage. Usually providing minimal necessary amenities and a minimum level of design complexity and may be rustic in appearance.

RUTTING: Depressions in the soil surface caused by animal, foot or mechanical traffic that alter the soil structure causing reduced infiltration of air and water into the soil.

SAWTIMBER: Any tree capable of yielding logs of a size and quality suitable for lumber production.

SENSITIVE SPECIES: Plant and animal species designated by a Regional Forester for which population viability is a concern.

SERAL STAGE: The stage of succession of a plant community that is transitional. If left alone, the seral stage will give way to another plant community that represents a further stage of succession (climax).

SIMPLE FACILITY: See Rustic Facility.

SIZE CLASS:

- **Size class 0**: Open lands
- **Size class 1:** Less than 4.5 feet in height
- **Size class 2:** From 4.5 feet to 4.9" diameter at breast height (DBH)
- **Size class 3:** From 5" to 8.9" DBH
- **Size class 4:** From 9" to 17.9" DBH
- **Size class 5:** Greater than 18" DBH

SKIDDING: Hauling logs by sliding from stump to a collection point.

SLASH: The residue left on the ground after timber cutting, a storm, fire or other event. Slash includes unused logs, uprooted stumps, broken or uprooted stems, branches, bark, etc.

SNAG: A standing dead tree.

SNOWMOBILE: A motor vehicle that is designed exclusively for use over snow that runs on tracks or skis.

SOIL COMPACTION: A physical change in soil properties that results in a decrease in porosity and an increase in soil-bulk density and strength.

SOIL PRODUCTIVITY: The capacity of a soil to produce a specific crop. Productivity depends on adequate moisture and soil nutrients, as well as favorable climate.

SOIL QUALITY: The inherent capacity of a specific soil, as determined by its inherent physical, chemical and biological characteristics, to perform its biologic, hydrologic and ecological functions (FSH 2509.18, 2002).

SPECIAL FOREST PRODUCTS: Goods and products resulting from use of the forest. These may include timber, firewood, plants, berries and forage.

SPECIAL USE PERMIT: An authorization that provides permission, without conveying an interest in land, to occupy and use National Forest System lands or facilities for specific purposes. Special Use Permits are both revocable and terminable**.**

SPECIES AT RISK: Federally-listed threatened, endangered, candidate or proposed species and other species for which loss of viability, including reduction in distribution or abundance, is a concern within the plan area. Other species at risk may include sensitive species and state-listed species.

SPECIES OF CONCERN: Species mentioned by the public for which they have some concern about the species' population or status. These species may or may not be of viability concern (threatened, endangered or sensitive), but other issues have been raised with respect to them.

SPECIES VIABILITY: A viable species consists of self-sustaining and interacting populations that are well-distributed through the species' range.

SPECTRUM: Computer software developed by the Forest Service's Ecosystem Management staff, in cooperation with the Rocky Mountain Forest and Range Experiment Station. The model optimizes management area prescriptions and allocation and schedules activities and outputs. It chooses among alternative solutions, given a set of constraints and an objective such as maximizing income or timber volume. The model evolved from the FORPLAN optimization model that was used in the initial round of forest planning.

STAND: A contiguous group of trees that occupies a specific area and is similar in species, age and condition.

STANDARD: Mandatory permissions and limitations needed to achieve the goals and objectives of the Plan. They are applicable to all foreseeable management situations; deviation from them requires an amendment to the Plan.

STOCKING LEVEL: The number of trees in an area compared to the desirable number of trees for best results, such as maximum wood production.

STREAM GEOMORPHOLOGY: The study of water and earth forces that form stream channels, drainage patterns, floodplains and explain erosion, transportation and deposition of sediments moved by water.

SUB SURFACE RIGHTS (MINERAL RIGHTS): Ownership of or right to use resources and improvements under the surface of the land.

SUCCESSION: A series of dynamic changes by which organisms succeed one another through plant community (seral) stages leading to a potential natural community or climax. In the forest plan revision process, these are generally referred to as early, mid and late successional stages. Stages are transitory in nature, and describe a plant community from its earliest growth condition to a condition of full maturity.

SUCCESSIONAL STAGE: A stage of plant community development as it moves from bare ground to climax. In the plan revision process, these generally relate to seral and size classes.

SUITABILITY: The appropriateness of applying certain resource management practices and uses to a particular area of land, as determined by an analysis of economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety or individual or combined management practices.

SUITED FOREST LAND: Land to be managed for timber production on a regulated basis.

SURFACE RIGHTS: Ownership of the land surface only; right to use the surface of the land.

SUSTAINABLE: The ability of an ecosystem to maintain ecological processes and functions, biological diversity and productivity over time.

SUSTAINED YIELD: The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the NFS without impairment of the productivity or the land. Sustained yield refers to the orderly, planned and recurrent harvest of living trees and is calculated considering only those acres deemed suitable.

THREATENED SPECIES: Official designation by USFWS applied to any species which is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.

TIMBERLAND: Forest land that is producing or capable of producing, in excess of 20 cubic feet per acre per year of industrial wood crops under natural conditions.

TIMBER PRODUCTION: The purposeful growing, tending, harvesting and regeneration of regulated crops of trees for cutting into logs, bolts, small roundwood or chips for industrial or consumer use. For purposes of forest planning, timber production does not include fuelwood or harvests from unsuitable lands (FSM 1900).

TOTAL ROAD/TRAIL DENSITY: The measure of all roads/trails per unit area, whether open or closed to identify uses.

TRAIL: Any constructed corridor on the land intended exclusively as a pathway for travel by foot, stock (i.e. horseback) or trail vehicles - such as bicycles, snowmobiles and OHVs. A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.

