

2.0 Alternatives Including the Proposed Action

2.1 INTRODUCTION TO THE ALTERNATIVES

This chapter describes the issues and concerns identified during scoping, the alternatives developed and analyzed in response to the issues and concerns, and alternatives considered but eliminated from detailed study. It also summarizes how the public participated in the National Environmental Policy Act (NEPA) process and how the responsible official and interdisciplinary team identified concerns and developed the alternatives (see Maps D through F and Maps H through M in Appendix A for maps of the alternatives).

At the end of this chapter are alternative summary tables for the various resources that have proposed activities (Table 2.7.1 through Table 2.7.6). Also included is a summary table that compares alternatives according to how they address the measurement indicators for the issues (Table 2.7.7).

Alternatives were formulated that respond to the Purpose and Need for the project area and address the issues listed below in part 2.2.2. All alternatives were designed to meet NEPA requirements, and the provisions of applicable laws, regulations, and policies. The range of alternatives is reasonable, given the direction set forth by the Forest Service Handbook 1909.12, the Forest Plan, and concerns raised during scoping and project development.

2.2 PUBLIC PARTICIPATION AND SUMMARY OF SCOPING AND ISSUES

Public participation helps the Forest Service identify issues and concerns that are used in developing alternatives to its proposals. This information enables the responsible official to make decisions with an understanding of their

Chapter Preview

- 2.1 Introduction to the Alternatives
- 2.2 Public Participation and Summary of Scoping and Issues
- 2.3 Alternative 1: No Action
- 2.4 Alternative 2: Modified Proposed Action
- 2.5 Alternative 3: Even-aged Emphasis (Aspen)
- 2.6 Alternative 4: Temporary Openings < 40 Acres with Emphasis on Softwood
- 2.7 Comparison of Alternatives
- 2.8 Design Criteria for Action Alternatives
- 2.9 Alternatives Considered but Eliminated from Detailed Study
- 2.10 Monitoring

environmental consequences. It also allows the Forest Service to disclose the nature and consequences of actions on National Forest System (NFS) lands.

On July 8, 2002, a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for this proposed project was published in the Federal Register. On this same date, public involvement was also initiated with a scoping letter explaining the proposed project along with maps showing the location of the proposed project. The scoping letter was sent to private individuals, groups, and public agencies asking for comments regarding this proposal. The legal notice for the 30-day scoping period was published in the *Ironwood Daily Globe* on July 8, 2002. In addition, the scoping document was posted on the web page for the Ottawa National Forest.

This proposed project was also listed in the *Ottawa Quarterly* beginning with the Fall 2002 edition, and has since appeared in each subsequent edition. As of April 2003, the

Ottawa Quarterly is routinely distributed to approximately 300 individuals, groups, and public agencies.

As stated in the NOI, initial scoping for the Thumper Vegetation Management Project began in July of 1998 and was listed in the 1998 winter edition of the *Ottawa Quarterly*. The 1999 summer edition of the *Ottawa Quarterly* further included the Winterfest Timber Sale as part of the Thumper Vegetation Management Project. This project was never completed and is now included in the Baltimore analysis. Comments received regarding the Thumper Vegetation Management Project prior to this NOI have been included in the documentation for the EIS.

In response to the 1998 and 2002 scoping letters requesting comments on these proposals, the Ottawa NF received a total of 58 responses, either through regular mail, e-mail, incoming telephone calls, or personal visits to the Ontonagon District Office. The comments received expressed varied opinions on resource management of the Ottawa. All comments were given careful consideration, categorized, and used to develop issues. A summary document of the issue identification process was prepared, placed in the project record, and is available upon request.

2.2.1 Issue Identification

Issues involve a point of discussion, debate, or dispute, and constitute an “unresolved conflict.” They were used to formulate alternatives to the proposal for consideration when determining how best to meet the project objectives.

Some comments relating to this proposal are discussed only briefly (as per 40 CFR 1500.4(c) and 40 CFR 1502.2(b)). Some comments were determined to be outside the scope of this project or are already addressed in the Forest Plan. Other comments could be addressed through project design criteria. Comments that could not be resolved by these methods were used in developing alternatives to the proposed action.

2.2.2 Major Issues

Internal and external comments and concerns revealed three issues representing unresolved conflict with the Proposed Action or existing condition. These issues are being carried forward and have been used to help formulate alternatives to the Proposed Action. These issues are as follows:

2.2.2.1 Issue 1---Aspen Management (See *Vegetation Section 3.1, Social/Economic Section 3.2, and Wildlife Section 3.3*)

Several commenters expressed a desire for maintenance or expansion of the existing aspen type and associated habitat, and were opposed to shelterwood treatment and/or conifer planting in aspen stands. The commenters stated that shelterwood treatment would not capture the full economic value of the mature aspen in these stands and would result in a reduction of aspen type because such treatment would convert the stands to another forest type. Also discussed were jobs created by timber-related enterprises, community stability tied to a dependable harvest level, and the payment to counties generated by timber harvest.

To address these concerns, the commenters suggested the Forest Service should consider additional harvest by treating and regenerating as many aspen stands as possible that are mature, over-mature, and/or at risk to insect and disease.

The ID team also identified concerns that there is a large portion of mature aspen greater than 50 years old needing treatment, and there is an imbalance of age classes among the existing aspen type in the project area.

Measurement Indicators

- Acres of treatment proposed to maintain or convert to aspen type;
- Percentage of aspen type in MA 1.1 of the project area and Forestwide after treatment;

- Long-term percentage of aspen type in MA 1.1 of the project area and Forestwide (%) due to loss of aspen type on unsuitable ground
- Acres of aspen type converted to other forest types;
- Age class distribution of aspen type after treatment.

2.2.2.2 Issue 2---Balance of Softwood Component *(See Vegetation Section 3.1 and Wildlife Section 3.3)*

Although the softwood component for MA 1.1 Forestwide is currently within the range of the DFC for pulpwood and is at the upper end of the range for sawtimber (see Table 1.3.1), the ID team recognizes that the softwood component in the project area is quite low, particularly softwood pulpwood, which could also be increased in MA 1.1 Forestwide.

