

United States  
Department of  
Agriculture



# Hiawatha National Forest

Forest Service

2006



## Executive Summary of the Final Environmental Impact Statement *To accompany the 2006 Land and Resource Management Plan*





# Executive Summary of the Final Environmental Impact Statement

*To accompany the 2006 Land and  
Resource Management Plan*

*Alger, Cheboygan, Chippewa, Delta, Mackinac, Marquette  
and Schoolcraft Counties, Michigan*

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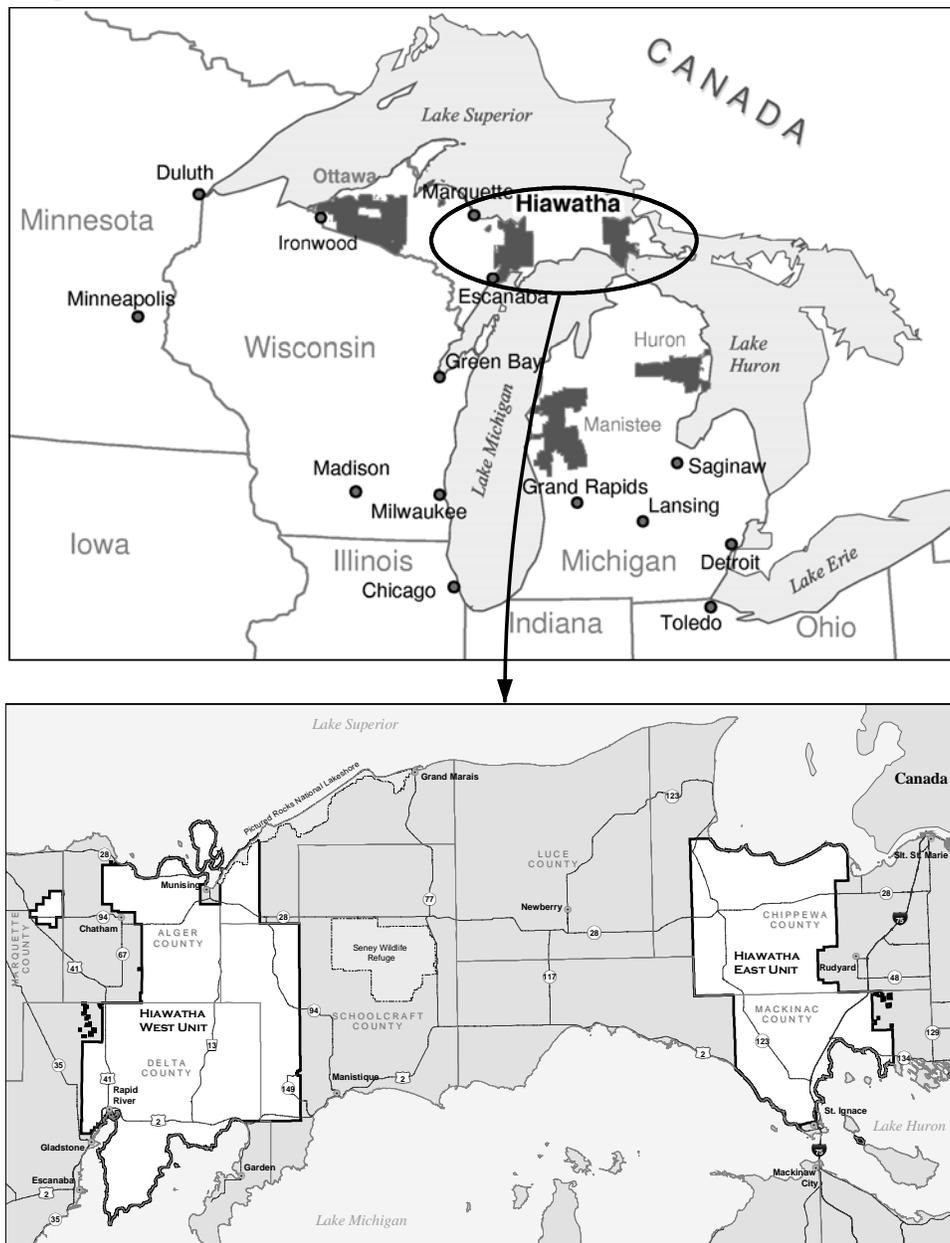
**Abstract:** This is the summary of the Hiawatha National Forest's Final environmental impact statement (FEIS). It documents the analysis of four alternatives developed for programmatic management of the Hiawatha National Forest. The Forest Service's selected alternative is Alternative 2, which will be implemented as the land and resource management plan for the Forest. The Forest Service developed the following alternatives with input from the public and other agencies.

# CHAPTER ONE

## *Introduction to the Executive Summary*

The Hiawatha National Forest's East Unit was established by President Teddy Roosevelt in 1909 as the Marquette National Forest. The West Unit was established in 1931, when President Herbert Hoover signed a proclamation to create the Hiawatha National Forest in the central region of Michigan's Upper Peninsula. In an executive order on February 9, 1962, all lands within the Marquette National Forest (East Unit) were transferred and made part of the Hiawatha (West Unit). There are approximately 1.3 million acres within the Hiawatha's proclaimed boundary, with about 895,300 acres in federal ownership. The planning area encompasses the entire Hiawatha National Forest.

Figure ES-1. Location of the Hiawatha National Forest.



## Revising the 1986 Forest Plan

The Hiawatha's Forest Plan was first issued in 1986. The National Forest Management Act (NFMA) requires national forests to revise their forest management plans every 10 to 15 years (36 CFR 219.10). NFMA also provides direction for the six decisions that are made in a forest plan. They are:

1. Forest-wide multiple use goals and objectives
2. Forest-wide management requirements
3. Management area direction
4. Determining lands suited for timber management and the allowable sale quantity
5. Monitoring and evaluation requirements
6. Recommendations for wilderness areas and wild and scenic rivers

The revised Forest Plan has been developed under the provisions of the 1982 planning rule, as permitted by section 219.13(e) of the 2004 Planning Rule.

The Hiawatha National Forest began its formal revision process with the publishing of the Notice of Intent in the Federal Register on September 18, 2003. Since then, the Hiawatha's interdisciplinary (ID) planning team completed extensive analysis to develop the four alternatives that were fully considered in the draft Environmental Impact Statement (EIS). The 2006 Forest Plan is based on the selected alternative (Alternative 2) in the final Environmental Impact Statement.

After release of the draft EIS and the proposed Forest Plan in March 2005, the planning team reviewed public comments, conducted additional analysis and made appropriate modifications. The result is the 2006 Forest Plan and the final EIS. The Hiawatha has also published a Record of Decision, which identifies the significant changes made between the draft and final Forest Plan and EIS and explains the rationale for choosing the selected alternative.

The 2006 Forest Plan replaces the 1986 Forest Plan. The Hiawatha will publish annual monitoring and evaluation reports to determine if the 2006 Plan provides effective management direction for forest resources, or if an amendment is needed.

## Purpose and Need for Action

The purpose of the final Environmental Impact Statement is to disclose the potential environmental impacts of the alternatives that were considered in the revision of the 1986 Forest Plan. Since 1986, the Hiawatha has successfully implemented site-specific projects using the management direction in the Forest Plan. In addition to NFMA, the following indicators also determine the need to revise a forest plan:

- When conditions of the land or demands from the public have changed significantly
- When changes in Agency policies, goals or objectives have a significant affect on Forest programs



- When an interdisciplinary team recommends a revision as the result of a monitoring and evaluation process
- When new information suggests that a revision is necessary

## Public Involvement and Cooperative Planning

Throughout the revision process, the Hiawatha National Forest was committed to revising the 1986 Forest Plan through collaboration with interested individuals, groups, other government agencies and local Native American tribes. The Hiawatha used many methods to involve citizens in the process and to share information, including newsletters, news releases, open houses, public meetings and Internet postings.

## Significant and Secondary Issues

Public comments were used to determine the resource management issues, to help define the range of alternatives and to provide information and considerations necessary to evaluate the potential effects between the alternatives. A resource management issue is a potential conflict from an effect on physical, biological, social or economic resources. The Forest identified two significant issues and several secondary issues.

**Significant Issues.** The topics that were identified as significant issues received a wide range of comments and viewpoints regarding management of these resources.

- **Vegetation Management.** There were differing opinions about how vegetation should be best managed on the Forest. Comments ranged from a desire for vegetation goals that emphasized older-aged, late seral forest to those emphasizing more early seral conditions. The 2006 Forest Plan determines the long-term desired conditions for young, mature, old and old-growth forests, the species composition of forest communities, types and distribution of forest vegetation communities and the size and distribution of managed non-forested openings. Components of this issue included the vegetation composition and structure, amount, ecological representation, and landscape design of old growth, late seral species, and habitat for species of concern and species of interest.



- **Recreation Access.** There were differing opinions about the amount and level of development of watercraft access to provide on inland and Great Lakes. In addition, there were differing opinions about the amount and connectivity of off-highway vehicle (OHV), snowmobile and non-motorized routes and trails to provide

on the Forest. Trail connectivity focuses on developing loops, connecting trails and roads and providing access to facilities and services.

The demand and levels of use for snowmobile, OHV, mountain biking, hiking and horseback riding recreation opportunities on the Forest has changed since the 1986 Forest Plan was written.

The increased use has resulted in some conflicts between users. Several Upper Peninsula counties have opened county roads to OHV use, which has increased access to Hiawatha National Forest lands. Both motorized and non-motorized users have requested more trails, more loop trails and better connectivity to facilities and services.

Components of this issue include the amount, distribution and type of inland and Great Lakes access, OHV and snowmobile trails and routes and non-motorized trails.

**Secondary Issues.** Secondary issues are important features of the alternatives that have also received further analysis. There is generally limited difference in these issues between the alternatives.

- Management Indicator Species
- Management Areas
- Candidate Research Natural Areas
- Recreation Opportunity Spectrum
- Land Suitability
- Soils
- Timber Output
- Watershed, Riparian and Aquatic Health
- Wild and Scenic River Management Plans
- Wilderness/Roadless Area Evaluation



## CHAPTER TWO

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### ***Summary of the Alternatives***

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This chapter describes and compares the alternatives that were considered for the revised Forest Plan. The National Forest Management Act (NFMA) requires that a range of reasonable alternatives be developed and analyzed during the planning process.

Four alternatives are evaluated in the final Environmental Impact Statement (FEIS). Each alternative has a different approach to managing the Hiawatha National Forest's resources for the next 10 to 15 years. Each of these alternatives is a potential forest plan that can be implemented, if selected.

#### **Developing Alternatives**

The Hiawatha used an interdisciplinary team approach to develop the alternatives. Each alternative was designed to respond to the comments and issues by providing different scenarios for management area allocation, management prescriptions, goals and objectives, standards and guidelines.

All four alternatives comply with applicable laws, regulations and Agency policies and guidelines, and are fully implementable. All alternatives adhere to the concepts of multiple use and ecosystem management. In addition to the four alternatives that were fully analyzed, the Hiawatha also considered three alternatives that were eliminated from detailed study.

#### **Summary of Proposed Alternatives**

**Alternative 1** is the “no action” alternative, as required by the National Environmental Policy Act (NEPA). No action means that the management allocations, activities and direction found in the Hiawatha's 1986 Forest Plan would continue for the next 10 to 15 years. It continues to move the Forest toward the desired conditions, goals and objectives stated in the 1986 Plan. Planning language and resource descriptions were updated, obsolete direction was removed and other minor aspects of the Plan were revised.

**Alternative 2** is the selected alternative and the 2006 Forest Plan. It emphasizes a mix of early and late seral species within the ecological capability of the land. This alternative emphasizes more uneven-aged hardwood sawlog management than even-aged hardwood management. It responds to comments about maintaining existing conditions for motorized and non-motorized lake access and settings and for increased OHV and snowmobile loops and connections between routes and facilities.

**Alternative 3** responds to comments to manage vegetation for increased timber product outputs and less old growth forests. It places more emphasis on early seral species, such as jack pine and aspen, than the other alternatives and it provides for increased even-aged management of northern hardwoods — although uneven-aged management will still be incorporated. It responds to comments for increased motorized access to inland lakes and settings and for increased OHV and snowmobile loop and connections between routes and facilities.

**Alternative 4** responds to comments to manage vegetation for less commodity production and more old growth characteristics. It emphasizes late seral species and uneven-aged hardwood sawlog management rather than even-aged hardwood management. It responds to comments for decreased motorized access and levels of facility development on inland lakes and decreased OHV and snowmobile access.

## Alternatives Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Notice of Intent provided suggestions for alternative methods for achieving the purpose and need.

