Designation Order/Decision Notice
and Finding of No Significant Impact for
Establishment of the Hayes Tower Research Natural Area

USDA Forest Service
Huron-Manistee National Forest
1755 South Mitchell St., Cadillac MI 49601

This notice documents the decision for the establishment of the Hayes Tower Research Natural Area on the Huron-Manistee National Forest. Public comments for this project were solicited by letters on July 28,1993 and August 13, 1996, and through public notice on August 19, 1996.

Decision

After reading the Environmental Assessment for the Hayes Tower Research Natural Area and in accordance with direction given in the Huron-Manistee Forest Land and Resource Management Plan and the Final Environmental Impact Statement, it is my decision to implement the Proposed Action as follows:

To amend the Huron-Manistee Forest Plan by:

1.) establishing the 388-acre (157-hectare) area known as Hayes Tower as a Research Natural Area

2.) modifying Standards and Guidelines for Management Area 8.1 to include Standards and Guidelines for all Research Natural Areas.

The Proposed Action is described in detail on pages 2-5 of the Environmental Assessment.

Reasons for the decision

My decision to implement the Proposed Action is based on its effectiveness in achieving the purpose and need identified in the Environmental Assessment, which is to provide protection for an area that has scientific, biological, geological, historical or recreational characteristics of local, regional or national significance. In evaluating the effects of the Proposed Action and Alternative, as described in Section 5 of the Environmental Assessment, it is my judgment that the Proposed Action more effectively achieves the stated purpose and need than the Alternative, because it best accomplishes the following:

- provides protection for a representative oak-pine community of regional importance for scientific purposes, which the No Action Alternative does not;

- provides Standards and Guidelines for all Research Natural Areas on the Forest, which the No Action Alternative does not.

In making this decision, I have taken into account public concerns and comments regarding the proposed project. I have evaluated the adequacy of the Environmental Assessment in resolving issues, formulating an alternative to the Proposed Action, and evaluating the effects of the alternative. I have also evaluated the disposition of issues raised during the public comment period.

Based on these and all other factors described in the Environmental Assessment, it is my judgment that the Proposed Action provides the greatest net benefit to the public.

Alternatives considered

In addition to the Proposed Action, the only alternative considered was the No Action Alternative. The No Action Alternative would not establish Hayes Tower as a Research Natural Area, or establish Standards and Guidelines for all Research Natural Areas on the Forest.

Finding of No Significant Impact

I have determined that these actions are not a major federal action, individually or cumulatively, and will not significantly affect the quality of the human environment. Therefore, an environmental impact statement is not needed. This determination is based on the following factors:

1. Public health and safety are minimally affected by the Proposed Action;
2. There are no known significant irreversible resource commitments or irretrievable loss of timber production, wildlife habitats, soil productivity, or water quality;
3. There are no unique characteristics of the geographical area that would be significantly affected by the action of this project;
4. The effects on the quality of the human environment are not likely to be highly controversial;
5. There are no known effects on the human environment that are highly uncertain or involve unique or unknown risks;
6. This action does not set precedent for other projects that may be implemented to meet the goals and objectives of the Forest Plan. This action is not connected to future actions that may have significant effects.;
7. There are no known significant cumulative effects between with this action and other projects implemented or planned in adjacent areas;
8. There will be no significant effects on heritage resources. Surveys for heritage resources are conducted prior to any activity on Forest Service lands. Any sites found will be protected;
9. All current and proposed federally threatened or endangered species will not be affected by the action;
10. The action does not threaten a violation of federal, state or local laws imposed for the protection of the environment.

Administrative Review of Appeal

Appeal Rights: This decision is subject to appeal pursuant to the provisions of 36 CFR 217. A Notice of Appeal of this decision must be submitted in duplicate to the Regional Forester within 45 days following the publication of this decision in the Cadillac Evening News at:

USDA Forest Service, Eastern Region
ATTN.: Appeals Deciding Officer
310 West Wisconsin Ave
Milwaukee, WI 53203

If no appeal is received, implementation of this decision may not occur before seven (7) business days from the close of the appeal-filing period.

Questions regarding this decision should be directed to:

Robert Jacobs
Regional Forester
USDA Forest Service, Region 9
310 West Wisconsin Ave.
Milwaukee, WI 53203
(414)297-3170

December 19, 1997
Date

Mary Ruth Wolf
for Robert Jacobs
Regional Forester

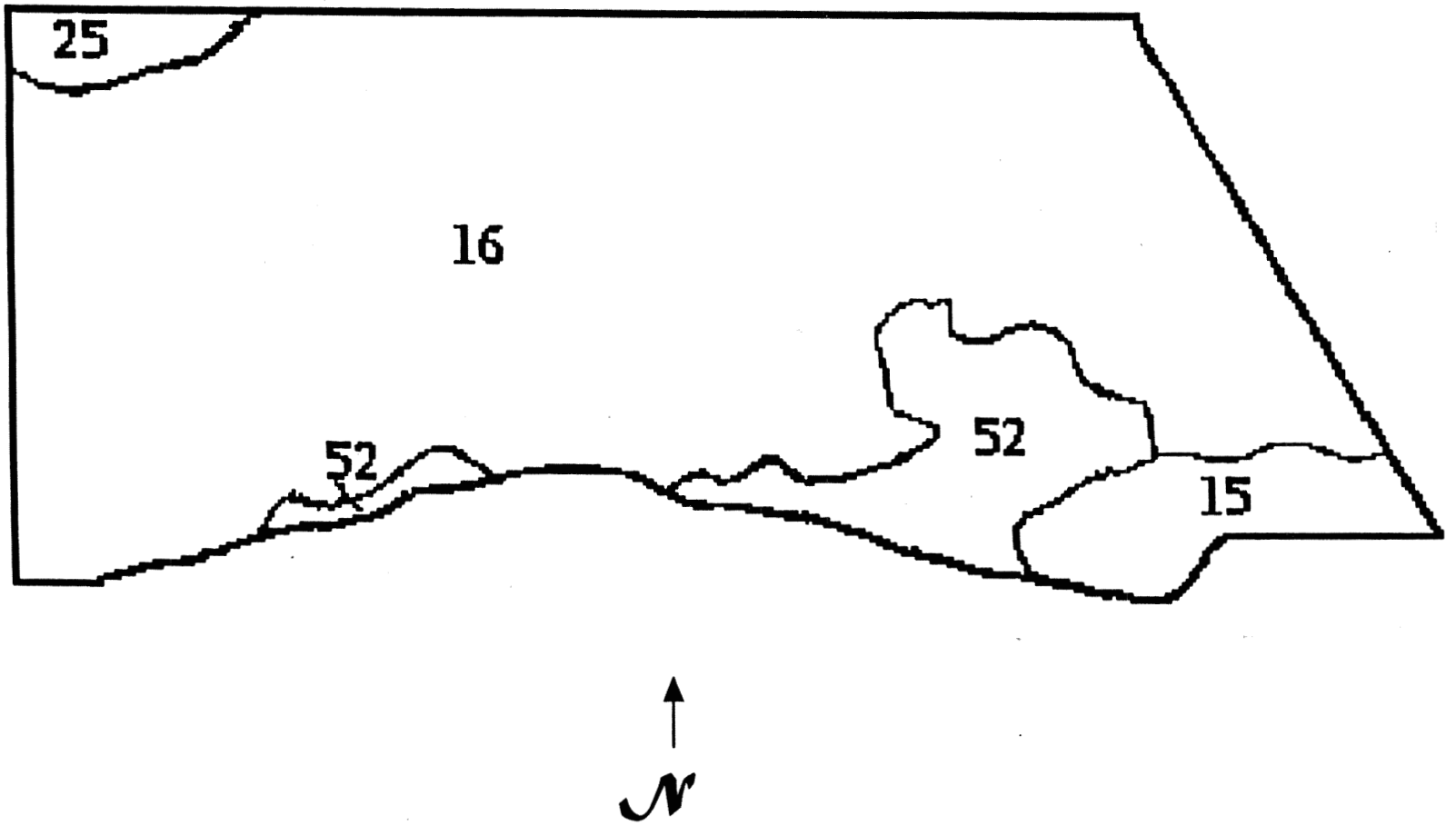
UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

Establishment Record for Hayes Tower
Research Natural Area within Huron-Manistee National
Forest, Alcona County, Michigan