To address this, the ID team looked for opportunities to convert some stands to a softwood pulpwood forest type, and for additional opportunities to underplant and restore white pine as part of the ecosystem of this area.

Measurement Indicators

- Acres proposed for conversion to softwood by conifer planting;
- Acres proposed for conversion to a softwood pulpwood forest type;
- Net increase in softwood;
- Percentage of softwood type in MA 1.1 of the project area and Forestwide after treatment.

2.2.2.3 Issue 3---Temporary Openings Exceeding 40 Acres. *(See Vegetation Section 3.1 and Wildlife Section 3.3)*

Forest Plan Standards and Guidelines for Vegetative Management provide management direction to limit the size of temporary openings created by even-aged management to 40 acres or less, except as provided for under

certain circumstances listed in the Forest Plan or following review and approval by the Regional Forester (Forest Plan, IV-87).

To address this, the ID team limited the amount of proposed even-aged management in one alternative so temporary openings would not exceed 40 acres. This provides contrast to disclose the effects of creating or not creating temporary openings that exceed 40 acres.

Measurement Indicators

- Number and size range of temporary openings exceeding 40 acres.

2.2.3 Other Resource Concerns

There are other resource concerns addressed in this analysis that in and of themselves do not drive the development of a separate alternative. They are resolved through small-scale activities or specific design criteria, which may become parts of one or more alternatives.

2.2.3.1 Invasive Plant Species

The ID team identified a need to treat the glossy buckthorn infestation discovered in the project area after scoping was initiated. The treatment is needed to control the invasive plant in the identified area and reduce the potential for spread.

2.2.3.2 Vegetative Management Along the North Country Trail (NCT)

Two of the commenters expressed concern about vegetative management along the NCT. One commenter asked how the Forest Service will protect the trail, what the Forest Service can do differently to protect the trail, and encouraged the Forest Service to drop sale units that cross the trail. The other commenter said the Forest Service should consider an alternative that includes no logging within view of the NCT.

2.2.3.3 Road Use Through Private Land

Some commenters requested that the Forest Service re-route a portion of an existing road so that future access to the area by the Forest Service and public would no longer involve passing through private property. The commenters reasoned that because the current location and route of the road leaves Forest System land, passes through private property, then re-enters Forest System land, it encourages the public wishing to access the Forest System land beyond the private property to use that portion of road passing through the private property.

2.3 ALTERNATIVE 1: NO ACTION

2.3.1 Alternative Description

This alternative was developed in response to NEPA requirements for a No Action Alternative and serves as a baseline for comparison to the action alternatives.

This alternative proposes no new ground disturbing activities. Current activities such as dispersed recreation use and annual road maintenance would continue. No new road construction, reconstruction, or decommissioning would occur as a result of this project.

No timber harvest would occur on National Forest System lands as a result of this project. Natural occurrences and processes would continue to occur. Stands within the project area classified with an old growth management objective would remain at approximately 614 acres, all within MA 1.1.

No recreation, wildlife, or watershed habitat improvement or enhancement projects would occur on National Forest System lands as a result of this project.

No treatment of the glossy buckthorn infestation would occur as a result of this project.

2.4 ALTERNATIVE 2: MODIFIED PROPOSED ACTION

2.4.1 Alternative Description

This alternative reflects the proposal presented in the July 8, 2002 scoping letter, with the exception of the proposed fish habitat enhancement project, proposed old growth classification, and refinements to acres proposed for timber harvest. These proposals are no longer being carried forward for reasons described in Alternatives Considered but Eliminated from Detailed Study, Section 2.9.1 where the Proposed Action, as scoped in July, 2002, is discussed.

Following is a description of the alternative. Additional elements of this alternative are found in Section 2.8 - *Design Criteria for Action Alternatives*.

2.4.1.1 Timber Management

Commercial timber treatment: Under this alternative commercial timber harvest activities would occur on approximately 3,165 acres within MA 1.1 of the project area (see Map D in Appendix A for specific locations, and Table B-1 in Appendix B for a list of Compartment/Stand data). Specific treatment activities for existing forest types include:

- Clearcutting of approximately 1120 acres of aspen or aspen-fir types, approximately 10 acres of conifer type, and approximately 30 acres of hardwood type (these would be silvicultural clearcuts with no residual trees);
- Clearcutting with residual trees of approximately 615 acres of aspen or aspen-fir types and approximately 110 acres of conifer type;
- Clearcutting of approximately 5 acres of conifer type followed by conifer planting;
- Thinning of approximately 755 acres of northern hardwood types and approximately 45 acres of aspen type;

- Shelterwood cutting of approximately 180 acres of aspen or aspen-fir types and approximately 110 acres of northern hardwood type, all followed by conifer planting;
- Removal cutting of approximately 85 acres of northern hardwood type;
- Selection cutting (uneven-aged management) of approximately 90 acres of northern hardwood types and approximately 10 acres of conifer type; and
- Site preparation for natural regeneration of aspen would be conducted in stands harvested for the regeneration of aspen, where needed.
- Hand-cutting small patches (approximately 0.25 acre) of tag alder to improve grouse and woodcock habitat (approximately 30 acres total).

The proposed clearcut treatments would create fifteen (15) temporary openings greater than 40 acres in size, ranging from approximately 50 to 175 acres, with an average size of approximately 105 acres (refer to Figure 3.1.4 in Vegetation, Section 3.1.3.2).

The commercial vegetative treatments would be implemented through commercial timber sales expected to be offered between Fiscal Year (FY) 2004 and FY 2006. These sales would yield a total of approximately 29.3 million board feet (MMBF) of timber. Each sale would likely be harvested over a two to five year period.