Some of these alternatives were outside the scope of the proposed changes, some were duplicative of the alternatives considered in detail, and some did not comply with applicable laws and regulations. The alternatives considered and dismissed from further consideration include:

- **Additional Wilderness.** Hiawatha interdisciplinary teams inventoried the Forest for areas that meet roadless area characteristics and completed field assessments. The Forest determined that only the Fibre area contained roadless area characteristics in accordance with 36 CFR 219.17, Forest Service Manual 1923 and Forest Service Handbook 1909.12 (Chapter 7). The Fibre area was evaluated for potential wilderness and was not recommended for additional study (See FEIS Appendix C).
- **Additional Wild & Scenic Rivers.** Hiawatha interdisciplinary teams completed a forest-wide wild and scenic river eligibility assessment and found no additional rivers that were eligible for wild and scenic river study. Based on the established criteria, none contained outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other values on a regional or national scale, (See FEIS Appendix B).
- **No Harvest.** The Hiawatha National Forest received requests to consider an alternative that eliminated commercial logging on the Forest. This alternative was eliminated from detailed consideration for several reasons:
  - It is not possible to accomplish restoration activities on the Forest without using vegetative treatments as a tool
  - In later decades, this alternative would not provide adequate representation of young age classes on the landscape to meet species viability needs
  - National Forest Management Act, Multiple Use Sustained Yield Act, Endangered Species Act and other laws require that national forests be managed for a variety of uses and provide resource protections.

<b>Comparison of Management Areas by Alternative</b>					
MA	Management Area Emphasis	Number of Acres			
		Alt. #1	Alt. #2	Alt. #3	Alt. #4
1.1	Aspen management for fiber production, deer & grouse outputs	21,943	0	0	0
1.2	Deer & grouse outputs, dispersed recreation, and Aspen management for fiber production	65,950	45,891	167,831	0
2.1	Uneven aged management of hardwoods for high-quality saw logs, dispersed recreation, and Non-game wildlife outputs	58,750	0	0	0
2.2	Dispersed recreation, developed recreation, vegetative composition and older forest for wildlife, un-even aged management of hardwoods for quality saw logs	74,306	0	0	0
2.3	Uneven aged management of hardwoods for high quality saw logs; and dispersed recreation; and non-game wildlife outputs	0	208,874	73,255	248,250
3.1	Even-aged management of hardwood for quality saw logs, dispersed recreation, and non-game wildlife outputs	32,249	0	0	0
3.2	Game and non-game wildlife outputs, dispersed & developed recreation, even-aged management of hardwoods for quality saw logs	10,864	0	120,778	0
4.1	Conifer management for fiber production, non-game wildlife outputs	14,298	0	22,165	0
4.2	Conifer management for saw logs production, non-game wildlife outputs	114,804	126,128	88,566	183,736
4.3	Dispersed recreation, fish outputs, developed recreation, conifer management for saw logs production, non-game wildlife outputs	27,883	0	0	22,829
4.4	Habitat production for upland wildlife species, conifer management for fiber production, and dispersed recreation	75,935	113,166	115,540	0
4.5	Deer yards and habitat for upland and lowland wildlife species, wetland plant communities, older forest habitat, conifer management for saw logs, and dispersed recreation.	104,826	116,065	118,623	62,873
5.1	Congressionally designated Wilderness Areas	37,207	37,020	37,020	37,020
6.1	Semi-primitive non-motorized (SPNM) recreation, non-game wildlife, even & uneven aged management with limited motorized entry	11,519	11,486	11,486	11,486
6.2	Semi-primitive motorized (SPM) recreation, access to fish & canoeing areas, habitat for game and non-game wildlife, even & un-even aged management.	17,572	17,511	17,511	17,511
6.3	Non-game wildlife, SPNM recreation, no timber harvest (includes RARE II Government Island, 214 acres)	2,287	2,606	2,606	8,867
6.4	Habitat for game & non-game wildlife, water fowl and wetland habitat, SPM recreation, access to hunting and fishing areas, even & uneven aged management (includes RARE II Fibre, 7,900 ac.)	60,451	46,603	19,319	75,703
7.1	Intensively developed recreation facilities	13,108	1,086	1,086	1,086
8.1	Protection of significant biological, geological, cultural features.	28,686	16,078	16,078	16,078
8.2	Forest Research Activities	5,615	5,573	5,573	5,573
8.3	Secluded wildlife habitat, wetland plant communities, dispersed recreation, even & uneven aged management	60,023	103,964	34,616	163,040
8.4	Wild & Scenic Rivers	30,075	29,841	29,841	29,841
8.5	Grand Island National Recreation Area	13,421	13,421	13,421	13,421
9.1	Minimal level management	13,480	0	0	0

## Alternative Comparisons

Criteria & Indicators	Alternative 1: 1986 Forest Plan	Alternative 2: Selected Alternative	Alternative 3	Alternative 4
<b>FOREST COMPOSITION (ISSUE – VEGETATION MANAGEMENT)</b>				
<p><i>Selected species/seral stage – composition, structure and openings.</i></p> <p><i>Predicted acres at time steps throughout the planning horizon.</i></p> <p><i>Reflects <u>only</u> lands classified as suited for timber production.</i></p> <p><i>** Large size class reflects stands greater than 18" diameter</i></p>	<p><b><i>Upland Openings (acres)</i></b> Existing ..... 33,500 10 years ..... 35,896 20 years ..... 36,409 50 years ..... 36,465 100 years ..... 43,108</p> <p><b><i>Aspen (acres)</i></b> Existing ..... 77,500 10 years ..... 80,100 20 years ..... 78,400 50 years ..... 81,700 100 years ..... 93,500</p> <p><b><i>Jack pine (acres)</i></b> Existing ..... 54,900 10 years ..... 52,400 20 years ..... 50,300 50 years ..... 44,000 100 years ..... 38,700</p> <p><b><i>Late seral – large size class ** (acres)</i></b> Existing ..... 2,100 10 years ..... 3,300 20 years ..... 4,600 50 years ..... 8,800 100 years ..... 24,900</p>	<p><b><i>Upland Openings (acres)</i></b> Existing ..... 33,800 10 years ..... 36,100 20 years ..... 15,700 50 years ..... 16,100 100 years ..... 17,000</p> <p><b><i>Aspen (acres)</i></b> Existing ..... 80,800 10 years ..... 61,100 20 years ..... 64,200 50 years ..... 55,200 100 years ..... 60,300</p> <p><b><i>Jack pine (acres)</i></b> Existing ..... 60,300 10 years ..... 57,700 20 years ..... 57,900 50 years ..... 58,000 100 years ..... 57,600</p> <p><b><i>Late seral – large size class ** (acres)</i></b> Existing ..... 1,700 10 years ..... 3,700 20 years ..... 6,900 50 years ..... 19,100 100 years ..... 82,600</p>	<p><b><i>Upland Openings (acres)</i></b> Existing ..... 33,900 10 years ..... 36,300 20 years ..... 15,700 50 years ..... 16,100 100 years ..... 17,100</p> <p><b><i>Aspen (acres)</i></b> Existing ..... 86,000 10 years ..... 75,400 20 years ..... 83,300 50 years ..... 86,700 100 years ..... 94,900</p> <p><b><i>Jack pine (acres)</i></b> Existing ..... 61,300 10 years ..... 62,600 20 years ..... 69,400 50 years ..... 71,300 100 years ..... 70,600</p> <p><b><i>Late seral – large size class ** (acres)</i></b> Existing ..... 1,900 10 years ..... 4,000 20 years ..... 6,900 50 years ..... 17,200 100 years ..... 55,600</p>	<p><b><i>Upland Openings (acres)</i></b> Existing ..... 33,900 10 years ..... 36,800 20 years ..... 15,400 50 years ..... 15,700 100 years ..... 21,200</p> <p><b><i>Aspen (acres)</i></b> Existing ..... 72,200 10 years ..... 54,000 20 years ..... 54,900 50 years ..... 41,000 100 years ..... 42,900</p> <p><b><i>Jack pine (acres)</i></b> Existing ..... 53,000 10 years ..... 36,100 20 years ..... 36,300 50 years ..... 22,600 100 years ..... 22,400</p> <p><b><i>Late seral – large size class ** (acres)</i></b> Existing ..... 2,100 10 years ..... 3,900 20 years ..... 5,500 50 years ..... 17,600 100 years ..... 96,400</p>

<b>Alternative Comparisons</b>				
NOI Topic or EIS Criteria & Indicators	Alternative 1: 1986 Forest Plan	Alternative 2: Selected Alternative	Alternative 3	Alternative 4
<b>OLD GROWTH SYSTEM (ISSUE – VEGETATION MANAGEMENT)</b>				
<i>Old growth acres and design</i>	<ul style="list-style-type: none"> <li>■ Minimum - 51,988 acres</li> <li>■ classified as suited</li> <li>■ Minimum percent of forest cover type per management area</li> </ul>	<ul style="list-style-type: none"> <li>■ 52,000 acres</li> <li>■ classified as unsuited</li> <li>■ Larger blocks and connective corridors</li> <li>■ No min. percent per MA</li> </ul>	<ul style="list-style-type: none"> <li>■ 5,400 acres</li> <li>■ classified as unsuited</li> <li>■ Larger blocks and connective corridors</li> <li>■ No min. percent per MA</li> </ul>	<ul style="list-style-type: none"> <li>■ 222,400 acres</li> <li>■ Larger blocks and connective corridors</li> <li>■ No min. percent per MA</li> </ul>
<b>SPECIES VIABILITY (ISSUE – VEGETATION MANAGEMENT)</b>				
<i>Outcome ratings for species with viability concerns - Threatened, endangered, and sensitive species (TES)</i>	Provide ecological conditions for species viability	Provide ecological conditions for species viability	Provide ecological conditions for species viability, emphasizing species needing early seral conditions	Provide ecological conditions for species viability, emphasizing species needing late seral conditions
	<ul style="list-style-type: none"> <li>■ Outdated TES species list</li> <li>■ Limited TES direction</li> <li>■ No specific lynx or KW direction</li> <li>■ No RFSS list</li> </ul>	<ul style="list-style-type: none"> <li>■ TES species list incorporated by reference</li> <li>■ Direction incorporated by referencing recovery plans</li> <li>■ Address Lynx and KW management direction</li> <li>■ TES S &amp;Gs updated based on new information</li> </ul>		
<i>MIS and species of interest habitat availability</i>	<ul style="list-style-type: none"> <li>■ 22 Management Indicator Species (MIS)</li> </ul>	<ul style="list-style-type: none"> <li>■ 4 MIS (American marten, brook trout, ruffed grouse, sharp-tailed grouse)</li> </ul>		
<b>INLAND LAKE ACCESS (ISSUE – RECREATION ACCESS)</b>				
<i>Allocation of desired Motorized/non-motorized/PWC Settings</i>				
■ Non-motorized	■ 7%	■ 47%	■ 17%	■ 71%
■ Motorized, no PWC	Not identified or allocated	■ 38%	■ 58%	■ 23%
■ Motorized with PWC		■ 15%	■ 25%	■ 6%
<i>Maximum percent by access types</i>				
■ No access	■ 41%	■ 50%	■ 47%	■ 61%
■ Carry-in	■ 47%	■ 35%	■ 25%	■ 29%
■ Back-in	■ 12%	■ 15%	■ 28%	■ 10%

<b>Alternative Comparisons</b>				
NOI Topic or EIS Criteria & Indicators	Alternative 1: 1986 Forest Plan	Alternative 2: Selected Alternative	Alternative 3	Alternative 4
<b>GREAT LAKES ACCESS (ISSUE – RECREATION ACCESS)</b>				
<i>Maximum number of Great Lakes boat access sites</i>	<ul style="list-style-type: none"> <li>■ 4 motorized (public)</li> <li>■ 4 motorized (permit)</li> </ul>	<ul style="list-style-type: none"> <li>■ 4 motorized (public)</li> <li>■ 4 motorized (permit)</li> </ul>	<ul style="list-style-type: none"> <li>■ 4 motorized (public)</li> <li>■ 4 motorized (permit)</li> </ul>	<ul style="list-style-type: none"> <li>■ 4 motorized (public)</li> <li>■ 4 motorized (permit)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Unspecified</li> </ul>	<ul style="list-style-type: none"> <li>■ Allow 1 additional Great Lakes Public Access (5 total)</li> </ul>		<ul style="list-style-type: none"> <li>■ No additional accesses</li> </ul>
<b>OFF-HIGHWAY VEHICLES (ISSUE – RECREATION ACCESS)</b>				
<i>Maximum miles of designated OHV trails</i>	<ul style="list-style-type: none"> <li>■ Maximum determined by road/trail density by MA</li> <li>■ 12 miles (projected)</li> </ul>	<ul style="list-style-type: none"> <li>■ 75 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 85 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 50 miles</li> </ul>
<i>Maximum acres/number of designated OHV area(s)</i>	<ul style="list-style-type: none"> <li>■ No maximum established</li> <li>■ 15 acres (one area)</li> </ul>	<ul style="list-style-type: none"> <li>■ 15 acres (one area)</li> </ul>	<ul style="list-style-type: none"> <li>■ 15 acres (one area)</li> </ul>	<ul style="list-style-type: none"> <li>■ 0 acres</li> </ul>
<i>Maximum miles of designated Forest roads open to OHV use by maintenance level (ML)</i>	<ul style="list-style-type: none"> <li>■ Maximum established by road density by MA and other factors</li> </ul>	<ul style="list-style-type: none"> <li>■ ML 3-5 150 miles</li> <li>■ ML 2 2,100 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ ML 3-5 220 miles</li> <li>■ ML 2 2,100 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ ML 3-5 130 miles</li> <li>■ ML 2* 2,100 miles</li> <li>*open during hunting season only</li> </ul>
<i>Designation on Forest roads and trails for OHV use</i>	<ul style="list-style-type: none"> <li>■ Forest roads open unless designated closed in motorized ROS MAs. See Existing Condition-Table 3-REC-4 (FEIS)</li> <li>■ All trails closed unless designated open</li> </ul>	All roads and trails closed unless designated open.		
<i>Cross country travel</i>	No cross country travel is allowed.			
<b>SNOWMOBILES (ISSUE – RECREATION ACCESS)</b>				
<i>Maximum miles of groomed, designated snowmobile trails.</i>	<ul style="list-style-type: none"> <li>■ Maximum established by trail density by MA and other factors</li> <li>■ 244 miles projected</li> </ul>	<ul style="list-style-type: none"> <li>■ 340 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 415 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 305 miles</li> </ul>
<i>Maximum acres/number of designated snowmobile area(s)</i>	<ul style="list-style-type: none"> <li>■ Not specified</li> <li>■ 15 acres (one area)</li> </ul>	<ul style="list-style-type: none"> <li>■ 15 acres (one area)</li> </ul>	<ul style="list-style-type: none"> <li>■ 15 acres (one area)</li> </ul>	<ul style="list-style-type: none"> <li>■ 0 acres</li> </ul>