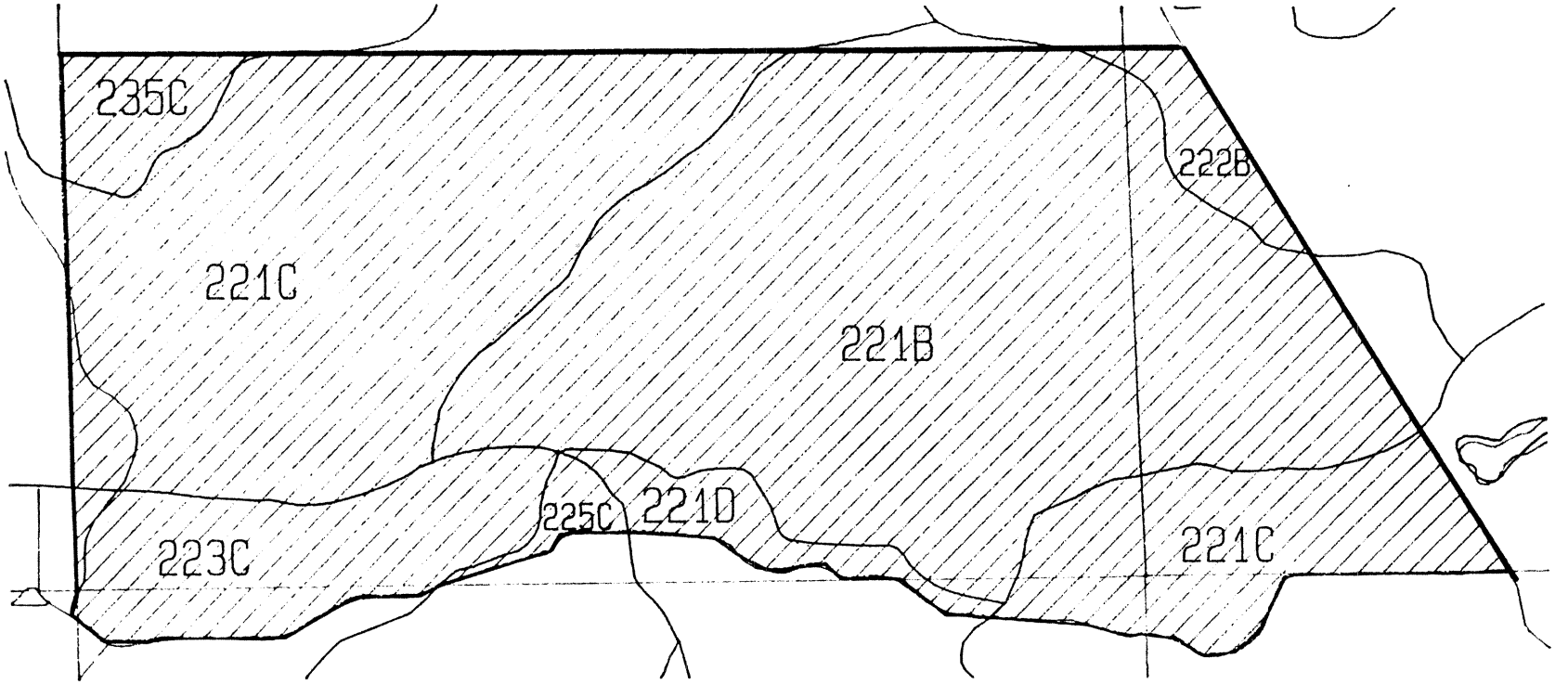
U. S. GOVERNMENT PRINTING OFFICE : 1977 O - 251-012

6200-7 (10/73)



25 sugar maple-beech-yellow birch type
16 aspen type
52 white oak-black oak-northern red oak type
15 red pine type

Map 3. SAF Cover Types
Hayes Tower Research Natural Area
Huron-Manistee National Forest
Alcona County Michigan
1:9,744



221 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thin banding deep in substratum

222 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and presense of water table deep in substratum

235 Mesic ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thick banding in lower solum or upper substratum

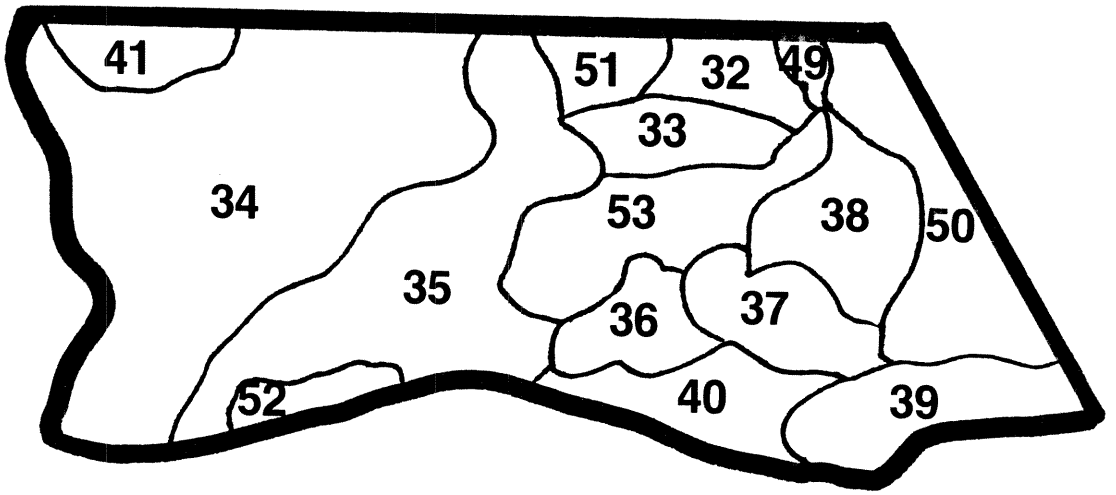
223 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thick banding deep in substratum

225 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thick banding in lower solum or upper substratum

B=0-6% slope C=6-18% slope D=18-24% slope

N

Map 5. Ecological Landtype Phases
Hayes Tower Research Natural Area
Huron-Manistee National Forest
Alcona County Michigan
1:10,394



Compartment Number 619

N

Map 6. Compartment/Stand Number Map
Hayes Tower Research Natural Area
Huron-Manistee National Forest
Alcona County Michigan

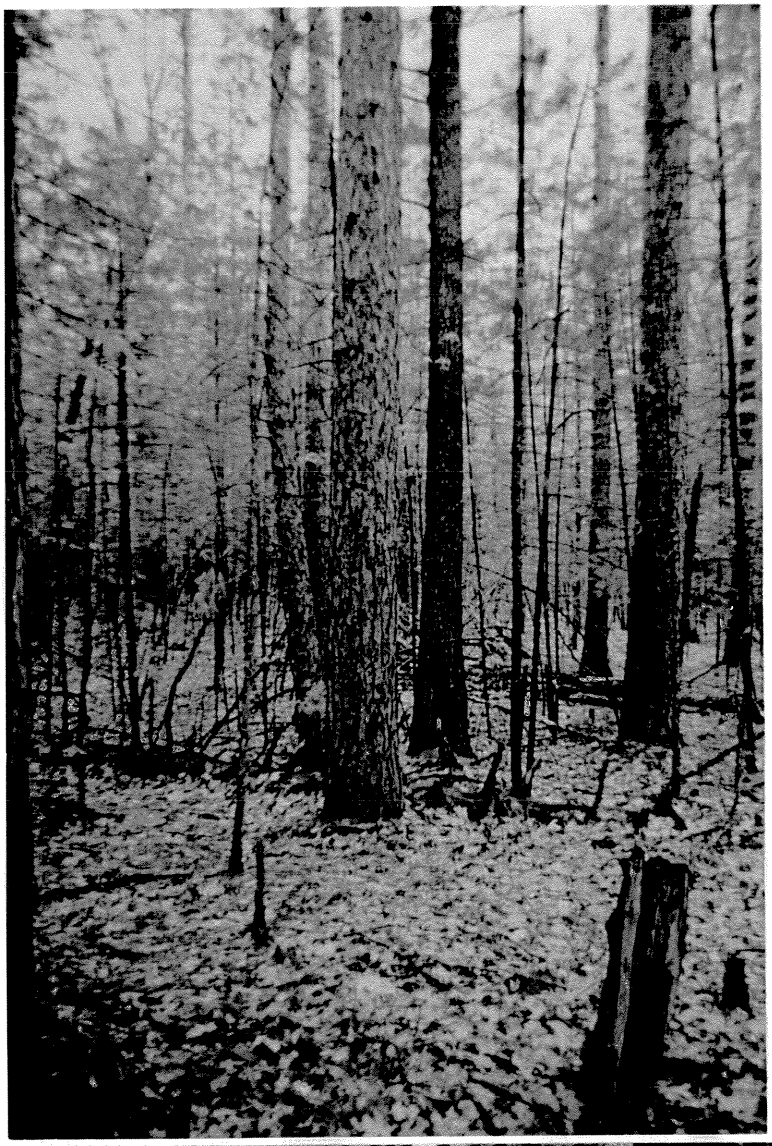


Photo 1. Hayes Tower Research Natural Area. Mature red pine and white pine with advanced white pine regeneration; fire scars evident on stump in foreground and white pine in background.
(photo: M. Patheja 1994)

Photo 2. Hayes Tower Research Natural Area. Mature red pine and oak adjacent to area with white pine underplanting.
(photo: L.Tyrrell 1995)

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Hayes Tower Research Natural Area

Huron-Manistee National Forest

Alcona County, Michigan

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

Prepared by Alexandra V. Cleveland Date 9-24-97

Alexandra V. Cleveland
Ecologist, Huron-Manistee National Forest

Recommended by Paul W Eden Date 9-25-97

for Charles Andrina
District Ranger, Huron Shores Ranger District

Recommended by C. L. Newman Jr Date 9-25-97

Corbin L. Newman, Jr.
Forest Supervisor, Huron-Manistee National Forest

Concurrence of [signature] Date 12/16/97

Linda R. Donoghue
Director, North Central Forest Experiment Station

Title Page

Establishment Record for Hayes Tower

Research Natural Area within Huron-Manistee

National Forest, Alcona County, Michigan

Introduction

Description of Hayes Tower Research Natural Area

Hayes Tower Research Natural Area (RNA) is located in the Northern Great Lakes Section, Subsection 212Hp, of the Ecological Units of the Eastern United States (Keys and Carpenter 1995). It is located in Landtype Association (LTA) 2, dry ice-contact hills, as described in the Huron-Manistee National Forests Ecological Classification and Inventory System (Cleland et al. 1994). Hayes Tower Research Natural Area includes a high-quality pine-oak ecosystem once characteristic of large portions of the Huron-Manistee National Forest. It is the only RNA within this climatic region, the only RNA in LTA 2, and one of few high-quality remnants of this ecosystem type left in northern lower Michigan (Comer pers. comm.).

Hayes Tower RNA is located on level to rolling topography characteristic of much of the Huron Shores Ranger District. The 388-acre (157-ha) RNA is comprised of a "core" of approximately 150 acres (61 ha) of high-quality pine-oak forest. Approximately 130 acres (53 ha) of the RNA is comprised of early successional forest species resulting from tornado impacts. The remaining 110 acres (44 ha) within the RNA has been intensively managed for aspen. This RNA provides opportunities to study forest structure, species composition, and successional processes within three different seral states of a pine-oak ecosystem.