2.4.1.2 Wildlife Habitat Improvement

Wildlife habitat improvement projects would include the following (see Map K in Appendix A for specific locations, and Tables B-7, B-8, B-11, and B-12 in Appendix B for a list of Compartment/Stand and Forest Road data):

- Reconstruction of existing upland grass/forb openings (approximately 135 acres total), and mowing certain Forest System Roads (approximately 15 miles total);
- Creating snags and future large woody debris in some of the treated aspen stands (approximately one tree per ten acres of treated area);

2.4.1.3 Transportation Management

The overall proposed transportation system identified for long-term access and management of forest resources does not vary by alternative, nor does the proposed gravel pit expansion mentioned below.

Transportation projects proposed and necessary to implement this alternative and to help achieve the long-term transportation plan for MA 1.1 of the project area would include the following (see Map H in Appendix A for specific locations):

New System Road Construction

Approximately 1.1 miles of new system road construction that would involve:

- Clearing trees and brush; grubbing stumps; widening clearings; installing culverts and crossings if needed; shaping the road prism; and ditching.
- These roads would be closed to passenger vehicle use by an earthen berm or gate upon completion of harvesting activities, but could be re-opened for use in a future project.

Road Reconstruction

Approximately 10.1 miles of system road reconstruction that would involve:

- Removing brush; widening the existing road clearing; installing and/or repairing culverts and crossings; reshaping the road prism; and ditching if needed.
- These roads would be closed to passenger vehicle use by an earthen berm or gate upon completion of harvesting activities, but could be re-opened for use in a future project.

Road Maintenance

Approximately 43.1 miles of system road maintenance that would involve:

- Removing brush; repairing culverts and crossings; and reshaping the road prism where or if needed.
- Part of road maintenance would also involve the relocation of an existing gate on Forest Road (FR) 710 to alleviate rutting and resource damage being caused by passenger vehicle use. This gate would be moved back to its old location near the west line of Section 22 in T49N R39W, approximately 300 feet east of US-45.
- The majority of these roads would be closed to passenger vehicle use by an earthen berm or gate upon completion of harvesting activities, but could be re-opened for use in a future project.

System Roads

Approximately 61.5 miles of existing roads not receiving reconstruction, maintenance, or use under this alternative would be retained or classified as Forest System Roads. These roads would remain or become part of the long-term transportation plan and transportation system necessary for future access and management of forest resources, and for public recreation.

Although not proposed for use under this alternative, these roads would remain or become closed to passenger vehicle use if:

- They are currently beyond an existing earthen berm or gate;
- They are not passable by passenger vehicles due to existing condition;
- They lie beyond an earthen berm or gate that would be constructed upon completion of harvesting activities;
- They are specifically identified for closure because they are receiving rutting and/or are causing or have the potential to cause erosion and sedimentation. Forest Roads 736 &

737 have been specifically identified for closure to passenger vehicles and would be closed by installing a gate near the beginning of each road.

Approximately 45.6 miles of the 61.5 miles of System roads would remain or become closed to passenger vehicle use, while approximately 15.9 miles would remain open. These roads could be re-opened for use in a future project.

Temporary Roads

Approximately 2.4 miles (total) of temporary road construction that would involve:

- Clearing trees and brush; installing temporary culverts and crossings, if needed; and ditching, if needed (refer to Forest Plan, pages IV-59 & 60).
- Obliterating the roads upon completion of harvesting activities (refer to Forest Plan, page IV-60).

In accordance with Forestwide Standards & Guidelines, all temporary roads would be planned and constructed to be revegetated (Forest Plan, page IV-57).

Road Decommissioning

Approximately 26.9 miles of existing roads would be decommissioned. These roads are no longer needed for long-term access and management of forest resources.

Road decommissioning would involve returning the road to a more natural state by allowing the road to naturally revegetate. Road decommissioning would also involve treatment of existing and potential soil erosion problems by removing culverts and crossing structures where needed.

These roads would be closed to passenger vehicle use by an earthen berm or gate, and would no longer be used or retained as part of the Forest transportation system.

Unclassified Roads

Approximately 1.5 miles of existing roads would be retained as unclassified. It was determined these roads are not needed to implement this alternative or for long-term access and management of forest resources

by the Forest Service, but they are currently used for recreational lease or private property access.

Culverts

Culverts would be installed where needed on roads to be constructed, reconstructed, or maintained. These culverts would be left in place after timber harvest to allow for recreational access and future management.

Gravel Pit Expansion

An existing gravel pit known as the Gauthier Gravel Pit would be expanded by approximately 5 acres to access an existing gravel deposit to provide material for road system needs.

2.4.1.4 Watershed Improvement

Projects to improve watershed conditions would include the following (see Map H in Appendix A for specific locations):

- Reconstruction of one vehicle crossing on Lathrop Creek - FR 715. This would involve replacement of the existing culvert with a larger one.
- Decommissioning two crossing sites on Lathrop Creek. This would involve the removal of an existing wooden bridge at one of the crossings.
- Improvement, rehabilitation, and/or erosion control work would be done at stream crossing sites utilized in this alternative as needed. This would involve contouring, seeding, and stabilization of the approach slopes, and diverting run-off water away from the stream to minimize sediment delivery into the stream.

2.4.1.5 Recreation Management

Dispersed recreation improvements would include such projects as (see Map K in Appendix A for specific locations):

- Hardening, improving, or developing some dispersed recreation parking and camping sites adjacent to Forest

System Roads 710, 730, and 733 to meet current and expected demand, and address soil rutting.

- Hardening and improving a parking site in conjunction with converting approximately 300 feet of an existing unclassified road to a trail near the junction of the East and West Branches of the Ontonagon River.
- Relocating a portion of existing Snowmobile Trail #3 that is currently located in the U.S. Highway 45 right-of-way.

This portion of the trail exists through a memorandum of understanding (MOU) between the Michigan Department of Natural Resources (MDNR) and the Michigan Department of Transportation (MDOT). The proposed relocation would be accomplished through cooperative work between the Forest Service, a local snowmobile club (Sno Valley Riders), MDNR, and MDOT. Cooperative work between the Forest Service, MDNR, and MDOT would involve retaining the current MOU so the trail could be temporarily relocated to its existing location to avoid a potential dual-use conflict of roads during future management activities in the immediate area.