Alternative Comparisons				
Criteria & Indicators	Alternative 1: 1986 Forest Plan	Alternative 2: Selected alternative	Alternative 3	Alternative 4
<i>Maximum miles of Forest road open to snowmobile use by maintenance level</i>	<ul style="list-style-type: none"> <li>■ ML 3-5 Roads: 373 miles</li> <li>■ ML 2 Roads: 2100 miles</li> </ul>			<ul style="list-style-type: none"> <li>■ No ML 2-5 roads open</li> </ul>
<i>Designation on Forest roads and trails for Snowmobile use</i>	<ul style="list-style-type: none"> <li>■ Forest roads open unless designated or posted closed in motorized ROS Management Areas. See Existing Condition-Table 3-REC-5 (FEIS)</li> <li>■ All trails closed unless designated or posted open</li> </ul>			<ul style="list-style-type: none"> <li>■ All roads and trails closed unless designated open.</li> </ul>
<i>Cross country travel</i>	Cross country travel allowed in motorized ROS Management Areas (MA) unless prohibitions or restrictions are needed for resource protection or to meet management objectives.			<ul style="list-style-type: none"> <li>■ Not Allowed</li> </ul>
NON-MOTORIZED TRAILS (ISSUE – RECREATION ACCESS)				
<i>Maximum miles of non-motorized trails by trail type</i>	Maximum established by MA trail density			
<ul style="list-style-type: none"> <li>■ Hiking only</li> </ul>	<ul style="list-style-type: none"> <li>■ 124 miles identified</li> </ul>	<ul style="list-style-type: none"> <li>■ 135 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 135 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 135 miles</li> </ul>
<ul style="list-style-type: none"> <li>■ Hiking, biking &amp; skiing</li> </ul>	<ul style="list-style-type: none"> <li>■ 205 miles identified</li> </ul>	<ul style="list-style-type: none"> <li>■ 175 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 175 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 175 miles</li> </ul>
<ul style="list-style-type: none"> <li>■ Hiking, biking, skiing &amp; horseback riding</li> </ul>	<ul style="list-style-type: none"> <li>■ 99 miles identified</li> </ul>	<ul style="list-style-type: none"> <li>■ 115 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 115 miles</li> </ul>	<ul style="list-style-type: none"> <li>■ 115 miles</li> </ul>

Alternative Comparisons of Non Significant Issues Range of Response				
NOI topic	Alternative 1: 1986 Forest Plan	Alternative 2: Selected alternative	Alternative 3	Alternative 4
1. <i>cRNA Evaluation</i>	<ul style="list-style-type: none"> <li>■ 3 RNAs</li> <li>■ 21 cRNAs</li> <li>■ Total acres: 18,496</li> </ul>	<ul style="list-style-type: none"> <li>■ 3 RNAs</li> <li>■ 20 cRNAs (minor adjustments to boundaries and 2 cRNAs merged into 1.)</li> <li>■ Total acres: 20,373</li> </ul>		
2. <i>Wild and Scenic Rivers Comprehensive Management Plans (CRMP)</i>	<ul style="list-style-type: none"> <li>■ 2 CRMP (Indian &amp; Carp) with final river boundaries</li> <li>■ Management direction revised to reflect designated and study river protection.</li> <li>■ 3 Final river boundaries (¼ mile-Whitefish, Sturgeon, E. Br. Tahquamenon)</li> </ul>	<ul style="list-style-type: none"> <li>■ 3 Comprehensive River Management Plans (Whitefish, Sturgeon and East Branch Tahquamenon)</li> <li>■ 3 Final River Boundaries of variable width</li> <li>■ Revised study river management direction</li> </ul>		

### Alternative Comparisons of Non Significant Issues Range of Response

NOI topic	Alternative 1: 1986 Forest Plan	Alternative 2: Selected alternative	Alternative 3	Alternative 4
3. <i>Watershed, Riparian and Aquatic Health</i>	<ul style="list-style-type: none"> <li>■ Minimal plan direction</li> <li>■ No DFC s, goals and objectives</li> </ul>	<ul style="list-style-type: none"> <li>■ Desired conditions, goals, objectives, standards and guidelines similar across alternatives</li> <li>■ Michigan BMPs incorporated by reference into plan</li> </ul>		
4. <i>Soils</i>	<ul style="list-style-type: none"> <li>■ Current Forest Plan Direction based on out dated information</li> </ul>	<ul style="list-style-type: none"> <li>■ Desired conditions, goals, objectives, standards and guidelines for soil productivity and function is similar across all alternatives</li> <li>■ Soil standards reflect new information</li> </ul>		
5. <i>Management Areas</i>	<ul style="list-style-type: none"> <li>■ No change to MAs</li> <li>■ Vegetation goals as minimum percentages by forest cover type</li> </ul>	<ul style="list-style-type: none"> <li>■ MA boundaries based on updated LTAs</li> <li>■ Maintains most of the existing Forest Plan MA direction (desired conditions, standards &amp; guidelines)</li> <li>■ Vegetation goals as percentage range for each vegetative condition within an MA</li> <li>■ Fewer and larger MAs</li> </ul>		
6. <i>Suitability:</i> <i>NFS acres:</i> <i>Bio/physical unsuited:</i> <i>Admin. Unsuited:</i> <i>Suited:</i>	<ul style="list-style-type: none"> <li>■ 895,313</li> <li>■ 216,227 (24%)</li> <li>■ 168,451 (19%)</li> <li>■ 510,635 (57%)</li> </ul>	<ul style="list-style-type: none"> <li>■ 895,313</li> <li>■ 216,227 (24%)</li> <li>■ 100,625 (11%)</li> <li>■ 578,461 (65%)</li> </ul>	<ul style="list-style-type: none"> <li>■ 895,313</li> <li>■ 216,227 (24%)</li> <li>■ 55,315 (6%)</li> <li>■ 623,771 (70%)</li> </ul>	<ul style="list-style-type: none"> <li>■ 895,313</li> <li>■ 216,227 (24%)</li> <li>■ 153,079 (17%)</li> <li>■ 526,007 (59%)</li> </ul>
7. <i>Max. ASQ (1st decade)</i>	996 MMBF	1,085 MMBF	1,119 MMBF	971 MMBF
8. <i>Roadless Areas (Fibre &amp; Government Island)</i>	Fibre: MA 6.4 (SPM)	Fibre: MA 8.3 (mixed ROS)	Fibre: MA 1.2 (RN ROS)	Fibre: MA 8.3 (mixed ROS)
	Government Island: MA 6.3 (SPNM ROS)			
	No additional inventoried roadless areas			
9. <i>Wilderness</i>	No recommendations for additional wilderness			
10. <i>ROS (Boot Lake, Buck Bay Creek and Delias Run)</i>	Semi-primitive non-motorized (SPNM) objectives	Semi-primitive motorized (SPM) objectives		
11. <i>Wild &amp; Scenic River eligibility</i>	Study rivers were established in the Michigan Scenic Rivers Act of 1991	No additional eligibility recommendations		

## CHAPTER THREE

### ***Affected Environment & Environmental Consequences***

Chapter 3 in the Final Environmental Impact Statement describes the current condition for each resource area, the criteria used in the analysis and the environmental effects that would be expected to occur as a result of implementing each alternative. The following discussion is a summary of the environmental effects for each resource.

#### **Vegetation**

Forest vegetative conditions are a result of management activities, natural ecological processes and events on the Forest, over time. This section evaluates Forest Plan alternatives with respect to seral stage (mix of species), size classes of trees, old growth and allowable sale quantity as a result of achieving desired conditions on the landscape.



- **Vegetation Management.** The Hiawatha is largely a second growth forest as a result of exploitive logging and burning around the end of 19<sup>th</sup> century. Fire control and planting took place in the 1930s and 1940s by the Forest Service and the Civilian Conservation Corps. The result is a forested landscape of mostly uniform age classes, with little within-stand diversity or structure. Many stands of species that are short-lived (like jack pine, aspen and balsam fir), are currently mature and over-mature. Longer-lived species such as red and white pine, northern hardwoods and cedar are maturing and growing into larger size classes.

The desired conditions for each alternative are expressed as vegetation composition (seral stage and size class) goals, which guide the mix and age class of forest vegetation on suited lands within management areas (MA). Vegetation goals for all alternatives are prescribed by ecological landtype (ELT) and by management area. These vegetation goals are described as minimum and maximum percentages (or acres) of the suited land within the management area. (See Alternative Comparison – Forest Composition for the minimum and maximum vegetation goals on suited lands by alternative for all of the vegetation types).

The range for each goal is the result of combining all minimum values for the low end of the range, combining all maximum values for the high end of the range, and comparing the two combined values. Species may be managed at the extreme ends of the applicable range in small areas, but to meet overall Plan goals, the cumulative management for each seral stage is expected to be more toward the middle of the goal range. Forest vegetation on suited lands would be treated through a variety of harvest treatments to achieve the desired vegetative goals summarized below.

- **Upland Openings** are a result of vegetation management by regeneration harvest and/or maintained by use of fire or mechanical treatments. All alternatives would manage and maintain openings. Alternative 1 would maintain approximately 33,000 to 34,000 acres, over the planning horizon while Alternatives 2–4 would maintain about 13,000 to 14,000 acres.



- **Aspen stands** were far less abundant before European settlement than they are today. Hiawatha's current aspen acreage is largely due to the extensive disturbance by turn-of-the-19<sup>th</sup> century logging. Although aspen acreage has declined since the

1960s, it remains the second most prevalent forest type in the Lake States region. Aspen is shade intolerant and requires disturbances such as clearcutting, ground scarification, wind or fire to become established and maintained.

All alternatives would manage and maintain aspen. Based on modeling, Alternatives 1 and 3 are predicted to have the highest amount of aspen during the planning horizon. Alternative 1 is expected to fluctuate between 97,000 and 108,000 acres, while Alternative 3 fluctuates between 95,000 and 107,000 acres. Alternative 4 is predicted to have the least amount ranging between 57,000 to 93,000 acres. The aspen acreage generally declines over time in this alternative. Alternative 2 is expected to fluctuate between 70,000 to 92,000 acres with the lower range generally later in the planning period.

- **Jack pine** is a short-lived conifer forest species and is usually managed using even-aged management treatments. Jack pine is shade intolerant and requires disturbances such as clearcutting, ground scarification or fire to become established and maintained. Existing forest-wide composition is greater than pre-European settlement due to turn-of-the-19<sup>th</sup> century logging disturbance. Without disturbance, jack pine will convert to other species. Many of the Hiawatha's jack pine stands are succeeding to mixed pine stands. Because a high proportion of the Hiawatha's jack pine is old and deteriorating, some acres are expected to be lost within the next few decades.

All alternatives would manage and maintain jack pine acreage. Based on modeling, Alternative 3 is expected to have the highest amount of jack pine over the planning horizon ranging from approximately 63,000 acres to 80,000 acres. Alternative 4 is expected to have the least amount ranging from 31,000 to 64,000. Alternative 1 is similar to Alternative 4 with amounts ranging from 44,000 to 63,000 acres. Both alternatives exhibit a steady decline over the planning horizon. It is predicted that Alternative 2 would fluctuate between 60,000 and 69,000 acres of jack pine.

- **Late Seral and Large Size Forest Conditions on the Hiawatha** has changed dramatically compared to pre-European settlement due to the large scale logging at the turn-of-the-19<sup>th</sup> century to the 1920s. Much of the large white pine, hemlock and northern hardwoods were logged, with the lands subsequently burned over. Presently, there is still less white pine and hemlock forest composition. In addition, there is only about 6,000 acres of large size (stands greater than 18-inches in diameter) late seral forest stands because of the time required for the forest to reach larger size diameters.

All alternatives were designed to create and maintain some late seral and large size forest conditions, with each management area having a different desired vegetation composition percentage. Based on modeling, Alternative 4 will have the greatest amount at the end of the planning horizon (100 years) with about 134,500 acres followed by Alternative 2 with 116,000 acres; Alternative 3 with 81,000 acres and Alternative 1 with 57,000 acres. Model predictions indicate that acreage will steadily rise for about 75 years, then show a rapid increase to year 100.