To aid in the description of Hayes Tower RNA, a location map (Map 1), boundary/ownership map (Map 2), cover-type map (Map 3), topographic map (Map 4), Ecological Landtype Phase (ELTP) map (Map 5), compartment/stand map (Map 6), and color photographs of the RNA are attached to this report.

Nomenclature for trees follows Little (1979); nomenclature for plants follows Gleason and Cronquist (1991); nomenclature for fauna follows Baker (1983).

Historical Background

Surveyors notes from the General Land Office of the United States (General Land Office of the United States 1938) indicate that in April, 1846, the southern half of the RNA, bordering what is now FR 4503, was part of a 600-acre "burnt pine plain". This fire event may have been started by a lightning strike, by Native American activities or by careless trappers.

Timing of the fire may have impacted suitability of the area for logging 50 years later, when much of the state of Michigan was heavily logged. This may explain why the southern portion of the RNA (Map 6, stands 39, 40, 37) appears to have been left unharvested, as corroborated by the lack of large pine stumps. This area is referred to as the "core" pine-oak forest of the RNA.

In the past few decades, other disturbances have taken place in Hayes Tower RNA:

- In 1961, selected trees were removed from the overstory in stand 40 (Map 6) to facilitate the regeneration of white pine (*Pinus strobus*) in the understory.

- In 1964, as part of a forest-wide effort to control white pine blister rust, most *Ribes* was removed from all stands.
- Stands 52, 35, 53, 33, 32, and 51, constituting approximately 150 acres (61 ha), were impacted by a tornado in 1976. Many of the trees in these stands were damaged or windthrown. Following the tornado, limited amounts of red oak (*Quercus rubra*), red maple (*Acer rubrum*), and red pine (*Pinus resinosa*) were removed in salvage cuts.
- During the 1970s, unsuccessful girdling of red oaks to limit competition with red pine was attempted in stand 37.
- Also in the mid 1970's, at the western extreme of the tract (stand 34), 90 acres (36 ha) were clearcut for aspen (*Populus tremuloides*) regeneration.

The RNA has been used historically for hunting. A snowmobile route follows FR 4503 in the winter.

Ownership

All land rights within the Hayes Tower RNA are held by the U.S. Government (Map 2). Mineral rights are described in the *Mineral Resources* section of this document.

Land Management Planning

The Hayes Tower RNA was not listed as a candidate for RNA designation in the Huron-Manistee National Forests' Land and Resource Management Plan (LRMP) (USDA 1986). Provision for designation of this RNA, however, is provided in Amendment No. 18 to the LRMP, which states that RNA's other than those recognized in the 1986 LRMP are likely to be found (p. IV-183, USDA 1986).

More recently, the RNA and adjacent lands have been included in the Forest's old-growth design, a strategy aimed at restoring and maintaining the Forest's biodiversity. The design criteria established for identifying old growth areas includes the incorporation of RNAs into the old-growth design. Within Hayes Tower RNA, as within other RNAs, RNA Standards and Guidelines will supersede old-growth Standards and Guidelines.

State-owned mineral rights within the Hayes Tower RNA have been designated as "Non-development on USFS Lands", under stipulation code No. 2. This designation prohibits surface development of mining operations within the RNA, as required by the Standard and Guidelines proposed for RNAs in the Hayes Tower Environmental Assessment (Appendix A, p.5).

Objectives

The objectives of the Hayes Tower Research Natural Area are to:

1. Protect a representative pine-oak forest ecosystem that was once characteristic of large portions of the Huron-Manistee National Forest and the Upper Great Lakes region.

2. Provide a reference area to monitor species composition and forest-structure characteristics in pine-oak forests of this region and within this Landtype Association.

3. Serve as a baseline area to study the effects of forest management on this forest type elsewhere in the Huron-Manistee National Forest and on other public and private forests throughout the region.

4. Provide an area that offers a comparative study of successional pathways within one Landtype Association.

6. Play a role in a comprehensive Forest strategy to comply with the Endangered Species Act and the National Forest Management Act in regards to protection of biological diversity.

7. Provide habitat for the flora and fauna associated with this forest type, including wide-ranging wildlife species such as black bear (*Ursus americanus*) and neotropical migrant birds.

Justification Statement and Principal Distinguishing Features

Hayes Tower RNA contributes to the RNA program at the national, regional, and Forest level by filling a gap in RNA representation. This RNA contains the only representation of a high-quality pine-oak forest type within a dry ice-contact hill landtype. Only three other areas in lower Michigan contain this combination of forest-type, acreage, and lack of human disturbance. In addition, SAF cover type 52 (Map 3), is not represented by any other RNA within this climatic Region (Regional Guide for the Eastern Region 1983, p. 3-109).

This RNA provides unique opportunities for research into natural processes. The 150-acre (51 ha) mature pine-oak "core" forest contains the species composition and complex canopy structure believed to be typical of pre-European settlement conditions, making it a benchmark for studying late-successional forest processes.

Hayes Tower RNA also provides an opportunity to compare natural and anthropogenic disturbances in the pine-oak forest type. Forest structure, species composition, and successional processes in three different seral states of this ecosystem type (former aspen clearcut, tornado impact, and relatively undisturbed) could be compared within the RNA and with areas outside the RNA.

Location and Access

Hayes Tower RNA is located on the Huron Shores Ranger District of the Huron National Forest, Alcona County, Michigan. The Mercator coordinates are 44° 36' N latitude and 83° 40' W longitude. Elevations vary from 930 ft (283 m) to 1060 ft (323 m) above sea level.

The 388-acre (157 ha) RNA is located in Millen Township (T26N R6E). The RNA is comprised of the southern 1/2 of Section 26, the western 1/2 of the southwest 1/4 of Section 25 and a small portion of the northern 1/2 of Sections 35 and 36 (Map 2). The east-west half section line of Section 26 forms the north boundary of the RNA. The western boundary is formed by the section line between sections 26 and 27. The southern boundary is formed by the northern edge of Forest Road 4503 and the eastern boundary is formed by Forest Road 4433 (Map 1).

The RNA can be accessed starting from US 23 in Harrisville to the east, or from I-75 in Grayling to the west. From Harrisville, go 16.5 miles (26.5 km) west on M-72 to Stout Road (Map 1). From Grayling, travel 56 miles (90.2 km) on M-72 east to Stout Road. Follow Stout Road south 1 mile (1.6 km) to Forest Road 4433. Take Forest Road 4433 west 2 miles (3.2 km), then south 2.5 miles(4.0 km). Hayes Tower RNA is located northwest of the corner of Forest Road 4433 and Forest Road 4503.

Area by Cover Types

Hayes Tower RNA can be characterized using the following SAF Cover Types (Eyre, 1980), Kuchler Types (Kuchler 1966), and Ecological Land Type Phases (Cleland et al., 1994) (acres and hectares are approximate):

SAF Cover Types (refer to Map 3):	acreage	hectares
15 red pine	65	26
52 white oak-black oak-northern red oak type	83	34
16 aspen type	220	89
25 sugar maple-beech-yellow birch type	20	8
Total	388	157

Kuchler Type:	acreage	hectares
86 Great Lakes Pine Forest	388	157

Ecological Land Type Phases (refer to Map 5):	acreage	hectares
221 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thin banding deep in substratum		
B (0-6% slope)	108	43
C (6-18% slope)	126	51
D (18-24% slope)	25	10
222 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and presence of water table deep in substratum		
B (0-6% slope)	24	10
223 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thick banding deep in the substratum		
C (6-18% slope)	65	26
225 Dry ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thick banding deep in lower solum or upper substratum		
C (6-18% slope)	14	6
235 Mesic ice-contact hills and overwashed moraines with sandy soils, some spodic horizon and thick banding deep in lower solum or upper substratum		
C (6-18% slope)	26	11
Total	388	157

Physical and Climatic Conditions

Hayes Tower RNA is located where rolling ridges of end moraine and glaciated topography connect a high plateau of sandy outwash plains (to the west and south) with lower elevation ground moraines (to the east and north).

The RNA is found within the Highplains District, as described by Albert et al. in the Regional Landscape Ecosystems of Lower Michigan (1986). This climatic region has the most severe climate in northern lower Michigan. The growing season in the Highplains District is 115 days, the shortest in northern lower Michigan. Mean annual temperature May-September is 16.9°C, annual extreme minimum temperature is 28°C, and the average annual precipitation is 77 cm (30 in.).

The following climatic information was derived from the closest weather station, located at Loud Dam in Iosco County, 16 km (10 miles) south of the RNA (average temperatures and precipitation were calculated from readings taken between 1951 and 1980):

Temperature

Ave. daily maximum	12.6°C
Ave. daily minimum	0.2°C
Overall mean	6.4°C
Record high	37.2°C
Record low	-40.0°C

Precipitation

Average annual snowfall	129 cm (51 in.)
Average annual rainfall	71 cm (28 in.)

Description of Values

Flora

In the southeast part of the RNA (Map 6, stands 37, 39, 40), mature overstory trees form a partially to completely closed canopy. Mature red pine, and less frequently white pine are dominant, often extending above the canopy. Overstory co-dominants include red oak, northern pin oak (*Quercus ellipsoidalis*), quaking aspen, and bigtooth aspen (*Populus grandidentata*). Subcanopy species include bigtooth and quaking aspens, red maple, white oak (*Quercus alba*), black cherry (*Prunus serotina*), and occasional jack pine (*Pinus banksiana*).