2.5 ALTERNATIVE 3: EVEN-AGED EMPHASIS (ASPEN)

2.5.1 Alternative Description

This alternative differs from Alternative 2 in the kind and amount of associated activities. Treatment emphasis under this alternative is even-aged management, particularly for the regeneration and maintenance of aspen and other early successional forest types.

In response to Issue #1, several of the aspen stands identified in the proposed action for a shelterwood treatment with conifer planting (180 acres), are being proposed for clearcut

treatment to regenerate aspen types under this alternative (120 of those acres). Another difference is the amount of aspen and aspen-fir types that are proposed for treatment and regeneration under this alternative, which is also in response to Issue #1.

This alternative proposes two additional activities not included in Alternative 2:

- 1) Non-commercial vegetation treatments;
- 2) Treatment of an invasive plant infestation.

Proposed watershed improvement and recreation management projects or activities described under Alternative 2 would be the same for this alternative (see Maps I and L in Appendix A for specific locations).

Following is a more detailed description of the alternative. Additional elements of this alternative are found in Section 2.8 - *Design Criteria for Action Alternatives*.

2.5.1.1 Timber Management

Commercial timber treatment: Under this alternative commercial timber harvest activities would occur on approximately 5,565 acres within MA 1.1 of the project area (see Map E in Appendix A for specific locations, and Table B-2 in Appendix B for a list of Compartment/Stand data). Specific treatment activities for existing forest types include:

- Clearcutting of approximately 2,110 acres of aspen or aspen-fir types, approximately 80 acres of conifer type, and approximately 55 acres of hardwood type (these would be silvicultural clearcuts with no residual trees);
- Clearcutting with residual trees of approximately 1,375 acres of aspen or aspen-fir types and approximately 50 acres of conifer type;
- Clearcutting of approximately 5 acres of conifer type followed by conifer planting;

- Clearcutting with residual trees of approximately 20 acres of conifer type followed by conifer planting;
- Improvement cutting of approximately 1,025 acres of northern hardwood types and approximately 55 acres of aspen or aspen-fir types;
- Improvement cutting of approximately 170 acres of northern hardwood types along with regenerating approximately 110 additional acres of mature/over mature aspen inclusions (> 1 acre each in size) interspersed within some of these northern hardwood types;
- Selection cutting (uneven-aged management) of approximately 310 acres of northern hardwood types.
- Shelterwood cutting of approximately 65 acres of aspen or aspen-fir types (next to or near U.S. Highway 45), approximately 115 acres of conifer types, and approximately 20 acres of northern hardwood type, all followed by conifer planting;
- Site preparation for natural regeneration of aspen would be conducted in stands harvested for the regeneration of aspen, where needed.

Non-commercial timber treatment: Under this alternative non-commercial timber treatment activities would occur on approximately 15 acres within MA 1.1 of the project area (see Map L in Appendix A for specific location, and Table B-3 in Appendix B for a list of Compartment/Stand). Specific treatment activities for existing forest types include:

- Shelterwood cutting by hand felling some of the trees on approximately 15 acres of white pine type, followed by conifer planting.

The proposed clearcut treatments would create 28 temporary openings greater than 40 acres in size, ranging from approximately 41 to 324 acres, with an average size of approximately

110 acres (refer to Figure 3.1.6 in Vegetation, Section 3.1.3.3).

The commercial vegetative treatments would be implemented through commercial timber sales with expected sell dates between FY 2004 and FY 2007. These sales would yield a total of approximately 52.2 MMBF of timber. Each sale would likely be harvested over a two to five year period.

2.5.1.2 Wildlife Habitat Improvement

Wildlife habitat improvement under this alternative would include the same types of projects described in Alternative 2 under Section 2.4.1.2 with the addition of the following (see Map L in Appendix A for specific locations, and Tables B-3, B-7, B-9, B-11, and B-12 in Appendix B for a list of Compartment/Stand and Forest Road data):

Approximately 40 acres of non-commercial treatments that would involve the following:

- Clearcutting by hand felling or girdling trees on approximately 40 acres of aspen types to maintain and regenerate the aspen type;

2.5.1.3 Transportation Management

Transportation projects proposed and necessary to implement this alternative, and to help achieve the long-term transportation plan for MA 1.1 of the project area, would involve the same types of activities as described in Alternative 2 under Section 2.4.1.3. Those activities with the associated mileages are described below (see Map I in Appendix A for specific locations):

New System Road Construction

Approximately 1.4 miles of new system road construction.

Road Reconstruction

Approximately 16.0 miles of system road reconstruction.

Road Maintenance

Approximately 67.2 miles of system road maintenance.

System Roads

Approximately 31.6 miles of existing roads not receiving reconstruction, maintenance, or use under this alternative would be retained or classified as Forest System Roads.

Approximately 16.9 miles of the 31.6 miles of these System roads would remain or become closed to passenger vehicle use. These roads could be re-opened for use in a future project.

Temporary Roads

Approximately 6.5 miles (total) of temporary road construction.

Road Decommissioning

Approximately 26.9 miles of existing roads would be decommissioned.

These roads would be closed to passenger vehicle use by an earthen berm or gate, and would no longer be used or retained as part of the Forest transportation system.

Unclassified Roads

Approximately 1.5 miles of existing roads would be retained as unclassified. It was determined these roads are not needed to implement this alternative or for long-term access and management of forest resources by the Forest Service, but they are currently used for recreational lease or private property access.

Culverts

Culverts would be installed where needed on roads to be constructed, reconstructed, or maintained. These culverts would be left in place after timber harvest to facilitate stream flows, reduce maintenance costs, and allow for recreational access and future management.

2.5.1.4 Invasive Plant Treatment

This alternative would treat the entire 300-plus acre infestation of the non-native shrub glossy buckthorn on National Forest System lands (refer to Figure 3.7.1 in Botanical Resources, Section 3.7.2, or Map L in Appendix A for specific locations).