- **Old Growth.** The majority of the Hiawatha is considered a young forest, recovering from the turn-of-the-19<sup>th</sup> century disturbances. It is estimated that there are only about 500 acres of true old growth on the Forest. In all alternatives, designated old growth would be complemented by special management areas classified as unsuited (e.g. wildernesses, Grand Island, etc.), by other forested lands classified as unsuited and by lands managed for late seral large size class characteristics (L-5). Table ES-1 displays the amount of these land allocations by alternative.

	Alt 1	Alt 2	Alt 3	Alt 4
Designated Old Growth	52,000	52,000	5,400	222,400
Special Management areas with other resource objectives classified as unsuited	82,200	82,500	82,500	88,700
Unsuited (forested—not otherwise designated)	191,100	75,345	74,500	5,600
Late Seral – Large Size Class (L-5)	25,000	82,300	55,300	96,100

Under Alternative 1, designated old growth would continue to be classified as suited for timber production with rotation ages extended. Alternative 1 would designate a minimum of 51,988 acres. As mapped, the system would be comprised primarily of small, scattered blocks, and provide representation of a variety of forest types, but would lack some representation of the pine and wetter lowland types.

Alternatives 2–4 would classify designated old growth as part of the unsuited landbase. Alternative 2 would designate about 52,000 acres and would focus on larger block sizes. Representation includes white pine, hemlock, red maple, northern hardwoods and cedar. Both red pine and black spruce old growth would have somewhat lower representation than the forest potential.

Alternative 3 would designate about 5,400 acres comprised of stands that presently contain the best representation of old growth characteristics. This results in fewer and smaller blocks than the current system. Alternative 3 does not have the representation of forest types that the other alternatives have.

Alternative 4 would designate about 222,400 acres as old growth. Some stands currently exhibit some old growth characteristics, but these large areas also include wetlands and other openings that will not become forested old growth and areas of early seral conditions that will move toward old growth characteristics over time.

This alternative would have large blocks of old growth, with a variety of forest types including non-forested wetlands. There is less representation of the red pine/white pine/hemlock and northern hardwood types than the Forest potential.

- **Lands Suited for Timber Production.** As part of the forest plan revision process, a suitability analysis was conducted to determine how much land is suitable for timber production. The analysis determined the acres on the Hiawatha where timber harvest would be biologically and physically possible, areas that are legally or administratively withdrawn (e.g. wilderness, Grand Island). Suited timberland is the landbase where planned timber harvests may occur. Table ES-2 displays the suited landbase for each alternative.

	Alt. 1	Alt. 2	Alt. 3	Alt. 4
National Forest Ownership	895,313	895,313	895,313	895,313
Suited for Timber Production	510,635	578,461	623,771	526,007

- **Allowable Sale Quantity.** The allowable sale quantity (ASQ) is the *maximum* amount of timber that may be sold from the Forest's suitable land base per decade. Table ES-3 displays the predicted ASQ by alternative for the first decade of Plan implementation and the long-term sustained yield.

	Alt. 1	Alt. 2	Alt. 3	Alt. 4
ASQ Decade 1	996	1,085	1,119	971
LTSY/decade achieved	1,039/Decade 4	1,085/Decade1	1,119/Decade 1	999/Decade 4

## Forest Health

- **Insects and Disease Risk.** The Forest is getting older. When mature or over-mature, trees can become very susceptible to native and naturalized insects and diseases which kill or severely degrade a tree's health. Predicted amounts of over-mature aspen, jack pine and spruce-fir were used as indicators of insect and disease susceptibility. All alternatives emphasize maintaining a healthy forest using silvicultural treatments and integrated pest management techniques. Alternative 4 has the greatest number of acres in the susceptible age classes, for the longest period of time. This is due to the large amount of unsuited acres over the short-term, which would not receive active silvicultural treatments. As these acres succeed into later seral types, the risk of infestation will decline.



risks posed by roads, vegetative treatments and recreation activities, Alternative 1 poses the highest risk of NNIS spread. Alternative 1 prescribes a moderate level of road construction, the lowest level of road decommissioning and closures, the highest level of high-risk harvest systems, and potentially high levels of motorized/non-motorized recreational use if off-highway vehicle use is increased.

Alternative 2 has the lowest proportion of high-risk harvest systems and the highest overall harvest levels, coupled with moderate levels of road construction and road closures/obliterations. Alternative 3 has a higher proportion of high-risk harvest systems than Alternative 2, a moderate level of road construction/reconstruction moderated by an overriding level of road closures and decommissioning. Alternative 4 probably poses the least risk of NNIS invasion and spread, based on the lowest road construction and reconstruction, a moderate level of closures and obliterations and the lowest OHV use.

- **Fire Ecology.** Fire and Fuels is recognized by the Chief of the Forest Service as one of the four threats to the nation's forests. To help national forests move towards reducing the threat of wildfire, the Healthy Forest Restoration Act (HFRA) of 2003 (H.R. 1904) and the Healthy Forest Initiative (HFI) were enacted.



Fire Regime Condition Class (FRCC) is a unit of measure for determining ecosystem health, with focus on wildfire risk. The combination of changes to vegetation/fuels and fire dynamics results in a measure of how far away from the reference conditions an alternative lies. The further the departure, the higher the risk. This in turn relates to wildfire risk level, forest and watershed health, and sustainability of landscape conditions. Fire Regime Condition Class will be used to express the current condition of the Hiawatha, as well

as projected conditions under each alternative. Fire Regime Condition Class includes three ratings to describe the degree of departure from reference conditions:

**FRCC 1:** Ecological conditions are close to reference conditions and the risk of losing key ecosystem components is low.

**FRCC 2:** Ecological conditions are moderately different from reference conditions. Risk of losing key ecosystem components is moderate.

**FRCC 3:** Ecological conditions are substantially different from reference conditions. The risk of losing key ecosystem components is high.

The effects of the alternatives on FRCC ratings indicate there are more similarities than differences between alternatives. All alternatives have a landscape score of FRCC 1 for vegetation and an FRCC 2 score for fire dynamics well into the future. For Alternative 1, the forest-wide fire dynamics FRCC rating does not change during the planning period. However, the vegetation/fuels departure shows steady improvement during the planning period. Alternative 1 shows the second highest average vegetation/fuels departure and therefore, is ranked next to last in reducing fire risk during the planning period.

Alternative 2 has the second lowest forest-wide vegetation/fuels departure and the second-lowest fire dynamics departure. Alternative 3 has the second highest total vegetation departure for the first 20 years, then moves to the highest departure for

the remainder of the planning period. Alternative 4 provides the greatest overall improvement in FRCC rating during the first 60 years of the planning period. However, it also has the most land classified as old growth and management options for high-hazard fuel accumulations from spruce budworm infestations are non-existent. Therefore, the fire risk of Alternative 4 is higher than the other alternatives.

Throughout the Forest, there are communities and isolated residences located within wildland fuel situations that could be threatened by an advancing fire. All alternatives have the capability of reducing fuels in the vicinity of private property and communities. Alternatives 1 and 2 would protect both private properties at risk and the wildland-urban interface (WUI). Alternative 3 develops the highest fire risks, and Alternative 4 allows the least opportunity to manage fire-dependent wetland conifers, because of the large amount of this type designated as old growth.

- **Air Quality.** Geographic regions of the country are given air quality classifications that designate the level of protection areas receive, and the Hiawatha National Forest lies within an area characterized by some of the best air quality in the nation. The state of Michigan considers the Hiawatha to be within a Class II attainment area under the Clean Air Act of 1990 (PL 88206), and that all areas of the Upper Peninsula are in compliance with the criteria pollutant health standards (MDEQ 2004). In all alternatives, Class II air quality attainment standards would be met.

## Plant Habitat

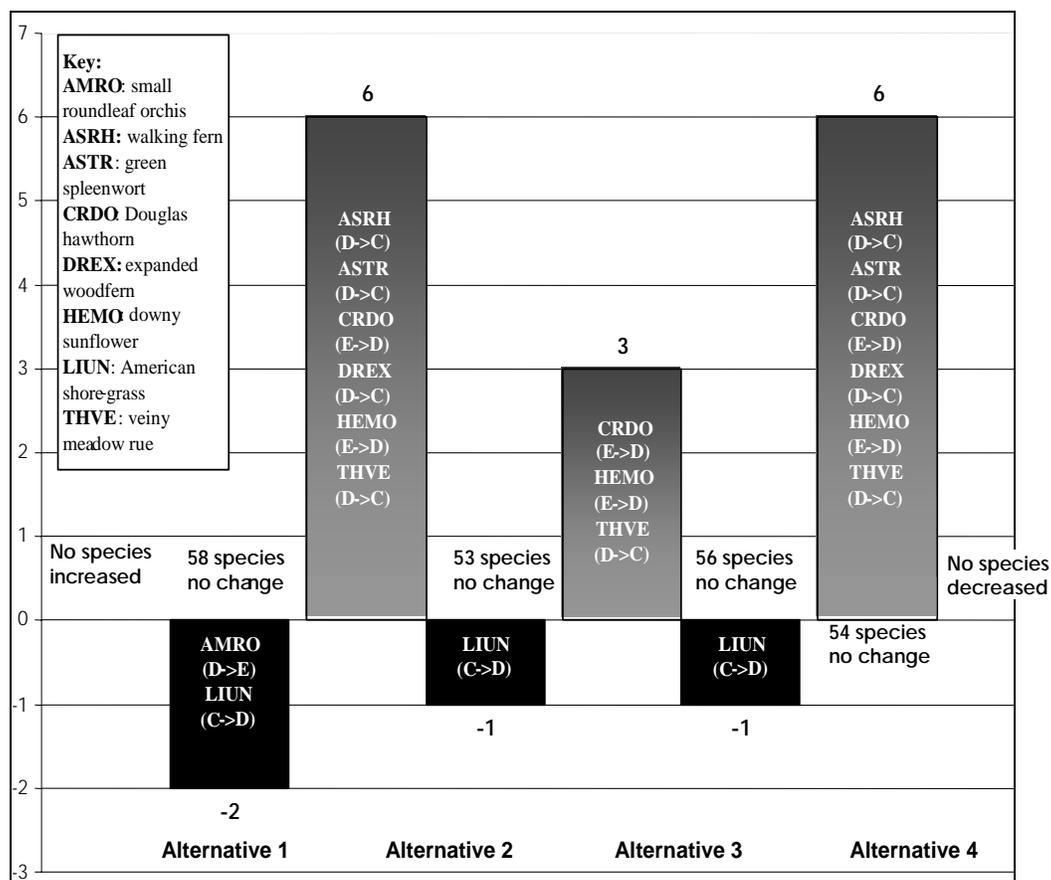
- **Plant Species of Concern.** The Hiawatha harbors more sensitive, threatened and endangered plants than any other Eastern Region (Region 9) forest. Approximately 40 percent of the Hiawatha's plant species of concern are not found on any other forest in the Region. Five of the element occurrences are the only documented occurrences of these plants in Michigan. Along with climatic factors, several other factors affect the Hiawatha's rare plants. These include competition from non-native invasive species; encroachment of woody vegetation as a result of fire suppression; trampling primarily due to recreation use; habitat alteration due to timber harvest or natural disturbance; deer herbivory and illegal harvest.

Forest biologists completed a species viability evaluation for threatened, endangered and sensitive species. The Species Viability Evaluation process was applied to five threatened and endangered species (TES) and 65 Regional Forester Sensitive Species (RFSS). Species were evaluated and given an outcome rating for historical condition, current condition and predicted condition for each alternative. The rationale for an outcome rating was based on existing information, relevant literature, current and predicted vegetative conditions and management direction for each alternative. Outcome ratings range from A (broadly distributed ecological conditions) to E (highly isolated ecological conditions). The evaluation focused on ecological conditions and primary risk factors pertinent to the species.

Figure ES-2 summarizes the SVE outcome ratings by alternative for sensitive species. All element occurrences of plant species of concern are protected by mitigation measures applied during project implementation. These commonly-applied measures are mandated by law and regulation to protect these known occurrences and any subsequently discovered rare plants. Effects from fire suppression, illegal collection of rare plants, ongoing disease and insect infestations, variations in Great Lakes water levels, the maintenance of US Highway 2, previous hydrological alterations, and physical trampling during recreational pursuits are not predicted to vary measurably between alternatives.

Between 53 and 58 of the rare plant species analyzed remain unaffected by any alternative. However, many of the species that are relics of an earlier environment or are affected by introduced diseases, may continue to decline despite any protection measures provided. For the RFSS, Alternative 4 had six increases from current and no decreases in outcome ratings. This was primarily the result of less intense human activities, less predicted spread of NNIS, and more emphasis on later seral forests. Alternative 2 had six increases and one decrease; Alternative 3 had three increases and one decrease, and Alternative 1 had no increases and two decreases. No species were predicted to decline to a point where they would trend toward federal listing.

Figure ES-2. Change in plant SVE outcome rating for sensitive species from current conditions for all alternatives



- **Federally Listed Plant Species.** The Hiawatha has five federally-listed plant species. As with the RFSS, all occurrences of these species are protected from the direct effects of management activities for all alternatives in accordance with the Endangered Species Act. The potential exists that individual plants could be affected through non-management activities such as trampling, from illegal OHV use, collection, NNIS establishment and fluctuations in the Great Lakes water levels.
- **Lakeside Daisy.** The Forest harbors Michigan’s only occurrence of Lakeside daisy. Alternatives 2-4 would provide beneficial effects to this species through specific management direction to manage NNIS and OHV use. Alternatives 2–4 also include an objective to establish a new population for this species. As a result, Alternatives 2–4 would provide the greatest benefit to Lakeside daisy.