In the center of the RNA (Map 6, stands 32, 33, 35, 36, 51), bigtooth aspen, quaking aspen, red oak, red maple and red pine boles are scattered in patches on the ground as a result of tornado-force winds in 1976. Disturbance-adapted understory species (aspen, red maple) are found in the canopy openings created by this windthrow. A more dense canopy primarily consisting of bigtooth aspen and red oak is found in most of the unaffected areas. Paper birch (*Betula papyrifera*) and serviceberry (*Amelanchier arborea*) are occasionally found in the understory. A scattered shrub layer includes velvetleaf blueberry (*Vaccinium myrtilloides*), maple-leaf arrow-wood (*Viburnum acerifolium*), highbush cranberry (*Vaccinium angustifolium*), and sweet fern (*Comptonia peregrina*).

In the northwest section of the RNA (Map 6, stand 34), quaking aspen is the dominant species. This area contains a dense forest of immature aspen, with few other species in the understory. Ground flora consists mostly of velvetleaf blueberry, sweet fern and bracken fern (*Pteridium aquilinum*).

Endangered, threatened, or sensitive plant species occurrences have not been recorded in the Hayes Tower RNA. A list of vascular flora is included in Appendix B.

Fauna

Hayes Tower RNA currently provides habitat for a variety of wildlife. Porcupines (*Erethizon dorsatum*) and a variety of songbirds were noted during site visits. Sign of white-tail deer (*Odocoileus virginianus*) and black bear (*Ursus americanus*) were also noted.

Endangered, threatened, or rare fauna occurrences have not been recorded in the Hayes Tower RNA.

Geology

Hayes Tower RNA is located at the eastern end of the Glennie Moraine, adjacent to the Loud Creek outwash channel. Landforms and soils within the RNA are characteristic of ice-contact topography, with the presence of coarse-textured soils due to the proximity of the Loud Creek outwash channel. Level to rolling, irregular topography is characteristic of the area (Maps 4, 5).

The surface geology was mostly formed by the Huron Lobe during the Port Bruce and Port Huron substages of Wisconsin glaciation approximately 12,500 years before present (Burgis and Eschman 1981). Burgis and Eschman (1981) and Farrand and Bell (1982) mapped the area as an end moraine of fine-textured till with pockets of fine-textured ground moraine and sandy outwash. This glacial drift varies from 27 to 84 meters (89 to 276 ft.) in thickness (Farrand 1982, Lindwall 1977). Underlying the unconsolidated glacial drift which forms the surface of the RNA, is the Coldwater Shale of the Lower Mississippian Period (Milstein 1987). This RNA also lies over a magnetic anomaly (Hinze et al. 1971, Lindwall 1978).

Soils

Soils in the Hayes Tower area are typical of ice-contact and morainal landforms, consisting generally of ice-contact hills and overwashed moraines with sandy soils (Map 5). The upper soil strata are primarily medium sands with coarse banding occurring in the top 1.5 to 4.6 m (5 to 15. ft.). Thin banding (less than 7.6 cm (3.0 in.) thick) of very fine sands, fine sands, sandy loam, coarse sandy loam, and gravelly textures occurs below 152 cm (60 in.). The 222 series, with flat to gentle slopes, has a water table between 1.8 m (6 ft.) and 4.6 m (15 ft.) during the growing season. The 235 series contains a spodic horizon and is characteristic in areas where outwash sands overlay fine-textured till.

The following soil types are found within the Hayes Tower RNA (Gates, Bruggink pers. comm.):

Sandy Mixed Frigid Entic Haplorthod	221 weak Rubicon sand
	222 weak Rubicon sand
	223 weak Rubicon sand
	225 weak Rubicon sand
Mixed Frigid Alfic Haplorthod	235 Manistee sand over loam

Lands
Lands within the Hayes Tower RNA are owned by the United States and are administered by the U.S. Forest Service, Huron-Manistee National Forest. Mineral rights in parts of the RNA (described below under *Mineral Resources*) are owned by the State of Michigan. Artifact rights in these same areas are owned by the state as well. State of Michigan hunting and fishing regulations are applicable within Hayes Tower RNA.

Cultural
A cultural resource survey of Hayes Tower RNA has not been conducted and no surveys are currently scheduled. A survey will be conducted prior to prescribed burning.

Impacts and Possible Conflicts

Mineral Resources
Mineral, gas, and oil rights for lands within the Hayes Tower RNA are divided between the US Government and the State of Michigan. The State of Michigan holds mineral rights in the following parts of Hayes Tower RNA: the entire SW quarter of Section 26, and the NE quarter of the SE quarter of Section 26.

Past, present, and future mining interests appear to be low in the Hayes Tower area. Although no exploratory drilling has been done, seismic surveys have been run through the RNA and in surrounding areas. The nearest established hydrocarbon production takes place in the Mio Prairie du Chien Gas Field approximately 17 miles (27 km) to the Southwest.

Gravel pits are not present within Hayes Tower RNA or in the immediate area. No other minerals of potential economic importance are known to occur in the mineral estate (Michigan Department of Natural Resources 1977). The geology of the area, indications of structure, and past activity suggest low to moderate potential for the discovery of oil and/or gas reserves in the mineral estate, particularly in the deeper formations. There is probably gas in Antrim shale located in the mineral estate, but the economic feasibility of extraction has not been analyzed (Lindwall pers. comm.).

The State of Michigan has entered into a non-development agreement with the US Forest Service for the areas within the Hayes Tower RNA where the state holds mineral rights.

Grazing
There is currently no grazing within the Hayes Tower RNA and there are no records or other indications of past grazing on the site. Grazing is not permitted in the RNA.

Timber
Hayes Tower RNA is located within the Forest's proposed 173,000-acre (70,040 ha) old-growth design. RNA designation does not effect available timber for production purposes because harvesting of timber-types found in the Hayes Tower RNA would not be permitted under current old-growth Standards and Guidelines.

Watershed Values
Hayes Tower RNA is located in the upper portions of the McGillis Creek and West Branch of the Pine River watersheds. Both of these small rivers flow east into the main branch of the Pine River, which empties into the Au Sable River 22 miles (35.5 km) southeast of the RNA. No waterways are located within Hayes Tower RNA.

Recreation Values
Current recreational activities associated with Hayes Tower RNA and adjacent lands within the Reid Lake Semiprimitive Nonmotorized Area are mainly limited to hiking, cross-country skiing, and hunting. Designation of this RNA does not preclude any of these activities. Monitoring will be used to assess any impacts caused by recreational use of the RNA.

No hiking trails will be constructed within the RNA. No trails were planned for construction in the near future for the Reid Lake area.

Special Management Area Values
Designating this RNA does not conflict with any congressionally or otherwise-designated area.

Transportation Plans
Current use and maintenance of Federal Routes 4503 and 4433 does not negatively impact Hayes Tower RNA. The sections of these roads that border the RNA will not be upgraded or widened. Access roads at the north end of the tract have been closed for more than ten years and are re-vegetating naturally.

Management Prescription

Vegetation Management
The frequency and intensity with which native wildfires occurred "naturally" in the Hayes Tower area should be investigated further. Techniques used to gather this type of information may include coring of trees, cross-sectioning of stumps and/or analyzing sediment cores from adjacent water bodies such as Little Trout Lake or Bliss Lake. A schedule should then be established for prescribed burning within the RNA to maintain natural succession and white pine, red pine, and oak components.

Additional management prescriptions for Hayes Tower RNA are as follows:

A. RESEARCH

1. Huron-Manistee National Forest and North Central Forest Experiment Station shall encourage appropriate use of Hayes Tower RNA by scientists, educators and managers.

2. The Director of the North Central Forest Experiment Station (NCFES) will be responsible for any studies or research conducted in the area, and requests to conduct research in the area

will be referred to him/her. In consultation with the Forest RNA Coordinator, the Station Director will evaluate research proposals and coordinate all studies and research in the RNA.

3. Copies of all data, reports, and publications resulting from studies in the area, including theses, dissertations, articles, monographs, etc., will be provided to the Station, Region and Forest. The final report on the results of the research study shall be submitted to the Forest Service no later than one year following completion of the research.

4. Collection of monitoring data and non-manipulative sampling are permitted. Activities such as clipping of vegetation, use of increment borers, temporary shelters for instrumentation, flagging, permanent markers to relocate long-term plots, and tree tagging may be allowed, but will be reviewed for approval by the Station Director on a case by case basis.

5. All plant and animal specimens collected in the course of research conducted on the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Station Director. When necessary, appropriate permits for collection will be obtained from state and federal agencies. Collection of endangered, threatened, or rare species will be conducted in accordance with state and federal laws.

B. ENVIRONMENTAL EDUCATION

1. Use of Hayes Tower RNA by educational parties external to the Forest Service may be authorized by the District Ranger or the Forest RNA Coordinator. Educational use may be allowed as long as the use supports, promotes, or does not degrade the special values for which the RNA was established.

C. RANGE

1. Grazing will not be permitted in Hayes Tower RNA.

D. RECREATION

1. Recreation in the area, such as hiking, hunting, camping, fishing, etc., will not be encouraged. Use of motorized vehicles or bicycles will not be allowed in Hayes Tower RNA. Use of the area by livestock animals is prohibited. Removal or use of live or dead vegetation will not be permitted. A monitoring plan will be developed in cooperation with the Station Director to track the impacts of all uses on the RNA. If monitoring shows that the impacts of use are threatening RNA values, a Forest Supervisor's Order (36 CFR Part 261, Subpart B) shall be issued to protect the RNA's features.

2. No trails will be established in Hayes Tower RNA.

E. TIMBER MANAGEMENT

1. Timber harvesting or other wood gathering activities and grazing will not be allowed in Hayes Tower RNA.

2. Removal of exotic species or encroaching vegetation will be permitted if the presence of such threatens the special values of the RNA.

3. Cutting, but not removal, of trees that are safety hazards along roadsides, will be permitted.

F. FIRE

1. Wildfires that endanger the Hayes Tower RNA will be suppressed; firefighting within the RNA will involve quick suppression, using techniques that least alter the landscape and disturb the ground.