TRAIL MANAGEMENT OBJECTIVES (TMO): Objectives that guide the management of each trail and tier off of Forest Plan direction. These objectives account for trail uses, user preferences, settings, protection of resources and other management needs.

TRAFFIC SERVICE LEVEL (TSL): A classification system developed by the Forest Service to describe a road's significant traffic characteristics and operating conditions. These levels are identified as a result of transportation planning activities and include the traffic characteristics that are significant in the selection of design criteria and describe the operating conditions for the road. These characteristics are described in FSH 7709.56, Chapter 4.

TRAVEL MANAGEMENT ATLAS: An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps.

UNEVEN-AGED MANAGEMENT: The application of a combination of actions needed to simultaneously maintain continuous forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes. This can be applied to a specific stand of trees or an entire ecosystem.

UNSUITED FOREST LAND: Forest land not managed for timber production because:

- Congress, the Secretary of Agriculture or the Chief of the Forest Service has withdrawn it from suitability;
- It is not producing or is capable of producing crops of industrial wood;
- Technology is not available to prevent irreversible damage to soils productivity or watershed conditions;
- There is no reasonable assurance based on existing technology and knowledge, that it is possible to restock lands within 5 years after final harvest, as reflected in current research and experience;
- There is presently a lack of adequate information about responses to timber management activities;
- Timber management is inconsistent with or not cost-efficient in meeting the management requirements and multiple-use objectives stated in the Forest Plan.

NFMA allows timber harvest on lands designated as unsuited for other reasons such as salvage or to protect or meet other multiple use objectives and values. (36 CFR 219.27 (c) (1)).

USER DEVELOPED: An access pathway or structure developed by users or through use and is not part of the Forest management system nor maintained by the Forest Service.

UTILITY CORRIDOR: A tract of land of varying width forming a passageway through which various commodities such as oil, gas and electricity are transported.

VIEWSHED: Total visible area from a single observer position (e.g. an overlook), or the total visible area from multiple observer positions (e.g. a corridor). Viewsheds are accumulated seen-areas from highways, trails, campgrounds, towns, cities or other viewer locations.

VISUAL QUALITY OBJECTIVES: This is also known as "scenic integrity objectives" and is a measure of the degree to which a landscape is visually perceived to be complete. The ratings are:

- **PRESERVATION (P):** Management activities where only ecological changes take place. Only very low visual impact recreation facilities are allowed.
- **RETENTION (R):** Management activities are not visually evident. Activities may only repeat form, line, color or texture should be accomplished during management activities or immediately thereafter. Enhancement and rehabilitation projects are given highest priority for implement in retention foreground.
- **PARTIAL RETENTION (PR):** Management activities remain visually subordinate to the characteristic landscape. Reductions in contrast to line, form, color or texture should be accomplished within the first year or as soon as possible after project completion. Partial retention areas are second in priority for implementation of enhancement and rehabilitation projects.
- **MODIFICATION (M):** Management activities may dominate the original characteristic landscape. These activities must borrow from naturally established form, line, color and texture to appear natural or compatible to the natural surroundings. Few visual enhancement or rehabilitation projects will be planned in modification areas.
- **MAXIMUM MODIFICATION (MM):** Management activities of vegetation and landform alterations which may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. When viewed as foreground or middleground, they may not appear to completely borrow from naturally established form, line, color or texture. Alterations may also be out of scale or contain detail which is incongruent with natural occurrences as seen in foreground or middleground.
- **REHABILITATION:** A short-term classification used to restore landscapes to a desired visual quality objective.

WATERCRAFT:

- **MOTORIZED WATERCRAFT:** Boats and canoes powered by internal combustion motors, includes personal watercraft (PWC).
- **NON-MOTORIZED WATERCRAFT:** Boats, canoes and kayaks without internal combustion motors but may have an electric trolling motor.
- **PERSONAL WATERCRAFT (PWC):** PWCs are commonly referred to as "jet skis," "air boats," etc. A PWC is an inboard boat that is less than 16 feet in length and is powered by either a 2-stroke or 4-stroke engine. The engine drives a jet pump that pressurizes water to propel and steer the craft With regard to management, on the Hiawatha National Forest, "PWC" also includes amphibious machines (water to land and back), and hovercraft.

WHEELCHAIR OR MOBILITY DEVICE: A device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area. A person whose disability requires use of a wheelchair or mobility device may use a wheelchair or mobility device that meets this definition anywhere foot travel is permitted. (Forest Service Manual 2353.05 and ADA Title V Section 507c).

"**Designed solely for use by a mobility-impaired person,**" means that the original design and manufacture of the wheelchair was only for the purpose of mobility for a person who has a disability. This does not include after-market retrofit of a motorized unit to make it useable by a person who has a disability. "Suitable for indoor pedestrian use" means useable inside a home, mall, courthouse, etc.

WILDERNESS: The National Wilderness Preservation Act of 1964 defines wilderness as an area of undeveloped federal land designated by Congress that has the following characteristics:

1. It is affected primarily by the forces of nature, where people are visitors who do not remain. It may contain ecological, geological or other features of scientific, educational, scenic or historical value.
2. It possesses outstanding opportunities for solitude or a primitive and unconfined type of recreation.
3. It is an area large enough so that continued use will not change its unspoiled natural condition.

WINDTHROW: Trees uprooted by wind.

WOODY DEBRIS: Dead, natural woody material greater than 10 cm in diameter and longer than one meter, usually composed of boles and large branches. Various terms, such as large woody debris (LWD), coarse woody debris (CWD), and large organic debris (LOD), have been used to describe this material.