- Dwarf Lake Iris inhabits the shorelines of northern Lakes Michigan and Huron. It is predicted that this species would benefit from all alternatives through control on NNIS and a prohibition on cross-country OHV travel.
- Houghton's Goldenrod also inhabits dunes and interdunal wetlands adjacent to northern Lakes Michigan and Huron. All alternatives would maintain the ecological conditions for this species. Control of NNIS and a prohibition of cross-country OHV travel would have a beneficial impact on Houghton's goldenrod. Encroachment of woody vegetation and road maintenance along US-2 could have an adverse affect on individual plants.
- Pitcher's Thistle occupies open dunes or beaches, primarily on Lake Michigan's shores. The anticipated effects are similar to Houghton's goldenrod.
- Hart's-tongue Fern is specific to limestone boulders in cool moist and shaded northern hardwood forests. Known occurrences are on the Forest's East Unit. While all alternatives would provide protection of known occurrences, Alternatives 1 and 2 would provide the most benefit. These alternatives have the largest areas adjacent to the known locations designated as old growth or as unsuited for timber production. This would provide more protection to unoccupied suited habitat than Alternatives 3 or 4 which have less old growth or unsuited lands.

## Wildlife Habitat

The Hiawatha National Forest is home to a wide variety of animals occupying a range of habitats, from jack pine stands on xeric outwash plains to northern hardwoods on mesic uplands. More than 292 terrestrial vertebrates are believed to utilize the Forest at some time during their life cycles. Animals are inextricably linked to their habitats. The number of wildlife species and their population levels are determined to a large degree by the amount, quality and variety of habitat available. Other factors affecting species population are: prey availability, human and natural predation, weather, diseases and natural population cycles.

- **Habitats for Species of Interest.** Out of the 895,000 acres of federal land within the Hiawatha, six wildlife habitat indicators were selected to evaluate impacts resulting from vegetation management and vegetation succession.
  - **Pine barrens/savanna.** Pine barren, savanna and open land are interchangeable terms used to describe opening complexes that are characterized by herbaceous and shrub cover, with scattered live and dead trees, within a matrix of forest land that is typically dominated by jack pine. Some of the species utilizing this habitat include: sharp-tailed grouse, black-backed woodpecker, Kirtland's warbler, prairie warbler, loggerhead shrike and short-eared owl.
 

Alternative 1 would provide more barren/savanna habitat over the next 20 years than Alternatives 2–4. Alternative 3 would provide the most habitat, although the long-term average is modeled about 5,000 acres less than current. Assuming a direct correlation between habitat quantity and wildlife abundance, the indicated trend towards less barren/savanna habitat in all alternatives would result in population declines of wildlife associated with this habitat.
  - **Mature lowland mixed hardwoods/conifers.** All lowland forest types including hardwood species, such as red maple, American beech and yellow birch and coniferous species, such as balsam fir, eastern hemlock and white pine are

included as components of these mixed stands. Some of the species utilizing this habitat include: black-backed woodpecker, Canada lynx, gray wolf and red-shouldered hawk.

Over the next 100 years, there would be an increase in mixed lowland hardwoods/conifers habitat for all alternatives. Alternatives 2 and 3 would provide similar quantities of habitat over both the short- and long-term. However, it is likely that Alternative 4 would provide the greatest quantity of structurally diverse mixed lowland hardwoods/conifers, since downed logs and woody debris would be distributed on more acres across the HNF. Alternative 3 would provide the least amount of habitat for species associated with this habitat.

- **Jack pine habitat** is characterized by all age classes of jack pine growing on a variety of soil types across the Forest. Some species of concern associated with this habitat include: sharp-tailed grouse, black-backed woodpecker, Kirtland's warbler, bald eagle, Canada lynx, northern goshawk and prairie warbler.

Over the next 20 years, Alternative 3 would provide more jack pine habitat than the other alternatives. It is the only alternative modeled with a long-term trend towards increasing jack pine habitat on the Forest. Alternative 2 would likely maintain current jack pine levels. Alternatives 1 and 4 would provide less jack pine habitat than current. Assuming a direct correlation between habitat quantity and wildlife abundance, the indicated trend towards less jack pine habitat in Alternatives 1 and 4 would result in population declines of jack pine and barren/savanna wildlife species.

- **Young aspen/birch.** This indicator includes aspen and birch on various ELTs in the 0-25 year age class. Currently there are about 32,000 acres in this age class. Species associated with this habitat include: snowshoe hare (an important prey species for federally-listed Canada lynx) and gray wolf, as well as game species such as deer, woodcock and ruffed grouse.

Alternatives 1 and 3 would provide more of the indicator habitat and most benefit those species requiring young aspen and birch habitat (e.g., white-tailed deer, golden-winged woodcock, ruffed grouse). It would also provide more young aspen/birch habitat over the long-term than the other alternatives. In Alternative 3, the quantity of young aspen/birch would initially be nearly double, but trend about 7,000 acres less than Alternative 1 over the long-term. Alternatives 2 and 4 would provide nearly identical quantities of young aspen/birch, trending towards less habitat over the long-term for wildlife associated with this indicator.

- **Mature northern hardwoods** are defined as sawtimber-sized stands greater than about 70 years old. Currently, there are about 117,000 acres in this class. Some species of concern associated with this habitat include: American marten, gray wolf, northern goshawk, black-backed woodpecker, red-shouldered hawk and bald eagle. Alternatives 2 and 4 would provide the greatest quantity of mature northern hardwoods habitat over both short-term and long-term periods. Habitat would increase rapidly in the first 20 years and then stabilize, then continue to increase at a slower rate. Alternative 3 would increase mature northern hardwood forests, but by a lesser amount than Alternatives 2 and 4.

Over the long-term, acreage of mature northern hardwoods habitat under Alternative 1 would not change much from the existing condition. Under all alternatives, it is expected that stands would mature, increasing in height and girth, adding canopy gaps and improving structure at ground level and above, all of which would increase habitat quality.

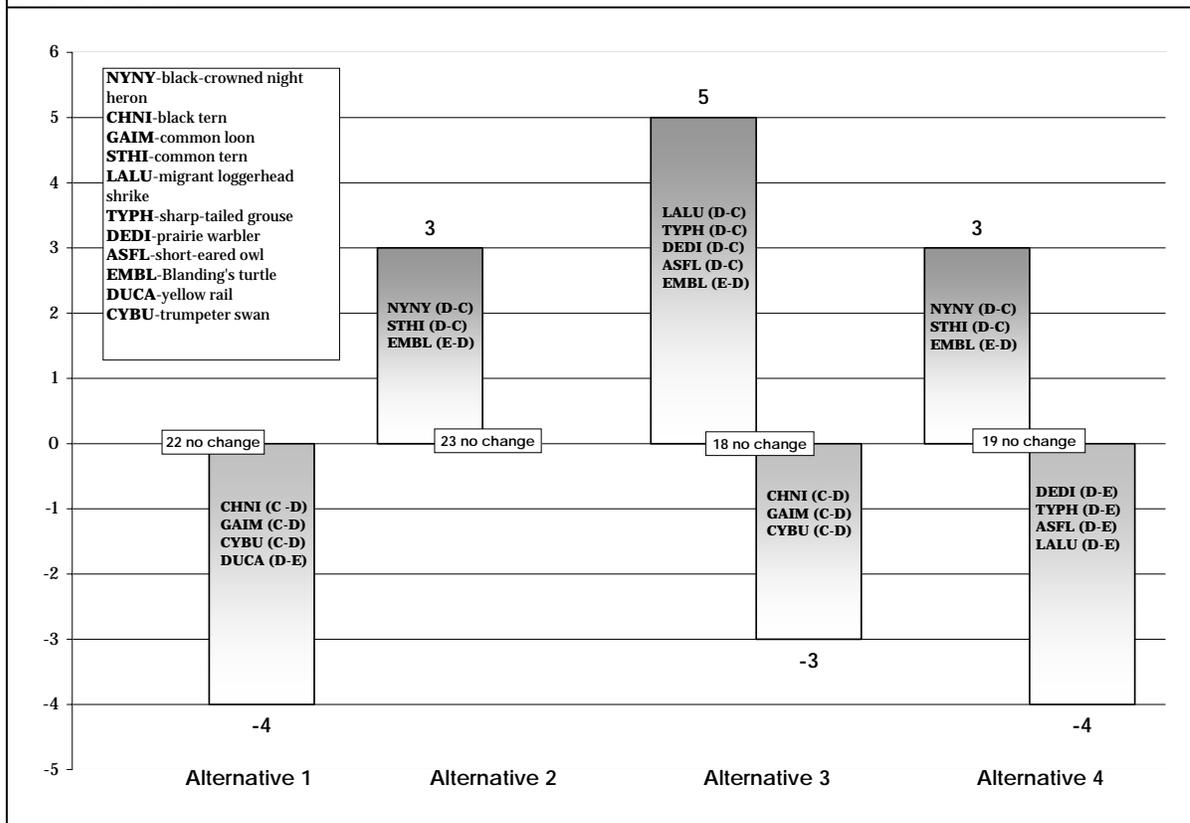
- **Northern white cedar** is a late seral species occurring primarily in mesic to wet sites. Currently, there are about 78,000 acres on the Forest. Northern white cedar provides important winter habitat for white-tailed deer and snowshoe hare. It also provides year-round habitat for species such as Canada lynx, red-shouldered hawk and bobcat.

Over the next 100 years, there would be an increase in cedar habitat for all alternatives with Alternatives 1 and 4 providing substantially higher amounts. This is due primarily from succession of early and mid-seral species to the late seral cedar type and limited harvest. Wildlife associated with this habitat would benefit under all alternatives; however, Alternatives 1 and 4 would provide the most benefit. White-tailed deer would likely benefit from the increased winter habitat, perhaps the single most limiting factor for the species on the Forest. American marten would benefit from the increase in structurally diverse habitat, as cedar ages into larger timber with an abundance of downed wood. Species dependent on smaller cedar size classes, such as snowshoe hare and various warblers would also benefit from increases in this habitat.

- **Management indicator species (MIS)** are used to monitor the effects that management activities have on species viability. Species are chosen based on their ability to represent the needs of other species in similar habitat. The following are the MIS for the 2006 Forest Plan alternatives:
  - **Ruffed Grouse** is a highly-valued game bird, which represents the early-successional stage of the aspen community and associated species such as golden-winged warbler, white-tailed deer, snowshoe hare and indigo bunting. Alternatives 1 and 3 would provide the most benefit to ruffed grouse, with the greatest predicted amounts of all habitat types at years 20, 50 and 100. Mature aspen would decrease for both alternatives during the first decade. Brood cover would be about 50 percent greater than winter foraging cover. Both Alternatives 2 and 4 would decrease winter food and brood habitat by year 50 and would continue the reduction through year 100. However, effects to ruffed grouse would be less pronounced with Alternative 2 than with Alternative 4.
  - **American Marten** represents late-successional northern hardwoods and conifer-dominated forests and includes species such as pileated woodpecker, northern goshawk, eastern chipmunk, woodland jumping mouse and gray wolf. Alternatives 2 and 4 provide the most breeding and denning habitat for American marten over the 100-year period modeled. The emphasis on uneven-aged management should result in a more structurally diverse habitat than Alternatives 1 or 3. Alternative 1 would provide the least amount of marten habitat.
  - **Sharp-tailed Grouse** has been identified as an MIS for species of open-land and early successional stages of jack pine ecosystems. Associated species include: short-eared owl, black-backed woodpecker, eastern bluebird, Kirtland's warbler and meadow jumping mouse. Alternative 3 would provide the most sharp-tail nesting and foraging habitat and Alternative 4 would provide the least. Alternative 2 would provide somewhat less habitat than Alternative 1.
  - **Brook trout** represents species that reside in coldwater streams. It is the only native salmonid and is a popular sport fishing species. Other resident fish species commonly associated with brook trout are the mottled sculpin, blacknose dace, longnose dace and brook stickleback. Alternatives 2 and 4 offer the best overall long-term conditions for brook trout. Both will substantially reduce potential for beaver impoundments and will increase potential recruitment of large woody debris.

- Wildlife Species of Concern.** A panel of Hiawatha wildlife biologists used the species viability evaluation (SVE) process to assess the effects of alternatives. Species were evaluated and given an outcome rating for historical condition, current condition and predicted condition for each alternative. The rationale for an outcome rating was based on existing information, relevant literature, current and predicted vegetative conditions and management direction for each alternative. Outcome ratings range from A (broadly distributed ecological conditions) to E (highly isolated ecological conditions). They are not a prediction of population occurrence, size density or other demographic characteristics. The evaluation focused on ecological conditions and primary risk factors pertinent to the species.

**Figure ES-3. Changes in wildlife SVE outcome ratings from current conditions for all alternatives.**



Species are represented by the first two alphabet characters of the Latin names for each. Ratings are in parentheses following the name abbreviations.