Treatment to kill the woody stems would involve girdling all stems over 1.75 inches in

diameter and burning smaller stems with a flame torch. Burning would be done at a time to minimize or eliminate the potential of causing a wildfire.

2.6 ALTERNATIVE 4: TEMPORARY OPENINGS LESS THAN 40 ACRES IN SIZE WITH EMPHASIS ON SOFTWOOD COMPONENT

2.6.1 Alternative Description

This alternative, in response to Issue #2 and Issue #3, emphasizes vegetative management to promote a better balance of the conifer component in the project area, and to not create any temporary openings greater than 40 acres in size, while still maintaining the aspen component within the Desired Future Condition.

The main differences between this alternative and Alternatives 2 and 3 are that no temporary openings greater than 40 acres in size would be created, and the amount and type of treatments being proposed place emphasis on the conifer component.

The amount of conifer planting proposed under this alternative is higher than that proposed in either Alternative 2 or Alternative 3.

The proposed invasive plant project and non-commercial treatment for wildlife habitat are different than in Alternative 3.

This alternative proposes one additional watershed improvement activity not included in either Alternative 2 or Alternative 3: a riparian influence area planting project.

All other associated wildlife, transportation, watershed, and recreation projects or activities described under Alternative 3 would be the same for this alternative (see Maps I and M in Appendix A for specific locations).

Following is a detailed description of this alternative. Additional elements of this

alternative are found in Section 2.8— *Design Criteria for Action Alternatives*.

2.6.1.1 Timber Management

Commercial timber treatment: Under this alternative commercial timber harvest activities would occur on approximately 5,570 acres within MA 1.1 of the project area (see Map F in Appendix A for specific locations, and Table B-4 in Appendix B for a list of Compartment/Stand data). Specific treatment activities for existing forest types include:

- Clearcutting of approximately 1,070 acres of aspen or aspen-fir types, approximately 45 acres of conifer type, and approximately 55 acres of hardwood type (these would be pure silvicultural clearcuts with no residual trees);
- Clearcutting with residual trees of approximately 575 acres of aspen or aspen-fir types and approximately 10 acres of conifer type;
- Clearcutting of approximately 15 acres of aspen-fir type and approximately 5 acres of conifer type, all followed by conifer planting;
- Removal cutting of approximately 875 acres of aspen or aspen-fir types and approximately 25 acres of conifer types;
- Improvement cutting of approximately 565 acres of aspen or aspen-fir types (which includes clearcutting of approximately 10 acres within an existing aspen type to maintain an inclusion of aspen within the treated and converted stand), approximately 45 acres of conifer types, and approximately 1520 acres of hardwood types;
- Improvement cutting of approximately 60 acres of northern hardwood type along with regenerating approximately 40 acres of mature/over mature aspen inclusions (> 1 acre each in size)

interspersed within some of the northern hardwood types;

- Shelterwood cutting of approximately 505 acres of aspen types, approximately 140 acres of conifer types, and approximately 20 acres of northern hardwood type, all followed by conifer planting;
- Site preparation for natural regeneration of aspen would be conducted in stands harvested for the regeneration of aspen, where needed.

Non-commercial timber treatment: Non-commercial timber treatment activities under this alternative would be the same as described in Alternative 3 under Section 2.5.1.1 (see Map M in Appendix A for specific location, and Table B-5 in Appendix B for Compartment/Stand data).

The commercial vegetative treatments would be implemented through commercial timber sales expected to be offered between FY 2004 and FY 2007. These sales would yield a total of approximately 46.6 MMBF of timber. Each sale would likely be harvested over a two to five year period.

2.6.1.2 Wildlife Habitat Improvement

Wildlife habitat improvement would include the same projects described in Alternative 3 under Section 2.5.1.2, with the exception of the following (see Map M in Appendix A for specific locations, and Tables B-5, B-7, B-10, B-11, and B-12 in Appendix B for a list of Compartment/Stand):

Only approximately 10 acres would receive non-commercial treatments that would involve the following:

- Clearcutting by hand felling or girdling trees on approximately 10 acres of

aspen types to maintain and regenerate the aspen type;

2.6.1.3 Invasive Plant Treatment

The proposed treatment used for the non-native shrub glossy buckthorn would be the same as described in Alternative 3, but only about 55 acres – the infestation centers – would be treated (refer to Figure 3.7.2 in Botanical Resources, Section 3.7.3.4, or Map M in Appendix A for specific locations).

2.6.1.4 Watershed Improvement

This alternative proposes planting white pine, white spruce, or hemlock within some of the riparian influence areas (refer to Map M in Appendix A, and Table B-13 in Appendix B for a list of Compartment/Stands). This would address the need to improve riparian areas and aquatic habitats.

Actual acres planted in one area could range from less than one acre to as high as 40 acres. Cumulatively, approximately 170 acres may be planted. No harvesting activity is proposed for these areas.

Some of the sites may prove to be unsuited for planting due to high crown density of existing overstory or wet site conditions. Validation and final selection of sites would occur prior to scheduling the planting.

2.7 COMPARISON OF ALTERNATIVES

The tables below provide a summary comparison of the proposed activities for each resource by alternative, and a summary comparison of the issues and measurement indicators by alternative.

Table 2.7.1. Summary Comparison of Proposed Timber Management by Alternative.

Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Timber Management	(Acres)			
Clearcut	0	1,160	2,245	1,170
Clearcut w/residual trees	0	725	1,425	585
Clearcut & plant conifer	0	5	5	20
Clearcut w/residual trees & plant conifer	0	0	20	0
Commercial thin	0	800	0	0
Shelterwood cut (all followed by conifer underplanting)	0	290	215 <i>(15 acres is non-commercial)</i>	680 <i>(15 acres is non-commercial)</i>
Improvement cut	0	0	1,080	2,130
Improvement cut w/inclusions of aspen regeneration	0	0	280	100
Overstory removal	0	85	0	900
Individual tree selection	0	100	310	0
Total Treatment Acres	0	3,165	5,580	5,585

Table 2.7.2. Summary Comparison of Proposed Wildlife Projects by Alternative.

Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wildlife Habitat Improvement				
Opening reconstruction (acres)	0	135	135	135
Road mowing (miles)	0	15	15	15
Snags/large woody debris (number of girdled trees)	0	158	209	72
Alder cutting (number of ¼-acre openings) (approximate total acres treated)	0	118 (30)	118 (30)	118 (30)
Non-commercial aspen treatment (acres)	0	0	40	10

Table 2.7.3. Summary Comparison of Proposed Transportation System by Alternative.

Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Transportation Management				
Road construction (miles)	0	1.1	1.4	1.4
Road reconstruction (miles)	0	10.1	16.0	16.0
Road maintenance (miles)	0	43.1	67.2	67.2
System roads not needed for project activities (miles)	114.8	61.5	31.6	31.6
Total system roads (miles)	114.8	115.8	116.2	116.2
Miles open to passenger vehicles	18.5	15.9	14.7	14.7
Miles closed to passenger vehicles	96.3	99.9	101.5	101.5
Unclassified roads (miles)	28.3	1.5	1.5	1.5
Miles open to passenger vehicles	1.8	0	0	0
Miles closed to passenger vehicles	26.5	1.5	1.5	1.5
Road density (miles/sq. mile)	3.6	2.9	2.9	2.9
Temporary road construction (approximate miles)	0	2.4	6.5	6.5
Road decommissioning (miles)	0	26.9	26.9	26.9
Relocate gate on Forest Road 710	No	Yes	Yes	Yes
Number of road/stream crossings	215	173	173	173
Approximate number of culverts needed	0	10	17	17
Approximate number of berms needed	0	12	22	22
Approximate number of gates needed	0	2	2	2
Gravel pit expansion	No	Yes	Yes	Yes

Table 2.7.4. Summary Comparison of Proposed Watershed Projects by Alternative.

Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Watershed Improvement				
Decommission two Lathrop Cr. X-ings (located on FR 710 & Rte. No. 0514216)	No	Yes	Yes	Yes
Reconstruct one Lathrop Cr. X-ing (located on FR 715)	No	Yes	Yes	Yes
Riparian influence area planting (approximate total acres)	0	0	0	170

Table 2.7.5. Summary Comparison of Proposed Recreation Projects by Alternative.

Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Recreation Management				
Dispersed parking/camping sites hardened or developed (approx. no. of sites hardened or developed)	0	23	23	23
Harden/improve Ontonagon River access parking	No	Yes	Yes	Yes
Relocate portion of Snowmobile Trail # 3	No	Yes	Yes	Yes

Table 2.7.6. Summary Comparison of Proposed Invasive Plant Treatment by Alternative.

Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Invasive Plant Treatment				
Glossy buckthorn infestation treated (approximate acres of infestation treated)	0	0	300	55

Table 2.7.7. Summary of Issues and Measurement Indicators by Alternative.

Issue	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Aspen Management				
Acres of treatment proposed to maintain or convert to aspen type	0	1,885	3,710	2,010
Percentage of aspen type in MA 1.1 of the project area and Forestwide (%) after treatment	72% (57%)	71% (57%)	72% (57%)	65% (55%)
Long-term percentage of aspen type in MA 1.1 of the project area and Forestwide (%) due to loss of aspen type on unsuitable ground	61% (53%)	60% (53%)	61% (54%)	54% (51%)
Acres of aspen type converted to other forest types	0	230	120	1,715
Age class distribution of aspen type after treatment	(Refer to Table 3.1.1 in Vegetation, Section 3.1.3)	(Refer to Table 3.1.1 in Vegetation, Section 3.1.3)	(Refer to Table 3.1.1 in Vegetation, Section 3.1.3)	(Refer to Table 3.1.1 in Vegetation, Section 3.1.3)
Balance of Softwood Component				
Acres proposed for conversion to softwood by conifer planting	0	290	85	540
Acres proposed for conversion to a softwood pulpwood forest type	0	0	54	806
<i>Net increase in softwood forest type</i>	0	182	51	1,303
Percentage of softwood type in MA 1.1 of the project area and Forestwide (%) after treatment	<u>Saw</u> 3% <u>Pulp</u> 6% (<u>Saw</u> 10%) (<u>Pulp</u> 13%)	<u>Saw</u> 4% <u>Pulp</u> 6% (<u>Saw</u> 11%) (<u>Pulp</u> 12%)	<u>Saw</u> 3% <u>Pulp</u> 6% (<u>Saw</u> 11%) (<u>Pulp</u> 12%)	<u>Saw</u> 5% <u>Pulp</u> 9% (<u>Saw</u> 11%) (<u>Pulp</u> 13%)
Temporary Openings Exceeding 40 Acres				
Number of temporary openings exceeding 40 acres	0	15	28	0
Size range of openings	0	50-175 acres	41-324 acres	0
<i>Average opening size</i>	0	105 acres	110 acres	0

2.8 DESIGN CRITERIA FOR ACTION ALTERNATIVES

In addition to the Forestwide Standards and Guidelines included in the Forest Plan (pages IV-34 to IV-36), the Best Management Practices (BMPs) recommended by Michigan's Department of Natural Resources (MI-DNR, 1994), and standard and special Forest Service Timber Sale Contract provisions, site-specific design criteria would be implemented to offer additional protection to fish and wildlife habitat, water quality, and soil resources. The following design criteria would be applied during implementation of any action alternative (unless otherwise noted), and include:

1. In all treatment stands with residual trees, favor the retention and regeneration of healthy black cherry, northern red oak, hemlock, pine, and cedar to encourage recruitment of wildlife forage species. These species may be harvested where needed. In stands receiving a selection harvest, encourage structural and species diversity within the stand. Where the favored species listed above are present, regeneration gaps may be created and should be approximately 40-80 feet in diameter.
2. Existing cull trees and snags within the hardwood and conifer stands would be retained where possible. Existing snags in aspen stands would be retained where possible. To allow for safer operating conditions during treatment activities, hazardous trees may be removed.
3. Reserve 2-3 of the larger diameter, low quality, large-limbed trees per acre in managed hardwood and conifer stands for future snag and den trees.
4. Where possible, retain the recommended number of larger diameter, low quality aspen trees in stands designated for large woody debris (see Maps K, L, and M in Appendix A, and Tables B-8, B-9, and B-10 in Appendix B for the recommended number of aspen trees to retain in each stand).
5. No logging activity would occur within 300 feet of active (used in the previous or current nesting season) red-shouldered hawk or goshawk nests at any time of the year. In addition, there would be a 30-acre nest protection area where no disturbance-causing activities would be allowed during the nesting period (March 15 through September 1).
6. Protection measures for any new locations of TES species would be reviewed on a case-by-case basis to determine the appropriate action. Guidelines in existing recovery plans and conservation approaches would be followed to protect TES locations. The District Ranger would make a final decision on additional protection measures.
7. If any RFSS plants are found during project layout and implementation, appropriate protective design criteria would be added to the project and an addendum to the BE prepared.
8. Opening reconstruction and road mowing should occur in early summer, prior to seed set of typical non-native invasive plants. Specific dates can be determined through consultation with the Forest Botanist.
9. Stands proposed for harvest that intersect the area of glossy buckthorn infestation should be harvested during the winter operating season over snow. This includes Compartment 72 Stands 1, 6, 7, 10, 14, 17, 18, and 20; Compartment 82 Stand 61; Compartment 83 Stands 12, 15, 18, and 22; and Compartment 139 Stand 77. This list of stands may be changed following additional mapping of the infestation in 2003.

After finishing work within any of the above mentioned stands and prior to movement into an uninfested stand, all off-road harvesting equipment shall be cleaned (dry, with broom or similar tool). Purchaser shall ensure that all off-road equipment is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. Equipment shall be considered free

- of soil, seeds, vegetative matter, and other such debris when a visual inspection by the Sale Administrator does not disclose such material.
10. Timber sale contract administrators should locate landings and skid trails where glossy buckthorn is absent.
 11. Design criteria for riparian area protection described in Table C-1 in Appendix C would be applied to all stands with management activities.
 12. ELTP guidelines for season of operations and limitations that are outlined in Table C-2 in Appendix C would be applied.
 13. Stream and wetland crossings would be minimized and/or avoided, and crossed at right angles, where possible. Only Forest Service-designated stream crossings would be used.
 14. Where roads cross riparian areas or streams, drainage would be provided to protect the road as well as water and soil resources. This may include crossing wetlands or small drainways under frozen ground conditions, or utilizing pipe bundles, corduroy (log stringers), or other similar cross-drainage structures. Whenever possible, temporary structures and crossings would be removed and rehabilitated upon completion of treatment activities and road use.
 15. All identified perennial and intermittent streams within sale areas would be shown as protected streamcourses on the Sale Area Maps.
 16. To the extent possible, pre-haul road maintenance would avoid removal of topsoil and herbaceous vegetation from the road surface in order to protect the road profile and maintain proper drainage.
 17. Within sale areas, signs would be placed where the NCT enters and exits sale areas to alert trail users of possible harvesting activities. Signs would also be placed at locations within the sale areas where roads being utilized for harvest activities intersect the NCT.
 18. Within a strip 25 feet in width measured from edge of clearing along the NCT all slash resulting from the purchaser's operations shall be removed and stumps shall be cut to less than 6 inches high. Within adjacent strip 25 feet in width all slash shall be lopped and scattered to lie within 2 feet of the ground.
 19. Skid trails crossing the NCT would be perpendicular to the trail and specifically designated on the ground by the Forest Service. Skidding would not be allowed along the trail surface.
 20. The NCT would be managed under Alternatives 2 and 4 by utilizing a no cut buffer strip, with the exception for hazard trees, on both sides of the trail where clearcut harvest units occur along the trail. The width of the buffer strip would consider the existing tree basal area and vegetation density, taking the viewshed into consideration. An average of 66 to 150 feet on each side of the trail would be used.
 21. For all harvest units along the NCT, post harvest treatment would remove unsightly residual saplings and seedlings where necessary to reduce the visual impact.
 22. To minimize conflict with NCT users and harvest operations in the area of highest trail use, harvest activities adjacent to the NCT from U.S. Highway 45 east to O Kun De Kun Falls would be conducted during specific times and days to limit user impact. Harvest activities, including equipment and timber hauling, during periods of high trail use in this area, June 1 through October 15, would only be allowed from 6:00 p.m. Sunday through 8:00 p.m. Friday.
 23. Use of the proposed snowmobile trail re-route by snowmobiles would not occur or be allowed until the timber sale(s) is completed in this area.

24. Exposed mineral soil on log landings, temporary roads, and newly constructed berms would be seeded as needed to prevent soil erosion. Skid trails would be leveled and seeded where necessary if a large amount of mineral soil is exposed. Existing roads within the project area that need erosion control would be seeded. Seeding is to be of a locally native plant seed mix, whenever feasible and available. If not, a non-invasive seed mix would be used.
25. Logging debris (chips, bark, etc.) at landings would be evenly redistributed to a thickness that would not inhibit vegetation growth on the area, as determined by the sale administrator.
26. Harvest operations would be restricted to July 16 - September 15, and from December 15 through March 15 to protect soil resources and residual stands throughout the project area. Except in goshawk and red-shouldered hawk nesting areas, operations could occur outside of this period when soil conditions will support the type of equipment being used.
27. No operations would be permitted on slopes over 35%, and equipment operations on slopes between 25% and 35% would be permitted on a case-by-case basis as determined by the Forest Service.
28. In clearcut units, harvesting methods other than whole-tree chipping should either leave slash at the stump or haul the slash back onto the harvested area and distribute it evenly.
29. Whenever feasible, stands proposed for clearcut-type harvests that have 40 basal area or less of aspen should be winter harvested to promote regeneration (see Tables B-1, B-2, B-3, and B-4 in Appendix B for recommended harvest seasons for such stands).
30. If Alternative 4 is selected or the riparian planting activity becomes part of the selected alternative, stands proposed for riparian conifer planting that were not previously surveyed for rare plants would be surveyed prior to the planting. If any

RFSS plant populations are found, they would be excluded and buffered from the planting area. Stands that would need to be surveyed include: Compartment 103, Stands 23, 43, and 49; Compartment 135, Stands 4, 5, 24, and 25; Compartment 136, Stands 8, 16, 25, 26, 27, 36, 38, 41, 48, 51, and 54; Compartment 139, Stands 18 (south half only), 22, 39, 42, and 88.