2. Prescribed burning will be permitted in Hayes Tower RNA.

G. MANAGEMENT OF ADJACENT AREAS

1. Managers planning activities in areas adjoining Hayes Tower RNA will consult these guidelines. The size, location, and characteristics of the RNA will be considered, so that adjacent activities will not have adverse effects or create potential adverse effects on the RNA. The Forest RNA Coordinator will be consulted as part of this process.

H. WILDLIFE, FISH AND SENSITIVE PLANT HABITAT MANAGEMENT

1. Habitats provided within Hayes Tower RNA will be the result of natural processes with little to no modification by humans. An exception may be the reintroduction of extirpated species.

I. THREATENED, ENDANGERED, SENSITIVE PLANTS/ANIMALS

1. Research and monitoring that aids the protection and management of populations of endangered, threatened, sensitive or rare species will be especially encouraged in Hayes Tower RNA.

2. The Forest Service is legally obligated to protect and implement recovery plans for federally listed Threatened or Endangered species. If such a species is found within the RNA, the Forest Service will consult with the Fish and Wildlife Service and the Station Director regarding the appropriate course of action to take within the RNA.

J. FOREST PEST MANAGEMENT

1. Protection of Hayes Tower RNA from introduced and endemic insects, diseases, plants and animals will be allowed only when the special values of the RNA are threatened.

Decisions regarding the need for action will be made by the Forest Supervisor and Regional Forester in consultation with the Station Director.

2. Protection will follow Integrated Pest Management (IPM) guidelines established in the Forest Plan (pp. IV-49, 50).

K. TRANSPORTATION SYSTEM

1. No roads will be established within Hayes Tower RNA. Existing skid trails will be allowed to revert to natural conditions.

L SPECIAL USES MANAGEMENT

1. Facilities and corridors for utility rights-of-way will not be established or allowed in Hayes Tower RNA.

M. BUILDINGS AND OTHER STRUCTURES

1. No facilities of any kind will be allowed within Hayes Tower RNA.

N. HERITAGE RESOURCES

1. Archeological activities, including limited excavation, will be allowed within Hayes Tower RNA following consultation with Forest RNA Coordinator.

2. Significant cultural resources will be protected through dispersal, control, and limits on public use of the RNA.

O. MINERALS AND GEOLOGY

1. Federal oil and gas leases within Hayes Tower RNA will contain a "no surface occupancy" stipulation.

2. For State of Michigan minerals, an Internal Agreement for non-development will be implemented.

3. Reasonable access to private mineral rights will be permitted.

Administration Records and Protection

Administration and protection of Hayes Tower RNA is the responsibility of:

District Ranger
Huron-Manistee National Forest
Huron Shores Ranger District
5761 North Skeel Ave.
(517) 739-0728

The research coordinator and Station Director for this area is:

Station Director
North Central Forest Experiment Station
1992 Folwell Ave.
St. Paul, MN 55108

Plant collections will be housed at the herbarium located on The University of Michigan campus in Ann Arbor, MI, or a place approved by the Station Director.

Research data files are maintained by the following offices:

Regional Forester
Eastern Region
310 Wisconsin Ave.
Rm. 500
Milwaukee, WI 53203

Station Director
North Central Forest Experiment Station
1992 Folwell Ave.
St. Paul, MN 55108

Forest Supervisor
Huron-Manistee National Forest
1755 South Mitchell St.
Cadillac, MI 59601

Archiving

The Station Director shall establish and maintain a system for archiving data and reports from the RNA in a manner that will facilitate the exchange and transfer of information among Stations and scientists.

References

Albert, D.A., S.R. Denton and B.V. Barnes. 1986. Regional landscape ecosystems of Michigan. School of Natural Resources, the University of Michigan. 32pp.

Baker, R.H. 1983. Michigan Mammals. Michigan State University Press, Detroit, MI. 642pp.

Braun, E.L. 1950. Deciduous Forests of Eastern North America. The Free Press, New York. 596pp.

Burgis, W.A. and D.F. Eschman. 1981. Late-Wisconsin history of northeastern lower Michigan: Friends of the Pleistocene 30th annual conference, Ann Arbor, MI. The University of Michigan, Department of Geological Sciences, Ann Arbor, MI. 110pp.

Cleland. D.T., J.B. Hart, G.E. Host, K.S. Pregitzer and C.W. Ramm. 1994. Field guide ecological classification and Inventory system of the Huron-Manistee National Forests. USDA Forest Service, Region-9, Milwaukee, WI. 268pp.

Eyre, F.H. ed. 1980. Forest Cover Types of the United States and Canada. Society of American Foresters, Washington, D.C. 148pp.

Ferrand, W.R. and D.L. Bell. 1982. Quartenary Geology of Southern Michigan (map). Department of Geologic Sciences, The University of Michigan, Ann Arbor, MI.

General Land Office of the United States. 1938. Transcribed field notes of the original land surveys in Alcona County, MI. **111**.

Gleason, H.A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Canada (2nd ed.). New York Botanical Garden, New York. 910pp.

Hinze, W.J., R.L. Kellog, and D.W. Merritt. 1971. Gravity and Aeromagnetic Maps of the Southern Peninsula of Michigan. Michigan Department of Natural Resources, Geological Survey Division.

Kuchler, A.W. 1966. Potential Natural Vegetation of the Conterminous United States (map). US Department of the Interior, Geologic Survey, Washington, D.C.

Lindwall, L.R. 1977. Gravel Pit Inventory Map of the Huron National Forest (map). Huron-Manistee National Forest, Cadillac, MI.

Lindwall, L.R. 1978. Oil and gas overview of the Huron-Manistee National Forests. Huron-Manistee National Forest, Cadillac, MI.

Little, E.L. Jr. 1979. Checklist of United States Trees (Native and Naturalized). USDA Forest Service Agricultural Handbook 541. US Department of Agriculture, Washington, D.C. 375pp.

Michigan Department of Natural Resources, Geological Survey Division. 1977. Michigan Oil and Gas Fields, Southern Peninsula (map). Michigan Department Of Natural Resources, Lansing, MI.

Michigan Department of Natural Resources, Geological Survey Division. 1977. Oil and Gas Map of Alcona county, MI. Michigan Department Of Natural Resources, Lansing, MI.

Milstein, R.L. 1987. Bedrock Geology of Southern Michigan. Michigan Department of Natural Resources, Geological Survey Division, Lansing, MI.

Newman, E.A. 1937. Trend Map and Anticlinal Folding. Michigan Department of Natural Resources, Geological Survey Division, Lansing, MI.

USDA Forest Service. 1986. Land and Resource Management Plan ; Huron-Manistee National Forests (as amended). USDA Forest Service, Eastern Region, Milwaukee, WI.

USDA Forest Service. 1983. Regional Guide for the Eastern Region. USDA Forest Service, Eastern Region, Milwaukee, WI.

Appendices

Appendix 1: Environmental Assessment for Hayes Tower RNA

Environmental Assessment
for the
Hayes Tower Research Natural Area

1.0 PURPOSE AND NEED FOR THE ACTION

1.1 Affected Environment

This report documents the environmental analysis of a proposed federal action located within Millen Township, Alcona County, Michigan: T26N R6E, the south half of section 26, the west half of the southwest quarter of section 25, and minor portions in sections 35 and 36, south of Federal Route 4503 (see Figure 1, Proposed Action Map).

The project area covers approximately 388 acres.

1.2 Purpose and Need

The purpose of this project is to implement the Research Natural Area goal contained in the management prescription for Management Area 8.1 (Huron-Manistee National Forests Land and Resource Management Plan, p. 179). Through establishment of Research Natural Areas, protection is provided for special areas that have scientific, biological, geological, historical, or recreational characteristics of local, regional, or national significance.

There is a need to establish Research Natural Areas that are in as near a natural condition as possible, which exemplify typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. These areas are set aside to preserve representative samples of ecological communities, primarily for scientific and educational purposes. Commercial use is not allowed and public use is not encouraged.

The Hayes Tower proposed Research Natural Area includes a high-quality pine-oak ecosystem within the Landtype Association dry ice-contact hills (LTA 2). This ecosystem was once characteristic of large portions of the Huron-Manistee National Forests. This area provides an opportunity for the study of successional processes, forest structure, and species composition in this once common forest type. This community type is not currently represented by an established Research Natural Area within this climatic region.

Another purpose is to incorporate standards and guidelines for the management of Research Natural Areas within the Forest Plan.

Presently, the Forest Plan does not contain Standards and Guidelines that provide direction for the management of Research Natural Areas.

1.3 Proposed Action

The following describes the proposed action:

To amend the Forest Plan to establish Hayes Tower as a Research Natural Area. Establishing this Research Natural Area involves changing the management prescription of 388 acres from Management Area 6.2 (Semiprimitive Nonmotorized use) to Management Area 8.1 (Special Areas).

To amend MA 8.1 in the Forest Plan to include the following Standards and Guidelines for all Research Natural Areas. (Standards and Guidelines already existing in the Huron-Manistee National Forests' Forest Plan are indicated by boldtype. They are included here for clarity.):

A. 4000 RESEARCH

1. Huron-Manistee National Forest and North Central Forest Experiment Station shall encourage appropriate use of Research Natural Areas by scientists, educators and managers.

2. The Director of the North Central Forest Experiment Station (NCFES) will be responsible for any studies or research conducted in the area, and requests to conduct research in the area will be referred to him/her. In consultation with the Forest Research Natural Area Coordinator, the Station Director will evaluate research proposals and coordinate all studies and research in the Research Natural Area.

3. Copies of all data, reports, and publications resulting from studies in the area, including theses, dissertations, articles, monographs, etc., will be provided to the Station, Region and Forest. The final report on the results of the research study shall be submitted to the Forest Service no later than one year following completion of the research.

4. Collection of monitoring data and non-manipulative sampling are permitted. Activities such as clipping of vegetation, use of increment borers, temporary shelters for instrumentation, flagging, permanent markers to relocate long-term plots, and tree tagging may be allowed, but will be reviewed for approval by the Station Director on a case by case basis.