- Regional Forester Sensitive Species (RFSS).** The Hiawatha has 26 known terrestrial animal species currently listed as RFSS. All alternatives promote the protection, enhancement or maintenance of various RFSS and the habitats upon which they depend. However, the role each alternative would play in contributing to the conservation of these species and habitats varies for many species. Figure ES-3 shows the changes in SVE outcome ratings for all alternatives.

Under Alternative 1, four species showed negative changes in outcome ratings from current conditions. The changes were generally related to potential increases in motorized lake access and OHV use. Black tern, common loon and trumpeter swan nesting areas on ponds and lakes were determined to be adversely impacted from

potentially increased inland lake motorized access and other forms of lake recreation. Yellow rail, an inland marsh dweller, was determined to be adversely affected from habitat loss, due to fire suppression activities and the Forest's policy to permit cross-county snowmobile travel.

For Alternative 2, there were no negative changes in outcome ratings from current conditions. Under Alternative 3, three species showed negative changes in outcome ratings. The changes were generally related to potential increases in motorized recreational activities associated with inland lakes. Black tern, common loon and trumpeter swan nesting areas on ponds and lakes could be adversely impacted from increased inland lake motorized access, however implementing the guideline that allows closure of nesting areas to motorized use would greatly reduce disturbance of nest sites.

Under Alternative 4, four species showed negative changes in outcome ratings. The changes were generally related to decreases in specific habitats. Jack pine and pine barren/savanna habitat, and sharp-tailed grouse, prairie warbler, short-eared owl and migrant loggerhead shrike habitats declined in quantity during the first 20 years, and trended still lower at desired condition.

- **Federal Threatened or Endangered Species.** The Hiawatha has six federally-listed wildlife species. As with the RFSS, all occurrences of these species are protected from the effects of management activities for all alternatives in accordance with the Endangered Species Act. Under all alternatives, federal recovery plans would be implemented and all nest and denning sites would be protected.
  - **Bald Eagle** is present on the Forest as a breeding species and occasionally as a winter resident. All alternatives would maintain or provide improved habitat conditions for eagles. This is because they steadily increase the acres and percent of the Forest in red and white pine forest types, including acres in older age classes. These species are preferred as nesting trees. Bald eagles would also benefit under Alternatives 2–4 from direction to manage riparian areas toward a later seral condition. Under all alternatives, nest site protections would be implemented. Alternative 4 would have the least potential for human disturbance followed by Alternatives 2, 3 and 1.
  - **Canada lynx** was listed as threatened in 2002. Lynx have been observed sporadically in the Upper Peninsula and are believed to be dispersing populations from Canada rather than resident populations. The most recent record of lynx in the U.P. was captured in a trap in Mackinac County in 2003. Critical risk factors are habitat (denning, foraging and connectivity), disturbance and competition from other carnivores. Under Alternative 1, lynx management would be guided by direction in the Lynx Conservation Strategy and Assessment. This was a document developed shortly after the listing to guide lynx management nationally.
    - Under Alternatives 2–4, forest-specific management direction for habitat connectivity, denning habitat and snow compacting activities would guide lynx management. All alternatives would provide sufficient denning and foraging habitat and habitat connectivity.
  - **Gray Wolf** is a resident of the Forest and numbers have steadily increased since 1996. Risk factors are prey habitat and human disturbance. All alternatives are likely to provide sufficient amount of young forest and conifer cover for prey species. Populations of available prey are expected to remain at levels to maintain viable wolf populations. Alternatives 1 and 3 have the highest likelihood of

increased human disturbance due to higher allowable levels of snowmobile and OHV use than Alternatives 2 and 4. Alternative 4 would have the least amount of human disturbance potential.

- **Kirtland’s Warbler** is present on the Forest, and is breeding and foraging in young jack pine stands. Nesting is inextricably linked to stands of dense jack pine from approximately 6-25 years old. Primary risk factors include the availability of nesting habitat, human activity and nest parasitism. Disturbance to individual birds through human activity and nest parasitism would be similar between all alternatives. All alternatives would provide nesting habitat, however Alternatives 2–4 provide specific nesting habitat goals. Alternative 3 has the highest acreage goal, followed by Alternatives 2 and 4. Alternative 1 does not specify a minimum goal. Alternatives 2-4 would allow management in larger block sizes, which is critical to the species.
- **Hines Emerald Dragonfly** is present on Mackinac County on the Hiawatha’s East Unit. This is the only known occurrence in the Upper Peninsula. Primary risk factors include available habitat and habitat destruction from off highway vehicles (OHV). All alternatives would not allow cross-country OHV use. Alternatives 2–4 generally classify occupied and potential habitat as unsuited for timber production and provide additional protection for occupied and potential habitat by increasing the size of the Summerby Swamp cRNA.
- **Piping Plover** is an endangered shorebird present on the Hiawatha. The Forest contains both designated critical habitat and other shoreline habitat with characteristics favoring piping plover. Critical risk factors include nest protection and habitat management. All alternatives are expected to have direct and indirect effects as a result of protecting, managing and monitoring known occurrences and essential habitat. Adverse effects to individual birds from recreation along shoreline areas and from development of recreation sites are expected to occur under all alternatives. Alternative 1 does not contain specific management direction for piping plover. Alternatives 2–4 have a standard requiring protection of plover nests with closure or fencing, as well as a guideline to discourage recreation activities near active or historic nesting sites. All alternatives would allow habitat enhancement activities to occur, however Alternatives 2–4 have a goal to improve nesting habitat by providing nesting structures and controlling non-native invasive species.

## Watershed

- **Riparian and Aquatic Habitat.** Riparian vegetation plays an important role in maintaining the health of aquatic ecosystems. Along streams, it provides shade to keep water temperatures cool during summer, provides nutrients for aquatic organisms and provides large woody debris (LWD) which is important to channel stability and aquatic habitat complexity. The Hiawatha has 1,780 mapped stream miles. The streams are classified as either high or low priority, based on the stream’s potential to provide a quality fishery and state of Michigan designated uses.

The Hiawatha’s riparian corridors are still exhibiting the effects from 19<sup>th</sup> century logging activities that removed long-lived tree species such as white pine and hemlock. This affected the corridor’s ability to provide quality large woody debris to the aquatic system. In addition, beavers expanded because of increased aspen forage. When beavers build dams, the water table behind the dam rises and spreads onto the floodplain, which kills large trees and leads to establishing grasses, forbs and shrubs.

There has been an gradual increase of mid- and late-seral tree species in riparian corridors as the aspen is replaced through forest succession. This is moving the Forest towards the desired condition of late seral species.

In Alternatives 2–4, high priority streams will have decreases in aspen within 500 feet of the streams because management direction prohibits aspen regeneration. This could eventually result in fewer beaver dams, maintaining water quality, increases in large woody debris and improving aquatic organisms passage.

All alternatives address watershed and riparian goals, objectives, standards and guidelines to some degree, with Alternative 1 the weakest. Management direction is designed to maintain watershed functions and resiliency during management activities designed to meet other resource objectives. Alternatives 2–4 incorporate Michigan and Federal Energy Regulatory Commission BMPs, which ensures many of the key aquatic habitat components will be maintained. In addition, Alternative 1 continues to implement the best available science for watershed and riparian resources while in Alternatives 2–4, latest sciences have been incorporated into the goals, objectives, standards and guidelines.

- **Sedimentation.** Road stream crossings are the greatest source of stream sedimentation, followed by recreational activities in or near streams. The Hiawatha manages about 3,945 miles of system roads, which includes about 900 stream crossings. During the next 10 to 15 years, the Hiawatha will build new roads and decommission others to accomplish management activities. Many of the new roads will be built as temporary roads for timber harvests.

In Alternatives 1–3, there is very little difference in construction, reconstruction and decommissioning miles of roads for timber harvests. Alternative 4 has the lowest allowable sale quantity, which will result in less road construction, reconstruction and decommissioning and therefore the lowest risk of increased sedimentation due to stream crossings. Although the actual locations of the new roads are unknown, the Hiawatha will implement the BMPs and the timber sale temporary road strategies to reduce sediment entering streams from roads. Alternatives 2–4 also incorporate standards and guidelines that are designed to protect streams.

- **Wetlands** comprise about 39 percent of the Hiawatha. Changes in vegetation composition from timber harvests, succession, fires and road construction, reconstruction and maintenance could all cause wetland loss or change in function.

Wetland conditions within the Hiawatha will continue to improve because watershed restoration has been a standard practice on the Forest. All alternatives will have timber harvests in forested wetlands, but it is not expected to result in a loss of wetlands. A minor amount of rutting, puddling and compaction is expected to occur but is likely to be within established management direction guidance. In all alternatives, incidental wetland areas may be filled by roads to access timber. Management direction will minimize these fillings and will restore the areas to original functioning conditions following harvesting.

Effects of OHVs on wetland vegetation and soils immediately adjacent to the trail are expected to increase due to increased OHV use. All alternatives prohibit cross country travel and allow restoration when damage occurs. All alternatives allow prescribed fires to restore wetland vegetation conditions. Wildfires may burn some wetlands, but in all alternatives, the extent and frequency of fires is expected to occur at the same frequency and intensity since 1986.

Alternatives 2–4 have management direction to improve road and trail crossings in streams and wetlands and to obliterate, relocate or improve 20 segments of roads and trails in the riparian corridor to restore soil-hydrologic functions. Alternatives 2–4 also have management direction to maintain the ecological functions of woodland ponds. In Alternative 1, woodland ponds are protected when identified, but negative impacts are likely to continue, due to inconsistent recognition and lack of protection.

- **Non-Native Invasive Riparian and Aquatic Species.** One of the primary threats to lake ecosystems is the inadvertent introduction and spread of non-native species. This often occurs from boats that are moved from lake to lake. Non-native invasive species (NNIS) are introduced or spread when they get caught on boat motors, trailers, are dumped into live wells and bait buckets or attach themselves to hulls. Most of the Hiawatha's lakes contain few, if any, NNIS. Inland lake accesses that encourage launching of large boats suitable for use on the Great Lakes pose the greatest risk of introducing NNIS, but any improvement in access increases the risk.

Alternative 1 does not establish a maximum percentage of lakes with motorized access. Therefore it has the highest potential for NNIS introduction and spread. In Alternative 2, motorized access is the same as the existing conditions therefore the risk of introducing or spreading NNIS species would not change from current risk levels. In Alternative 3, motorized lake access increases to 83 percent, increasing the risk of introducing or spreading NNIS. Alternative 4 has the lowest risk of NNIS introduction and spread because motorized lake access decreases to 29 percent.

Once exotics become established, efforts to eliminate them are nearly impossible. The 2006 Forest Plan has management direction aimed at controlling and/or reducing the spread of NNIS on the Forest. It includes a goal to develop educational materials about controlling and/or reducing the spread of non-native invasive species and distributing them at appropriate locations including boat launches. Prevention will continue to be the best management strategy for NNIS.

- **Soil Resources.** Some soils on the outwash plains are still recovering from 19<sup>th</sup> century timber harvests and subsequent slash fires. The slash fires oxidized much of the organic matter that had accumulated on the soil surface. Timber harvest and prescribed fire can reduce soil productivity by removing and oxidizing the organic materials that would provide nutrients in the soil.

For Alternative 1, the Forest has implemented a no whole-tree harvest policy on sites with inherent low soil productivity. Because the policy is not in the Forest Plan, there is no guarantee that it will be implemented over the course of the planning horizon. Prescribed burning occurs under Alternative 1, and could reduce soil productivity if excessive organic matter is consumed. Prescribed fires on these sites are designed to be of low intensity and are not expected to reduce soil productivity.

For Alternatives 2–4, standards and guidelines for savannah and open lands conditions require slash retention on sites with inherently low productivity and retaining slash when conducting prescribed burns. No reduction of soil productivity is expected for all alternatives as a result of management activities.

Land management activities can erode, compact, puddle, or rut soils affecting soil productivity. Alternatives 2–4 establish management direction by incorporating Region 9 soil quality standards that protect soil productivity. On the Hiawatha, soil erosion hazard varies from slight on the outwash plains to severe on the steep, finer textured soils of the moraines.

Under Alternative 1, soil erosion is prevented by management direction that prohibits equipment on slopes over 35 percent gradient. In Alternatives 2-4, soil erosion is further reduced with direction that restores temporary roads to natural conditions. All alternatives have objectives to identify and restore areas where soil-hydrologic function is impaired. In Alternative 2, soil erosion as a result of management activities within stands is expected to remain slight. Alternative 3 has a slightly higher risk of soil erosion as a result of increased timber harvest activities and Alternative 4 is lower because it emphasizes longer-lived species management, resulting in less clear-cutting and more uneven-aged management. Because of management direction, all alternatives will have no measurable effect on soil erosion and productivity.

- **Aquatic Fauna Habitat.** The effects of the alternatives on aquatic fauna habitat are addressed by expected changes to the ecological conditions for steelhead (*Onchorynchus gairdneri*) and largemouth bass (*Micropterus salmoides*).
  - **Steelhead** is a non-native, migratory rainbow trout introduced to the Great Lakes basin in late 1800s. It is of interest because it is the most wide-spread anadromous salmonid on the Forest and supports a popular sport fishery in the Great Lakes and in spawning streams. Steelhead require relatively cold water, low sediment loads, clean spawning gravel, large woody debris and barrier-free migration routes. Steelhead dominate the larger, somewhat warmer streams that can be affected by beaver dams, the lack of large woody debris and sedimentation from road crossings.