2.9 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The ID team discussed the following alternative actions that were ultimately eliminated from detailed study:

2.9.1 Original Proposed Action

The original Proposed Action that was scoped in July, 2002 was not developed and analyzed in detail due to new information resulting from updated databases and further field verification. Modifications were made based on the new information and are being carried forward as Alternative 2, Modified Proposed Action.

The original Proposed Action proposed to classify approximately 1,650 acres with an old growth management objective. Of that amount, approximately 290 acres were proposed for classification as managed old growth, and approximately 1,360 acres were proposed for classification as unmanaged old growth.

However, during the course of analyzing the project it was discovered that there are more than 600 acres, or approximately 2.5% of the forested land in MA 1.1 of the project area, currently classified with an old growth management objective. This old growth was classified as part of the Thunder Cat VMP. Approximately 356 acres of the existing classification overlaps what was proposed for old growth classification under the Proposed Action.

In addition, at the time of scoping the most recent Monitoring and Evaluation Report for the Forest (FY 97&98 Monitoring and Evaluation Report) indicated in *Table II.12 - Old Growth Classification (Non-Wilderness) on the Ottawa National Forest (9/96)*, that only 1.3% of the forested land for MA 1.1 Forestwide was classified as Old Growth (page 64). A new Monitoring and Evaluation Report (Ottawa National Forest 15-year Review) has been completed with updated information showing 3.0% of the forested land in MA 1.1 Forestwide is currently classified with an old growth management objective, and therefore, the DFC for the MA has been met (refer to Table 1.3.1).

The ID team compared the proposed old growth to the existing classified old growth and recommended that the old growth that had been proposed in addition to the existing classified old growth be dropped from further consideration because the goal for the MA has been met. The deciding official concurred with this recommendation.

An additional change to the Proposed Action relates to the dropping of the proposed fisheries habitat project from further consideration. This is due to field reconnaissance showing that access into the area is inadequate and would prevent hauling in materials and equipment, and therefore, the project could not be completed.

A slight reduction from the 3,360 acres originally proposed for vegetative treatment is also reflected in the Alternative 2 description. The acres presented during scoping were gross stand acres. It has since been determined that parts of some stands proposed for treatment would not be treated for various reasons, such as stream buffers.

2.9.2 No Clearcutting

The ID team considered a no clearcutting alternative, but concluded that such an alternative would not meet the stated purpose and need of regenerating and maintaining early successional forest types and associated habitat, particularly aspen types, within the DFC.

2.9.3 Conflict of Dual-use of Roads

There was a concern raised during scoping that re-routing or moving a portion of existing Snowmobile Trail #3 to existing forest roads would have the potential to create a dual-use conflict between snowmobiles and winter harvesting/hauling operations. To address this concern, the ID team looked for alternate routes to re-route the trail to keep it off existing roads. Due to the limitations of topography and private land, only two other options were considered.

The first option considered was creating an entirely new trail corridor through the woods. Because of the limitations mentioned, this corridor would have essentially paralleled the existing roads and have created a second corridor within ¼ mile of the existing road corridor. In addition, the area under consideration is relatively close to the existing, and much wider, US Highway 45 corridor. Because of this, the ID team concluded that creating yet another corridor within such a short distance of two existing corridors would further fragment the area. As such, this option was dropped from further consideration.

The second option considered was to widen the existing forest road corridor so the snowmobile trail could be located off the roadbed in the newly widened area, while the existing roadbed could still be plowed in the winter to accommodate harvesting activities.

Again, the ID team considered the fairly wide US Highway 45 corridor that already exists in the immediate area. It was also noted that during winter harvesting operations there are often complaints from timber sale purchasers that snowmobiles are driving on the plowed access and haul routes and often at high speeds.

After consideration of these factors, the ID team determined that widening the existing forest road corridor was not likely to adequately resolve the potential dual-use conflict. Therefore, the ID team elected to proceed with the trail re-routing option as presented in the three action alternatives.

2.10 MONITORING

In order to follow up on the effectiveness of ongoing Forest Service planning and activities, project monitoring during and after implementation of projects would incorporate the following activities under all action alternatives or as specified otherwise:

- Erosion control structures and seeded areas would be checked during regeneration surveys to ensure their effectiveness.
- Ongoing monitoring of implementation of BMPs and Design Criteria would occur throughout project implementation to avoid and minimize soil and water impacts and retain site productivity.
- Closure devices (berms or gates) would be monitored periodically to ensure their effectiveness.
- Proposed wildlife projects would include monitoring of proposed improvements.
- First and third year surveys would be conducted to ensure compliance with the NFMA requirement to adequately restock land within five years following final harvest. These surveys would also determine any need for TSI treatment.
- Monitor goshawk and red-shouldered hawk nest success in the project area before harvest, and for 5 years after harvest.
- At least every two years check the status of the *Pterospora andromeda* (giant pinedrops) population to ensure that recreational users are not impacting the habitat or plants by driving off trails.
- At least every two years check the status of the *Orobancha uniflora* (one-flowered broomrape) north population to ensure that snowmobile trail use is not impacting the habitat or plants by recreationists driving off designated trails.
- If either mechanical glossy buckthorn control treatment is selected, monitor the effectiveness of the treatments in reducing abundance and slowing spread of the infestation, 1 - 2 years following treatment.
- If the riparian influence area planting project is selected, monitor the survival rate of the planted trees 5 years after planting.