5. All plant and animal specimens collected in the course of research conducted on the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Station Director. When necessary, appropriate permits for collection will be obtained from state and federal agencies. Collection of endangered, threatened, or rare species will be conducted in accordance with state and federal laws.

B. 1620 ENVIRONMENTAL EDUCATION

1. Use of the Research Natural Area by educational parties external to the Forest Service may be authorized by the District Ranger or the Forest Research Natural Area Coordinator.

Educational use may be allowed as long as the use supports, promotes, or does not degrade the special values for which the Research Natural Area was established.

C. 2200 RANGE

1. Grazing will not be permitted in Research Natural Areas.

D. 2300 RECREATION

1. Recreation in the area, such as hiking, hunting, camping, fishing, etc., will not be encouraged. Use of motorized vehicles or bicycles will not be allowed in the Research Natural Area. Use of the area by livestock animals is prohibited. Removal or use of live or dead vegetation will not be permitted. A monitoring plan will be developed in cooperation with the Station Director to track the impacts of all uses on the Research Natural Area. If monitoring shows that the impacts of use are threatening Research Natural Area values, a Forest Supervisor's Order (36 CFR Part 261, Subpart B) shall be issued to protect the Research Natural Area's features.

2. No trails will be established in the Research Natural Area.

E. 2400 TIMBER MANAGEMENT

1. Timber harvesting or wood gathering activities will not be allowed.

2. Removal of exotic species or encroaching vegetation will be permitted if the presence of such threatens the special values of the Research Natural Area.

3. Cutting, but not removal, of trees that are safety hazards along roadsides, will be permitted.

F. 5100 FIRE

1. Wildfires that endanger the Research Natural Area will be suppressed; firefighting within the Research Natural Area will involve quick suppression, using techniques that least alter the landscape and disturb the ground.

2. **Prescribed burning will be permitted in areas where reintroduction of fire is desirable.**

G. MANAGEMENT OF ADJACENT AREAS

1. **Managers planning activities in areas adjoining the Research Natural Area will consult these guidelines. The size, location, and characteristics of the Research Natural Area will be considered, so that adjacent activities will not have adverse effects or**

create potential adverse effects on the Research Natural Area. The Forest Research Natural Area Coordinator will be consulted as part of this process.

H. 2600 WILDLIFE, FISH AND SENSITIVE PLANT HABITAT MANAGEMENT

1. Habitats provided will be the result of natural processes with little to no modification by humans. An exception may be the reintroduction of extirpated species.

I. 2670 THREATENED, ENDANGERED, SENSITIVE PLANTS/ANIMALS

1. Research and monitoring that aids the protection and management of populations of endangered, threatened, sensitive or rare species will be especially encouraged.

2. **The Forest Service is legally obligated to protect and implement recovery plans for federally listed Threatened or Endangered species.** If such a species is found within the Research Natural Area, the Forest Service will consult with the Fish and Wildlife Service and the Station Director regarding the appropriate course of action to take within the Research Natural Area.

J. 3400 FOREST PEST MANAGEMENT

1. Protection of the Research Natural Area from introduced and endemic insects, diseases, plants and animals will be allowed only when the special values of the Research Natural Area are threatened. Decisions regarding the need for action will be made by the Forest Supervisor and Regional Forester in consultation with the Station Director.

2. **Protection will follow Integrated Pest Management (IPM) guidelines established in the Forest Plan (pp. IV-49, 50).**

K. 7700 TRANSPORTATION SYSTEM

1. No roads will be established within the Research Natural Area. Existing skid trails will be allowed to revert to natural conditions.

L. 2700 SPECIAL USES MANAGEMENT

1. Facilities and corridors for utility rights-of-way will not be established or allowed in the Research Natural Area.

M. 7300 BUILDINGS AND OTHER STRUCTURES

1. No facilities of any kind will be allowed within the Research Natural Area.

N. 2630 HERITAGE RESOURCES

1. **Archeological activities, including limited excavation, will be allowed,** following consultation with Forest Research Natural Area Coordinator.

2. Significant cultural resources will be protected through dispersal, control, and limits on public use of the Research Natural Area.

O. 2800 MINERALS AND GEOLOGY

1. Federal oil and gas leases will contain a "no surface occupancy" stipulation.

2. For State of Michigan minerals, an Internal Agreement for non-development will be implemented.

3. Reasonable access to private mineral rights will be permitted.

1.3-1 Mitigations Associated with the Proposed Action

In addition to the generally applicable Forest and Management Area Standards and Guidelines listed in the Forest Plan for Management Area 8.1 (pp. IV179 - IV183) and the Research Natural Area Standards and Guidelines proposed above, the following specific mitigation or coordination measures are included in the Proposed Action:

- The section of Federal Route 4503 which borders the Research Natural Area may be maintained but not widened, or upgraded.

- **The Research Natural Area will be managed according to Forest Service Manual 4063.3 "Protection and Management Standards".**

2.0 ISSUES RELATED TO THE PROPOSED ACTION

Issues related to the proposed action were identified by contacting interested and affected publics by letter, dated July 28, 1993. A list of those contacted is found in the Other Agencies, Groups, Individuals Consulted.

Response to scoping resulted in three letters identifying the two issues listed below. These issues served as a basis for evaluating the Proposed Action and the Alternative, and for assessing environmental consequences.

2.1 Issues within the Scope of the Project

Issue 1: Pine-oak Forest Representation

There is a need to include a representative pine-oak forest in the Research Natural Area System. The Hayes Tower Research Natural Area site is among the best examples of this type of community remaining in lower Michigan. **This issue is addressed in the Proposed Action.**

Issue 2: Reduction in Available Timber

The establishment of Hayes Tower Research Natural Area will reduce the amount of timber available for harvesting. **This issue is addressed in the Effects on Vegetation and Social and Economic Effects sections of the No Action Alternative.**

2.1 Issues Outside the Scope of the Project

Issue 1: Reduction in Available Timber Due to Old-Growth Designation

The general effect of old growth designation on the amount of timber available for harvesting and the suggestion that all aspen, red pine, and jack pine should be released from old-growth candidacy prior to establishing Hayes Tower Research Natural Area is beyond the scope of this document.

3.0 ALTERNATIVES TO THE PROPOSED ACTION

This section is designed to describe alternatives that were developed in response to the issues generated by the Proposed Action, and to address other reasonable Actions that satisfy the Purpose and Need. The Proposed Action and the No Action Alternative address all issues generated. No other Action Alternatives exist, due to the lack of similar forest types that would offer the same opportunities.

3.1 Alternative 1 (No Action)

This alternative would not designate the Hayes Tower 388-acre tract as an Research Natural Area. The Management Prescription and the Standards and Guidelines will remain in Area 6.2, for semi-primitive non-motorized use.

4.0 RESEARCH NATURAL AREA SUITABILITY

- Distinctive Features: Section 4063.02 in the Forest Service Manual gives direction that Research Natural Areas should preserve "...natural situations that have special or unique characteristics...". Approximately 150 acres of the Hayes Tower tract consists of a mature pine-oak community that is comparable in size, species composition and lack of human disturbance, to only three other locations in lower Michigan. This pine-oak community contains the species composition and complex canopy structure believed to be typical of pre-European settlement conditions, making it a benchmark for studying late-successional forest processes.

Another distinctive feature of the site is the research opportunities offered by the varying degrees and types of disturbance located within the site. Approximately one third of the tract had aspen removed, and another portion of the area had significant wind damage. These two areas, found in close proximity and with topography and soils similar to the mature pine-oak community, provide an opportunity to study the effects of different types of disturbance.

- Representation: Section 4063.2 of the Forest Service Manual states that Research Natural Areas should be selected "...that best represent the ecological conditions needed to complete the natural area system...". The Hayes Tower tract represents the only remaining occurrence of a high quality pine-oak forest within the Landtype Association dry ice-contact hills (LTA 2), a once-common community type on the Forests and the Upper Great Lakes Region.

- Size: The Forest Service Manual, section 4063.1, states that Research Natural Areas "must be large enough to provide essentially unmodified conditions within their interiors." Where possible, 300 acres is considered a minimum size. The Hayes Tower tract covers 388 acres.

- Human Disturbance: Direction from section 4063.2 of the Forest Service Manual regarding human disturbance is to "Whenever possible, select proposed areas that show no evidence of major disturbances by humans....for the past 50 years". Additional acres have been included in the RNA to provide a size that represents this landtype at more of a landscape scale. In addition to adding to the landscape nature of the RNA, the areas of aspen cutting and tornado impact found in Hayes Tower Research Natural Area would also provide an opportunity to compare succession following different types of disturbance. Other disturbances within the RNA have been relatively minor in extent or impact: in 1961, a white pine release cut was performed in a small stand along the southern border of the tract; in 1964, most *Ribes* occurrences were eradicated from the same stand.; in 1971, unsuccessful girdling of many red oaks in the pine-oak forest was performed; in 1976, salvaging of small numbers of red pine, red maple and red oak took place in 6 stands that had been impacted by a tornado. The remainder of the area has undergone minimal human impact within the past 50 years.

5. ENVIRONMENTAL EFFECTS

This section describes the environmental effects of implementing the Proposed Action and the only alternative, the No Action Alternative. The direct, indirect and cumulative effects are addressed by resource area with respect to: 1) the issues identified previously in this document, 2) the anticipated results of implementing the Proposed Action and the No Action Alternative and 3) fulfilling the stated Purpose and Need.

Chapter IV of the Final Environmental Impact Statement (FEIS) for the Huron-Manistee National Forests' Land and Resource ManagementPlan contains discussion of the physical, biological and cumulative effects of management practices on different elements of the environment. The Proposed Action and Alternative addressed in this document discuss issues similar to those discussed in Chapter IV, therefore this section will be directly tiered to the FEIS. Descriptions of additional environmental effects are based upon the expertise of the interdisciplinary team and consultants working on this document.