Alternatives 2 and 4 offer the best overall conditions for steelhead in the long-term. Both will reduce potential for beaver impoundments and will increase potential recruitment of LWD. Implementation of a 500-foot buffer between aspen regeneration units and high priority streams and clearer riparian management direction in Alternatives 2-4 clearly distinguishes them from Alternative 1, which would retain the existing, ineffective 200-foot buffer.
  - **Largemouth bass** is the most widely-distributed predator species found in warmwater lakes on the Forest and is a popular sport fishing species. The Hiawatha has 90 lakes that currently support or are capable of supporting a healthy warmwater largemouth bass fish community. The effect of the alternatives on largemouth bass habitat are addressed through changes to large woody debris, from non-native invasive species and from disturbance from personal watercraft.

All alternatives have management direction to increase the long-term capability of the riparian area to provide LWD. Alternative 1 is weaker due to less riparian management direction. Alternative 1 substantially increases the number of back-in accesses on lakes that allow personal watercraft (PWC) use, but total numbers of back-in and carry-in accesses change little from the existing condition.

Overall risk for NNIS introduction is only slightly higher than exists now. For Alternative 2, the number of back-in, carry-in and no access lakes changes little from the existing condition, but the number of lakes where PWC use is allowed is increased. Overall risk for NNIS introduction is similar to Alternative 1. For Alternative 3, the potential for NNIS introduction and disturbance of shallow water habitat is much higher than for the other alternatives due to large increases in the number of lakes that have back-in access and allow PWC use.

Alternative 4 has the lowest risk of NNIS introduction and of shallow water habitat disturbance from PWCs. It has a large reduction in the number of lakes managed for motorized, back-in access and a large increase in the number of lakes managed for non-motorized use are responsible for the lower risk to bass habitat of all the alternatives.

## Recreation

Residents and visitors alike seek the wide variety of recreation opportunities and settings offered on the Hiawatha National Forest. The 2006 Forest Plan prescribes three main areas of change to the recreation settings and opportunities on the Forest:

- It changes the Recreation Opportunity Spectrum (ROS) objectives for the Boot Lake, Delias Run and Buck Bay Creek areas from semi-primitive non-motorized emphasis (SPNME) to semi-primitive motorized (SPM), to reflect the current use and desired future management of these areas.
- It provides allocations by facility type for watercraft access on inland lakes and Great Lakes, and it provides direction to manage motorized and non-motorized watercraft access on inland lakes.
- It allocates management direction for motorized and non-motorized OHV and snowmobile road and trail access, and it emphasizes opportunities for loops and connections between routes that are open to these uses and facilities.

Motorized and non-motorized recreation opportunities will be provided under all alternatives (reference the alternative comparative charts). Alternatives 1 and 3 generally allow for increased amounts of developed watercraft access and increased motorized recreation opportunities. Alternative 4 prescribes lower amounts of developed watercraft access and decreased motorized recreation opportunities. Alternative 2 generally maintains the existing condition or slightly increases the amount of developed watercraft access and moderately increases motorized recreation opportunities. Non-motorized recreation opportunities have the potential to increase in all the alternatives.

- **Recreation Opportunity Spectrum (ROS).** Under Alternatives 1 and 4, Forest visitors will find more acres of semi-primitive non-motorized (SPNM) and SPNM emphasis, recreation opportunity spectrum (ROS) objectives than in Alternatives 2 and 3. This could result in slightly more acres available to experience remoteness, independence, closeness to nature, and self-reliance in Alternatives 1 and 4, than in Alternatives 2 and 3. However, more acres do not necessarily equate to quality SPNM settings. The Delias Run, Boot Lake and Buck Bay Creek areas lie within management areas that allow motorized access and emphasize vegetative treatments, but emphasize SPNM recreation use, under Alternative 1.

Alternatives 1 and 4 could be more responsive to users who desire more non-motorized areas on the Forest over time. The difference in acres allocated to SPNM ROS objectives between Alternative 1, and Alternatives 2 and 3 is largely a result of the changes proposed to the Delias Run, Boot Lake and Buck Bay Creek areas. The Forest would maintain about the same overall percentage of lands in SPNM recreation settings and opportunities in Alternatives 1-3. The percentage of lands with SPNM ROS objectives increase slightly in Alternative 4 because of management area allocation. However, the total number of acres allocated to SPNM ROS objectives varies between the alternatives (reference Table 3-ROS-5 in the FEIS).

In Alternatives 2–4, Delias Run, Boot Lake and Buck Bay Creek would be changed from a SPNM emphasis to semi-primitive motorized (SPM) objectives. This reflects recreation settings in these areas that are more consistent with the existing condition, and is more consistent with the roaded natural (RN) ROS objectives for the lands surrounding these areas. Certain roads and trails would remain open to motorized use and/or additional loops and connections could be established.

Influences from private lands and/or uses that occur on roads and trails that are not under USFS jurisdiction, would continue to affect the recreation setting for these areas. However, it is more likely that these activities would complement SPM ROS objectives than SPNM ROS objectives.

- **Watercraft Access.** While the state of Michigan retains regulatory authority over the water, bed and bank of most of the rivers, lakes and streams, the Forest Service has the authority to regulate the types and kinds of watercraft access facilities that are constructed on national forest lands and to manage the launch and retrieval of watercraft from national forest lands. Where concerns arise, the Forest Service has a history of working cooperatively with the State to resolve them.

By designing and managing for certain access facilities and types of watercraft to launch and retrieve on inland lakes from national forest lands, the Hiawatha can manage for a variety of motorized and non-motorized recreation settings and opportunities. This affords the ability to reduce user conflicts and complaints and to address resource concerns for species viability and wildlife habitats. Where other land ownership exists on inland lakes, the desired settings may not be fully achieved.

Personal watercraft (PWC) use emerged on the Forest after the 1986 Forest Plan was developed. Increasingly, the Forest receives complaints about PWC use on inland lakes. Commonly known as jet skis and jet/air boats, their size and maneuverability causes it to be used differently than other motorized watercraft. Other concerns include accelerated shoreline erosion and effects to wildlife, particularly loons. It is the PWC's unique characteristics and specific use complaints that cause PWCs to be analyzed separately from other motorized watercraft.

In Alternative 1, a variety of watercraft access facilities would be provided, and motorized or non-motorized settings would generally not be specified on inland lakes, except in areas where motorized use is prohibited (e.g. SPNM and wilderness). Alternative 2 manages watercraft access and settings on inland lakes at levels that most closely reflects the existing condition. Motorized use could increase slightly above the existing condition, allowing for some increase in motorized recreation over the planning period. It would slightly reduce the number of back-in accesses on inland lakes and slightly increase the number of carry-in accesses. However, multiple watercraft accesses could exist on some lakes.

In Alternative 3, back-in watercraft access on inland lakes would increase above the existing condition, carry-in access would decrease, and there would be fewer lakes with no developed watercraft access facilities. This alternative provides the highest level of development for motorized watercraft access and settings, while Alternative 4 provides the least. Alternative 4 would decrease the percentage of back-in accesses and increase the percentage of lakes with no developed watercraft access facilities. Likewise, Alternative 4 would manage for less motorized use and more non-motorized use on inland lakes, than the existing condition.

Alternatives 1–3 allow for the development of an additional Great Lakes boat access, while Alternative 4 would retain the existing number of Great Lakes accesses.

- **Motorized (OHV and snowmobile)/Non-Motorized Trails and Routes.** The Forest Service released the 2005 Final Travel Management Rule (Rule) between the draft and final Forest Plan. The management direction and effects analysis were changed to incorporate the requirements of the Rule.

The Rule established specific terminology and definitions including the definition for off-highway vehicles (OHV) that were incorporated into the glossary. It requires the Forest to develop within four years, Motor Vehicle Use Maps (MVUM) that depict and designate “authorized” motorized routes by vehicle class. All other routes that are not shown on the MVUM are closed to motorized use and classified as “unauthorized.” The MVUM will be the information and enforcement tool for routes that are open to OHV use on the Forest, in accordance with the Rule.

All alternatives provide for coordination with other public entities when possible. All alternatives prohibit cross-country travel by OHVs— which is no change from the existing condition. None of the alternatives considered opening all forest roads to OHV use, because of safety concerns and impacts to other resources.

The focus of Forest Plan allocations for motorized trails and routes in Alternatives 2-4 is to create loops between trails and roads that are open to OHV and/or snowmobile use, and to create connections to facilities. The maximum allowable miles listed in the alternatives are designed to complement the existing system of OHV and snowmobile trails and routes.

Alternative 2 provides more mile of potential OHV and snowmobile routes than the existing condition and Alternative 4, and fewer than Alternative 3. Alternative 4 focuses on creating loops and connections primarily through changes in the existing trail/route system and it would eliminate cross-country travel by snowmobiles. Alternatives 2-4 implement a “closed unless designated open” policy on Forest roads and trails for OHVs, and retains an “open unless designated/posted closed” policy for snowmobiles on Forest roads. Alternatives 1-3 maintain a 15-acre OHV/snowmobile area on the Forest; Alternative 4 eliminates this area.

Based on the comments to the DEIS and proposed Revised Plan, the Hiawatha completed additional analysis on the environmental effects of allowing cross-country snowmobile travel. This analysis determined that the effects of snowmobile use at current levels would not increase risks to species viability. Alternative 2 was modified to allow cross-country snowmobile use to continue and a standard was added to the Forest Plan which states, “Cross country snowmobile use is generally allowed within motorized ROS classes unless prohibitions or restrictions are needed for resource protection or to meet management objectives.” This management direction allows the Forest to manage/restrict snowmobile use to protect resources where conflict occurs, while accommodating user needs for cross-country travel.

An analysis of the Forest’s non-motorized trail system indicated that there are adequate miles of trail to accommodate user needs (recreation demand). However, the Forest receives complaints about the mix of recreation uses on some trails. All alternatives allow additional miles of non-motorized trail construction. Alternatives 2-4, shift the focus for non-motorized trails from longer, back-packing trails (identified in the 1986 Plan) to shorter loops and connections to recreation facilities and existing trails. This reflects changes in use patterns that have occurred since 1986. They also accommodate mountain biking and increased horse use which have evolved since 1986, and provide opportunities to reduce conflicts between uses on the existing trail system.

## Scenic (Visual) Quality

The Forest provides a variety of settings and visual perspectives, ranging from sandy Great Lakes shorelines to wetland marshes; from red pine plantations and conifer stands to northern hardwood stands that form canopies over roadways.

The 1986 Forest Plan established visual quality objectives (VQOs) to manage the Forest's scenic quality and to prescribe objectives for resource activities to maintain or improve the Forest's scenic quality. No changes to the existing VQOs occurred in any of the alternatives. The 1986 Plan prescribed VQOs independent of management areas, therefore, no change would occur to the visual quality objectives as a result of changes to the management area allocations.

The Hiawatha will continue to be managed to meet the assigned VQOs, and the goal to maintain a "natural-appearing Forest" is retained. Forest visitors will continue to experience a relatively unaltered perception of the Forest overall, resulting in a recreational experience that will maintain the desired setting. The desired conditions for MAs 5.1 to 9.1 place a greater emphasis on maintaining each area's natural appearance and an element of minimal disturbance.

Individual stand VQOs may change through project level analysis to a rehabilitation classification or maximum modification (MM). These changes may occur in areas where salvage treatments are prescribed, for areas of large opening management, and/or for Kirtland's warbler habitat development.

In all alternatives, the greater potential to impact and/or affect VQO results from vegetative treatment and road-building activities. Most management areas contain a mixture of even-aged and uneven-aged harvest treatments; however, in management areas where uneven-aged management is emphasized, the ability to mitigate effects to the scenic quality could be more easily achieved due to the natural screening provided by vegetation that is left.

The Forest's transportation system is largely in place and most road construction would be for temporary roads. Fisheries habitat improvement and recreation facility development likewise have the potential to affect VQOs; however, these are generally mitigated by the choice of material, design and vegetation restoration and becomes less evident to the casual visitor over time.

## Research Natural Areas

The Hiawatha's research natural areas (RNAs) and candidate research natural areas (cRNAs) provide examples of those unique or special ecological communities in the Eastern Upper Peninsula. These areas usually exhibit minimal evidence of human disturbance, with vegetative composition resulting primarily from natural ecological processes, rather than human-induced influences. There are currently three RNAs and 21 cRNAs designated on the Forest.

There is no change to established RNAs under all alternatives. Under Alternative 1, the boundaries of the cRNAs would remain unchanged. Under Alternatives 2–4, minor boundary adjustments were made to five cRNAs to eliminate mapping and boundary discrepancies. The Ramsey-Lost Lakes and Ogontz Lake Plain cRNAs were merged and the boundary was adjusted to capture the best examples of large and small dunes, and to provide a more intact and centralized representation that is isolated from management activities and natural disturbances, by non-forested wetlands. These areas were renamed as the Lost Lakes cRNA.

Summerby Swamp cRNA was modified to include all of section 10 and portions of sections 11, 14 and 15 south of Highway 123. The additional lands were identified in field investigations as areas with high ecological and biological significance. The area contains several federally and Region 9 listed plants and animal species and ecologically significant and rare community types.