5.1 Vegetation

5.1-1 Affected Environment

Three different forest communities are located within the Hayes Tower tract: approximately 150 acres in late-successional, relatively undisturbed pine-oak forest, approximately 150 acres in early-to-mid successional pine-oak forest that have been disturbed by high winds and have received salvage treatment, and an approximately 90-acre early-successional aspen community that was managed, in the past, for timber production.

There are no Endangered, Threatened or Sensitive plant species known to occur within the Hayes Tower tract.

5.1-2 Effects of Proposed Action and Alternative on Vegetation

In the absence of timber harvesting and with prescribed fire, conditions generated under the Proposed Action, the forests would naturally succeed to old growth, with senescence of over-mature trees and regeneration resulting. Species dominating the site are likely to be oaks, red pine and white pine. As salvaging of dead and down material or windthrow would not take place, the amount of coarse woody debris on the site would likely be high. An environment for interior forest conditions would exist.

The No Action Alternative would keep all 388 acres in Management Area 6.2. The desired future conditions for 6.2 Areas call for "natural" or "natural-appearing" conditions (Forest Plan, p IV-160) and significant amounts of old growth (Forest Plan, p IV-161). This Management Area designation precludes intensive vegetation management, leaving much of the vegetative condition similar to the Proposed Action. The small amounts of timber that potentially could be removed from the site would create conditions for earlier successional vegetation, such as aspen, oak and red maple. The higher light conditions generated by tree removal would encourage the growth of open-forest and disturbance-adapted plant species, and would probably increase the occurrence of invasive non-native plant species.

Because salvage cutting would be allowed, following "extensive damage" (Forest Plan p IV-161) in the No Action Alternative, the amount of coarse woody debris on the site would be significantly reduced if such an event occurred.

By not designating the Hayes Tower tract as an Research Natural Area, as called for in the No Action Alternative, the Huron-Manistee National Forest would forego the opportunity to contribute a representative forest community to the national Research Natural Area system.

5.1-3 Cumulative Effects of the Proposed Action and Alternative on Vegetation

The Proposed Action would enhance the proposed old-growth design in addition to reserving an example of a forest type which is not well-represented on the Forest. The cumulative impacts of

the Proposed Action would potentially slightly reduce the volume of timber available for harvesting and potentially slightly reduce the amount of early successional habitat.

The No Action Alternative would potentially provide small amounts of timber for harvesting and would potentially create small amounts of varying successional stage forest habitats.

5.2 Wildlife

5.2-1 Affected Environment

The type and numbers of wildlife using the Hayes Tower tract differs in the different forest communities found within the site. In pine-oak communities, typical mammals would include deer, badger, black bear, fox squirrel, mouse; birds such as black-capped chickadee, blue jay, downy woodpecker, eastern wood peewee, red-eyed vireo, ovenbird, scarlet tanager and turkey; and reptiles such as the eastern hognose and northern red-bellied snakes. In the young, regenerating aspen areas, grouse and other wildlife preferring a more open habitat would be characteristic with numerous populations of small rodents utilizing the dead, woody component found in the tornado-impacted areas.

No Threatened, Endangered or Sensitive wildlife species are known to occur on the Hayes Tower tract.

5.2-2 Effects of the Proposed Action and Alternative on Wildlife

Species that prefer forest interior habitats, such as pine marten, pileated woodpeckers, and salamanders may benefit from the Proposed Action. Many neotropical migrant birds and other species that are sensitive to forest fragmentation may benefit from having the Hayes Tower tract be part of the old-growth design. Natural disturbances will create small openings that would increase structural diversity, creating more opportunity for diversity in wildlife.

Species that prefer larger openings, such as grouse and deer might benefit from the No Action Alternative, as potential timber management could create a small increase in the number and size of openings on the site. Cavity-nesting birds and mammals would be less abundant due to the reduced number of large, standing dead trees.

5.2-3 Cumulative Effects of the Proposed Action and the Alternative on Wildlife

The cumulative impacts of the Proposed Action on wildlife would probably be to increase the number of forest interior species using the Hayes Tower tract, and reduce the number of early successional wildlife species. The number of cavity-nesting birds would increase due to the increased number of naturally senescing and windthrown trees.

The No Action Alternative would potentially provide a small continuing source of early successional habitat for open-land and forest-edge wildlife species.

5.3 Recreation

5.3-1 Affected Environment

The Hayes Tower tract is located within the Reid Lake Management Prescription Area 6.2 for semi-primitive non-motorized use. This area is open to camping, hunting, and hiking. There is currently not much recreational use of the Hayes Tower area.

5.3-2 Effects of the Proposed Action and the Alternative on Recreation

Under the Proposed Action, the area would still be open to camping, hunting and hiking. The potential for additional recreational activities, apart from education, would be reduced, as a result of no trail construction. The potential for recreation involving removal of vegetation such as berry-picking or mushroom-hunting would also be reduced due to the restrictions outlined above in the Standards and Guidelines for Research Natural Areas.

The No Action Alternative would continue to provide recreational opportunities consistent with semi-primitive non-motorized use. New hiking trails might be constructed.

5.3-3 Cumulative Effects of the Proposed Action and the Alternative on Recreation

The Proposed Action reduces the potential for (new) recreational activities involving trail use in the Hayes Tower tract due to restrictions on trail construction. Educational use of the area may increase.

The No Action Alternative could potentially increase recreational activity in the Hayes Tower area through the possible creation of new trails.

5.4 Heritage Resources

5.4-1 Affected Environment

Heritage resources have not been inventoried on the Hayes Tower tract.

5.4-2 Effects of the Proposed Action and the Alternative on Heritage Resources

The Proposed Action would have no effect on any Heritage Resources potentially located within the Hayes Tower tract. However, the Proposed Action could potentially affect the location, size or magnitude of disturbance created by archeological activities.

The No Action Alternative would have no effect on Heritage Resources.

5.4-3 Cumulative Effects of the Proposed Action and the Alternative on Heritage Resources

There would be no cumulative effects as a result of the Proposed Action or the No Action Alternative on Heritage Resources.

5.5 Minerals, Oil and Gas

5.5-1 Affected Environment

All mineral rights in the Hayes Tower tract are currently in public ownership; approximately 60 percent are State of Michigan rights, and 40 percent are federal rights. The tract overlies potentially extractable Antrim shale deposits, which may contain deposits of natural gas.

5.5-2 Effects of Proposed Action and Alternative on Minerals, Oil and Gas

The Proposed Action would reduce access to minerals and oil and gas resources located under the Hayes Tower tract through the stipulation of "no surface occupancy" within the tract.

Under the No Action Alternative, mineral, oil and gas exploration would continue under Management Area 6.2 Standards and Guidelines.

5.5-3 Cumulative Effects of the Proposed Action and the Alternative on Minerals, Oil and Gas

The Proposed Action would increase the cost or preclude development and utilization of the mineral and oil and gas resources under the Hayes Tower tract.

The No Action Alternative would allow for the continuing development of mineral, gas and oil products under the Standards and Guidelines of Management Area 6.2.

5.6 Visual Quality

5.6 -1 Affected Environment

The Standards and Guidelines for 6.2 Management Areas direct that the Hayes Tower tract has a predominately "natural or natural-appearing" environment. The current condition of the site meets this criteria.

5.6-2 Effects of the Proposed Action and the Alternative on Visual Quality

The Proposed Action would enhance the "natural" appearance of the Hayes Tower tract as human interference with natural processes would be greatly reduced.

The No Action Alternative would allow for continued management practices that follow the Standards and Guidelines for Management Area 6.2, allowing timber management activities that potentially could reduce the "natural" appearance of the area.

5.6-3 Cumulative Effects of the Proposed Action and the Alternative on Visual Quality

The Proposed Action has a long-term goal of maintaining natural conditions within the Hayes Tower site, which is complementary to the natural appearance desired in the Reid Lake semi-primitive non-motorized use area and for the adjacent old-growth areas.

The No Action Alternative would continue to provide a "natural" appearance, although timber harvesting would potentially occur.

5.7 Aquatic Resources

There are no Aquatic Resources located within or adjacent to the Hayes Tower tract, therefore there is no affected environment.

5.8 Social/Economic

5.8-1 Effects of the Proposed Action and the Alternative on Society/Economics

The Proposed Action would have an improved effect on the aesthetics of the area by maintaining a natural environment. There would be minimal detrimental economic effects due to the low timber production goals set forth for this site in the Forest Plan. Recreational use would be minimally impacted as there is no/low use of the Hayes Tower tract for berry-picking or mushroom-hunting, and because the trail system in the Reid Lake area is not currently expanding.

The No Action Alternative has the potential to produce small economic gains, through the harvesting of small amounts of timber. Recreational uses could potentially increase through the construction of new trails.