These changes increase the cRNAs and RNAs acres from about 18,500 to 20,370 (including some private land that is located within the boundaries). Research Natural Areas and cRNAs are assigned to MA 8.1, unless they are embedded in other MAs (e.g. wilderness). These changes adjust boundaries to align with ecosystem boundaries. They also include important influence zones to the cRNAs (e.g. continued important water flow into the represented area).

## Wild and Scenic Rivers

The Hiawatha National Forest has five designated National Wild and Scenic Rivers (Indian, Carp, Whitefish, Sturgeon and East Branch Tahquamenon). As part of Forest Plan revision, final river corridor boundaries and comprehensive river management plan (CRMP) direction were developed for the Whitefish, Sturgeon and East Branch Tahquamenon Rivers.

All alternatives protect and/or enhance each river's free-flowing condition and outstandingly remarkable values, in accordance with the provisions of the National Wild and Scenic Rivers Act. All alternatives provide final river corridor boundaries, descriptions of the outstandingly remarkable values (ORVs), river corridor carrying capacities and zoning recommendations for consideration by local governments.

Alternative 1 establishes final river corridor boundaries that extend one-quarter ( $\frac{1}{4}$ ) mile on each side of the river from high water mark, and retains 1986 Forest Plan management area direction (with minor changes to incorporate provisions of the Michigan Scenic Rivers Act of 1991 and new science) to manage, protect and enhance each river's free-flowing condition, and outstandingly remarkable values (ORVs).

Alternatives 2–4 incorporate the final river corridor boundaries that were identified and located with respect to the location and protection of the ORVs and landscape features that make the boundaries identifiable on the ground. Alternatives 2–4 incorporate new science, desired conditions for each river and river-specific enhancements within the river corridors.

There are four legislatively mandated “study rivers” within and adjacent to the Forest. The boundaries of each extend one-quarter ( $\frac{1}{4}$ ) mile on each side of the river from the ordinary high water mark. All alternatives protect the eligibility of these study rivers for future consideration under the National Wild and Scenic Rivers Act. Alternative 1 retains 1986 Plan management direction and Alternatives 2–4 incorporate modified management direction for the study rivers.

## Heritage Resources

No changes were proposed for heritage resources in the 2006 Forest Plan. Heritage resources can be broadly defined as all historic (after A.D. 1650) and prehistoric (pre-European or before A.D. 1650) sites possessing historical, cultural and/or archaeological value. These sites consist of the physical evidence for human occupation, activities or events and the place or places where the evidence survives in a context that allows for research, interpretation, preservation and/or use as an educational tool for connecting people with cultural and natural history.



While there are a small number of 17<sup>th</sup> and 18<sup>th</sup> century fur trade-era sites, most of the historic sites date to the 19<sup>th</sup> and early 20<sup>th</sup> centuries. Logging camps, residential cabins, farmsteads, relics from European settlers and early recreational or hunting camps are commonly found on the Hiawatha. About 2,900 sites have been identified and more than half have been field verified and documented in accordance with federal law (36 CFR 61) and Forest Service direction.

Nearly 100 inventoried sites have either been listed or formally determined to be eligible for the National Register of Historic Places.

Monitoring identified three earth-disturbing activities influenced by Forest Plan revision decisions that could negatively affect heritage resources. They are:

1. Damage from timber harvest related activities, such as skidding, decking, heavy equipment use and road construction
2. Damage from construction, maintenance and operation of recreation facilities, such as trails, boat launches and parking lots
3. Damage from recreation activities, such as erosion from OHV use, foot traffic and dispersed campsite use

These activities have occurred and have resulted in relatively low impacts. This suggests that timber harvest, recreation construction and recreation use levels would have to increase substantially to significantly change the risk of damaging heritage resources. The Forest Service has a national measurement and tracking system that establishes standards for managing heritage resources. These standards are incorporated into the goals, objectives and guidelines that are common to all alternatives.

## Social and Economic Environment

- **Social Environment.** The Forest provides a range of uses, forest settings, visitor experiences, products, goods and services. Forest Plan revision has the potential to affect the mix of uses, values, products, services and experiences that are provided on the Forest. The term “quality of life” refers to the features and opportunities on the national forest that attract and keep residents in the area. The term “Sense of Place” refers to the features and opportunities on the national forest that make it unique.

All alternatives provide for a diverse range of opportunities for recreation, personal consumption and use of forest products, that contribute to lifestyles and quality of life for visitors and residents. For many, “sense of place” is tied to the Forest and to the many opportunities it provides. All alternatives will continue to contribute to a sense of place for existing users, while also serving to enhance community attractiveness to new residents and visitors.

Motorized and non-motorized recreation opportunities will continue to be provided under all alternatives. Those persons requesting the elimination of recreation vehicle use (OHV and/or snowmobile) on trails and roads, or the opening of all forest roads to OHV use, would likely perceive a continued adverse effect to their quality of life and sense of place under all alternatives.

Inland lake settings would be managed for higher levels of motorized watercraft access under Alternative 3 and lower under Alternative 4. Alternatives 1 and 2 would remain fairly consistent with the existing condition. Alternatives 2–4 would express desired motorized/non-motorized and PWC settings to manage toward across the Forest, providing choice on inland lakes for users to select the setting that best meets their quality of life and sense of place needs. People desiring limited motorized watercraft or PWC access facilities would prefer Alternative 4, followed by Alternative 2. Those desiring higher levels of motorized watercraft access facilities (including PWC) would prefer Alternative 3, followed by Alternative 1.

Local communities and governments have expressed concern that forest management support or enhance local economic development. For many U.P. residents, commodity uses of forest products are part of their ways of life. Some consider these activities and the jobs they support as essential elements of their quality of life and sense of place.

Other concerns include the desire to provide amenities and opportunities to attract and keep new residents. All alternatives would provide for a larger ASQ than the 1986 Plan, supporting the interests expressed by local governments to support the wood products industry and to support schools and roads. Additionally, all alternatives provide a full range of recreation opportunities and adequate capacity to continue to aid in attracting and keeping residents in the area, and provide economic support to local businesses.

A consideration important to all forest visitors relative to quality of life, is the abundance of a wide variety of wildlife for viewing during sightseeing and other forest activities. Those seeking hunting opportunities, will likely favor Alternative 3 followed by Alternative 1. Alternative 3 provides for increasing amounts of thermal cover in the form of white cedar, which contribute to more stable habitat conditions year round. Alternative 1 provides the largest amount of foraging and nesting habitat, but may not provide sufficient thermal cover. Alternative 4 emphasizes later seral stages and increased old growth conditions, which decreases the habitat desired by species favored by hunters. Alternative 2 favors a mix of early and late seral stages.

Alternatives 1 and 3 increase early seral habitat conditions favored by many game species, thereby contributing to the maintenance or enhancement of hunting opportunities important to lifestyle and quality of life for these individuals.

- **Economic Environment.** The Hiawatha provides multiple economic benefits to the nation, to Michigan and to local communities. Economic benefits that contribute regionally include market and non-market commodities like timber, minerals, tourism, sightseeing, hunting, fishing, boating, etc. Forest Plan decisions, when implemented, can contribute to economic sustainability by providing for a range of uses, values, conditions, products and services.

All alternatives protect the reserved rights and privileges defined in treaties, executive orders, laws and court decisions related to the national forests and grasslands, and maintain trust responsibilities and cooperative efforts to support economic development for federally recognized tribes. Based on the economic analysis in the Environmental Impact Statement:

- Under full implementation of the Plan and contingent upon sufficient budget allocations, all alternatives show a potential for increased employment opportunities. Alternatives 2 and 3 show the greatest potential for increased employment opportunities.



- The activities that support the largest number of job opportunities (derived from Forest activities) are timber, followed by recreation and Forest Service expenditures.
- The greatest potential generated labor income is under Alternative 2, with the greatest increase occurring in the manufacturing sector.
- Payments to States for Chippewa County were elected under the Secure Rural Schools and Communities Self-Determination Act of 2000 (SRSCS) and would not change, unless SRSCS is not re-enacted by Congress after 2006.
- Payment to the remaining counties is estimated under the 25% Payments to States and could vary based on the alternative selected and revenues generated.
- Alternative 2 has the greatest potential revenue receipts, generating an estimated \$3.4 million (25% Payment), followed by Alternative 3 (\$3.3 million), Alternative 1 (\$3.2 million) and Alternative 4 (\$2.9 million).

## Transportation System

The Forest Service released the 2005 Final Travel Management Rule (Rule) between the draft and final revised Plan, and the management direction and effects analysis were changed to incorporate the requirements of the Rule. The terminology for roads was changed as a result of the Rule. Forest Service system roads are now referenced as “authorized” and “unauthorized” and references to “classified” and “unclassified” roads is obsolete.

There are 4,232 miles of roads within the Hiawatha National Forest’s proclamation boundary. About 3,944 miles of these roads are owned and maintained by the Forest. To better manage the road system, the Hiawatha established road density guidelines, which sets a maximum road density for each management area.

Throughout the next planning period, the Hiawatha will build new roads and decommission others. Much of the road construction and decommissioning will be due to managing for timber harvests. Road density is affected when new roads have to be built to access timber harvest sites. To maintain road density levels, some roads must be decommissioned to offset the new roads being constructed.

The total miles of construction/reconstruction or decommissioning will have slight variations between alternatives and could affect all forest activities. The goals, objectives and desired conditions for the transportation system do not change between alternatives, as they provide general direction for meeting the environmental, social and health concerns of the public.

## Lands and Special Uses

- **Lands.** Forest Service policy encourages national forests to consolidate National Forest System lands through purchase, donation and/or exchange to meet national forest objectives. Since the 1986 Forest Plan was approved, approximately 15,000 acres have been added to the Hiawatha National Forest. Based on the assumption that current funding trends will remain the same for the next planning period, the projected increase of less than 3 percent net NFS ownership would continue into the next planning period. The effects of the implementation of all alternatives will be fewer miles of boundary lines to maintain on NFS lands, consolidation of ownership into contiguous parcels and/or elimination of small, isolated tracts that are not contributing to national forest management objectives.
- **Special Use Permits.** The Forest administers approximately 370 special use permits annually. About 40 percent of the permits are for recreation special uses and 60 percent are for non-recreation special uses. The objectives, standards and guidelines for special use management have been updated and clarified, but are not changed from the 1986 Forest Plan, and do not vary across the alternatives.

## Minerals

- **Leasable Minerals.** There is a low potential for oil and gas development, or other leasable mineral development on available Hiawatha National Forest lands. Past exploration has not resulted in economic quantities of oil or gas. Well permit records maintained by the state of Michigan show only one well permit issued within the Forest boundaries (in 1929) with “dry hole” results. No areas are currently under lease on the Forest. The only foreseeable future activities would be potential for additional speculative exploration.
- **Common Variety of Minerals.** Management direction in the 2006 Forest Plan was not changed from the 1986 Plan for common variety mineral management, and does not vary between the alternatives. The Forest has 30 developed pits that have been established to extract common variety minerals. They produce an average of 27,000 tons of sand and 163,000 tons of pit run gravel annually. About 60 percent of the pit run material supports Forest Service maintenance and development activities, and 40 percent is sold under permit for public use.

All of the sand produced is sold to the public. The amount of land available for the development of common variety mineral resources is the same for all alternatives. Forest Plan goals, standards, guidelines and best management practices have been incorporated into the 2006 Forest Plan to mitigate potential effects that could result from use and development of common variety minerals, such as spread of NNIS, sedimentation in streams or waterbodies, etc. The environmental effects of developing and/or expanding individual pits would be disclosed on a project specific basis.

**Notes**

## To Find out More About Forest Plan Revision

The Hiawatha National Forest is committed to helping citizens and organizations understand the impact the 2006 Forest Plan may have on activities. Full sets of all official documents may be found in the following locations:

- **Local College Libraries.** Bay de Noc Community College, Lake Superior State University, Michigan Technological University and Northern Michigan University.
- **Local Libraries.** Many of the libraries in communities within the Hiawatha's Proclamation Boundary have received printed copies and CDs of the Final EIS and 2006 Forest Plan.
- **Hiawatha National Forest Web Site:**  
[http://www.fs.fed.us/r9/hiawatha/revision/rev\\_welcome.html](http://www.fs.fed.us/r9/hiawatha/revision/rev_welcome.html).

CDs and limited quantities of printed copies of the Final EIS and 2006 Forest Plan are available at the following Hiawatha National Forest locations:

### **Supervisor's Office**

2727 N. Lincoln Road, Escanaba, MI 49829  
Phone: 906.786.4062

### **Manistique Ranger District**

499 E. Lake Shore Dr., Manistique, MI 49854  
Phone: 906.341.5666

### **Munising Ranger District**

400 E. Munising Ave., Munising, MI 49862  
Phone: 906.387.2512

### **Rapid River Ranger District**

8181 U.S. Hwy. 2, Rapid River, MI 49878  
Phone: 906.474.6442

### **St. Ignace Ranger District**

1498 W. U.S. Hwy. 2, St. Ignace, MI 49871  
Phone: 906.643.7900

### **Sault Ste. Marie Ranger District**

4000 I-75 Business Spur, Sault Ste. Marie, MI 49873  
Phone: 906.635.5311



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