6.0 LIST OF PREPARERS

Interdisciplinary Team:	Alexandra Cleveland, Ecologist and Team Leader Manmeeth Patheja, Ecologist Eunice Padley, Regional Ecologist Carl Racchini, Zone Biologist Rebecca Reigle, Forester Joeseph A. Gates, Soil Scientist, Silviculturist
Consultants:	Chuck Andrina, District Ranger Pat Comer, Michigan Natural Features Inventory James DiMaio, Forest Planner Paul Edgerton, retired Regional Ecologist Rose Ingram, Forest Silviculturist, Recreation Program Manager Don Krejcarek, retired Forest Planner Lance Lindwall, Geologist Liz McNichols, Forester Quint McNichols, Forester Dave Riegle, Wildlife Biologist Mark Romey, Fire Officer Lucy Tyrrell, Regional Research Natural Area Coordinator Forests' Old-Growth Team

7.0 OTHER AGENCIES, GROUPS, INDIVIDUALS CONSULTED

Jim McMillan, Area Forester, Michigan DNR
Dave Smith, District Fish Biologist, Michigan DNR
Robert Hess, District Wildlife Biologist, Michigan DNR
U.S. Representative Allen Lowe
U.S. Representative James Barcia
Jim Cook, Harrisville, MI
George Byelich, Harrisville, MI
Dennis Werblow, Woods Manager, ABT Co. MI
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Jack Inman, Glennie, MI
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Daniel Welch, Jr., Curran, MI
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Alcona County Snowmobile Assoc.
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Tim Flynn, Sierra Club
William D. Lewis, Citizens Against Pollution, Inc.
Dean Wiltse, Oscoda Township Supervisor
City Manager, East Tawas City Hall
City Manager, Tawas City Hall
Township Supervisor, AuSable Township
Plainfield Township
Wilbur Township
Grant Township
Tawas Area Elks
John Wilson
Charles Wooley, Field Supervisor, US Fish & Wildlife Service
Iosco County Board of Commissioners
Hale Area Chamber of Commerce
Oscoda-AuSable Chamber of Commerce
Tawas Area Chamber of Commerce
Whittemore Chamber of Commerce
Kiwanis, Oscoda, MI
Kiwanis, East Tawas, MI
President, Glennie Lions Club
President, Tawas Area Lions Club
President, Oscoda Lions Club
Oscoda Press
Iosco County News Herald
Indian Mission Chapter, MUCC
James Henderson, Executive Division, MDNR
Honorable Tom Alley, State Representative
Honorable John Pridnia
Iosco County Parks and Recreation
Jeff Shue, AuSable Shoreline Association
Ken Nielson, Woods Manager, Abitibi-Price Corporation
Michigan Trail Riders Ass.
Roger Friend, Midland, MI
Cycle Conservation Club of Michigan
American Motorcyclist Association
Bentwheels Motorcycle Club
Lee Anderson, AuSable Steelheaders
Rick Jameson, Michigan United Conservation Club
Indian Mission Chapter, MUCC
Kathleen Thomson, Michigan Natural Areas Council

Appendix A

DISPOSITION OF ISSUES RECEIVED DURING 30-DAY COMMENT PERIOD AUGUST 8, 1996 - SEPTEMBER 9, 1996

On August 14, 1996, a copy of the Proposed Action for the establishment of the Hayes Tower Research Natural Area and standards and guidelines for all Research Natural Areas on the Huron-Manistee National Forests was mailed to interested parties. A public notice informing the general public of the Proposed Action and 30-day comment period appeared in the *Cadillac Evening News* on August 19, 1996. Two letters containing ten comments which encompassed six different issues were received. This appendix contains a list of the comments received and a disposition of those comments by reference to documents used in the decision-making process.

Respondents with comments:

Alcona County Board of Commissioners, received 9/18/96
Glennie Lions Club, received 9/19/96

Issues:

1.) **Setting aside 388 acres for a Research Natural Area.**

Alcona County Board of Commissioners is opposed because the local economy depends upon public land for recreation and livelihood. They are also concerned that more Research Natural Areas will be established in their county and less land will be available for public use.

Glennie Lions Club opposes because it will eliminate more acreage from timber harvesting.

2.) **Lack of public hearing.**

Alcona County Board of Commissioners believes that there have been insufficient public hearings on how this proposal will affect the local community.

3.) **Lack of explanation about what will happen now and in the future in the Research Natural Area.**

4.) **Fire protection.**

Alcona County Board of Commissioners wants to know how fire protection will be achieved in limited access area.

5.) **The Forest Service does not have time to monitor this area.**

6.) **Governmental control.**

The Glennie Lions Club believes that the situation is already over-controlled by the government.

Disposition of Issue 1:
The Hayes Tower tract is located in Management Area 6.2, Semiprimitive Nonmotorized Rolling Plains and Morainal Hills. The prescription for these areas calls for a "predominantly natural or natural-appearing" environment (p. IV 160). This precludes the removal of anything but small amounts of timber from the site. As a Research Natural Area, the only loss of timber revenue would be the small amounts that would have been allowed under the Management Area prescription (See Environmental Assessment, p. 8, Sections 5.1-2, 5.1-3, and 5.8-1).

The Hayes Tower tract is also located within an area currently designated as potential old growth. When the Forests' Plan amendment for old growth is completed, this area is slated to fall under old-growth standards and guidelines, which are even more restrictive than Management Area 6.2 guidelines for timber removal.

Allowable recreational uses in the Hayes Tower area will not be very different than the current management direction. Hunting, camping, hiking are all still acceptable recreational uses. Removal of vegetation and building of new trails are the only uses that will no longer be allowed (See Environmental Assessment, p. 10, Section 5.3).

Disposition of Issue 2:
Public notification of the proposal for the establishment of Hayes Tower Research Natural Area was given twice: on July 28,1993, and again on August 19, 1996. Responses from the public have been incorporated into the Environmental Assessment.

Disposition of Issue 3:
There are currently no specific plans for any projects within the Hayes Tower Research Natural Area. Potential future uses are discussed in the Environmental Assessment, p. 2, Section 1.3-A. 4000 RESEARCH.

Disposition of Issue 4:

Fire protection in the area will not be reduced (Environmental Assessment, p. 3, Section 1.3-E. 5100 FIRE).

Disposition of Issue 5:
The monitoring of Research Natural Areas is performed by the Research Natural Areas Coordinator on the Forest, whose job description includes such monitoring.

Disposition of Issue 6:
This is beyond the scope of the Proposed Action.

Appendix 2: Flora list for Hayes Tower RNA

Compiled by Lawrence Brewer, August 22, 1991, and Patrick Comer, June 30, 1992.

Species in mature Pine-oak forest:

Scientific name	Common name
Trees	
Abies balsamea	balsam fir
Acer rubrum	red maple
Amelanchier arborea	juneberry
Betula payrifera	paper birch
Fraxinus americana	white ash
Pinus banksiana	jack pine
Pinus resinosa	red pine
Pinus strobus	white pine
Populus grandidentata	bigtooth aspen
Populus tremuloides	quaking aspen
Prunus pensylvanica	pin cherry
Prunus serotina	black cherry
Quercus alba	white oak
Quercus ellipsoidalis	northern pin oak
Quercus rubra	red oak
Shrubs	
Comptonia perigrina	sweet fern
Epigaea repens	trailing arbutus
Hamamelis virginiana	witch hazel
Ilex verticillata	winterberry
Rubus occidentalis	black rasberry
Rubus pubescens	dwarf rasberry
Vaccinium angustifolium	common lowbush-blueberry
Vaccinium myrtilloides	velvetleaf-blueberry
Viburnum acerifolium	maple-leaved arrow-wood
Viburnum trilobum	highbush cranberry
Groundcover	
Anemone quinquefolia	wood anemone
Andropogon scoparius	little bluestem grass
Antennaria neglecta	cat's foot
Apocynum cannabinum	indian hemp
Arabis divaricarpa	rock cress
Aralia nudicaulis	wild sarsaparilla
Carex arctata	bear sedge
Carex brunnescens	sedge
Carex pensylvanica	Pennsylvania sedge

Chimaphila umbellata	prince's pine
Comandra umbellata	bastard toad-flax
Cornus canadensis	bunchberry
Cypripedium acaule	moccasin flower
Danthonia spicata	poverty oat grass
Fragaria virginiana	wild strawberry
Galium circaezans	bedstraw
Hieracium venosum	veiny hawkweed
Houstonia longifolia	Long-leaved bluets
Gaultheria procumbens	wintergreen
Lycopodium clavatum	running ground pine
Lycopodium obscurum	ground pine
Lycopodium tristachyum	ground cedar
Lycopus uniflorus	northern bugle weed
Lysimachia quadrifolia	whorled loostrife
Maianthemum canadensis	Canada mayflower
Melampyrum lineare	cowheat
Moneses uniflora	one-flowered shinleaf
Oryzopsis asperifolia	rough-leaved rice grass
Osmunda cinnamomea	cinnamon fern
Panicum latifolium	broad-leaved panic grass
Panicum linearifolium	narrow-leaved panic grass
Pedicularis canadensis	wood betony
Poa compressa	Canada blue grass
Polygala pauciflora	fringed polygala
Polytrichum juniperinum	moss
Pteridium aquilinum	bracken fern
Pyrola elliptica	large-leaved shinleaf
Smilacina racemosa	feathery false Solomon's seal
Trientalis borealis	starflower
Viola conspersa	dog violet

Additional shrubs/groundcover early successional area:

Achillea millefolium	yarrow
Aster macrophyllus	big-leaved aster
Bromus pubescens	brome-grass
Chrysanthemum leucanthemum	ox-eye daisy
Cornus rugosa	round-leaved dogwood
Hieracium aurantiacum	orange hawkweed
Krigia virginica	dwarf dandelion
Linnaea borealis	twinflower
Onoclea sensibilis	sensitive fern
Potentilla simplex	common cinquefoil
Prenanthes alba	white lettuce
Pyrola rotundifolia	round-leaved shinleaf

Appendix 3: Statement of Boundary and Identification

The Hayes Tower Research Natural Area is described as being a portion of Sections 25, 26, 35 and 36, all being located in Township 26 North, Range 6 East, Michigan Meridian, and is further described as follows:

Being those lands lying north of Forest Road 4503 in the South Half (S1/2) of Section 26 and the North Half of the North Half (N1/2N1/2) of Section 35; and that portion of the Northwest Quarter (NW1/4) of Section 36 lying west and north of Forest Service Road 4503; and that part of the Southwest Quarter (SW1/4) of Section 25 lying west of Forest Service Road 4433. This Research Natural Area contains approximately 388 acres.

Michael Lange
Forest Surveyor, Huron-Manistee National Forest

9/25/97
date