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Environmental Assessment

Interior Vegetation Management Project

Watersmeet and Kenton Ranger Districts, Ottawa National Forest
Gogebic and Ontonagon Counties, Michigan



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Document Structure

Purpose and Need for this Project - Section 1 includes an introduction; information on the history of the project proposal; and the purpose of and need for the project.

Comparison of Alternatives - Section 2 provides a description of the agency's proposed alternatives. This section also details how the Forest Service informed the public of the proposal and how the public responded, including their role in developing the Proposed Action. Finally, this section provides a summary table of the proposed activities, and the expected outcomes associated with meeting the purpose and need for this project.

Environmental Consequences - Section 3 describes the framework of analysis and the effects of the proposed actions on the environment. This section includes the tentative determinations for whether this project would result in significant effects on the human environment in terms of the context and intensity of expected impacts of implementation in accordance with 40 Code of Federal Regulations 1508.27.

Finding of No Significant Impact - Section 4 outlines the determinations for this project based on applicable laws, policy and regulations.

ID Team Members and Persons Consulted - Section 5 provides a list of preparers and staff consulted during the development of this EA.

Appendices - The appendices include the proposed design criteria and monitoring items; literature cited; and maps displaying the location of proposed activities.

Our objective is to furnish enough site-specific information to demonstrate our consideration of environmental consequences of the proposed alternatives. A reduction of paper as specified by 40 CFR 1500.4 has been an important consideration in the preparation of this document. Additional information is located in a project file (e.g., a compilation of documents prepared for this project), which can be reviewed upon request. This document, as well as the 2012 and 2013 scoping letters, and information available from the 2012 public meetings, is also available on the Internet at <http://www.fs.usda.gov/projects/ottawa/landmanagement/projects>.

Definitions of the terms used in this document as well as a list of acronyms are located in the glossary section of the Ottawa National Forest's 2006 Land and Resource Management Plan (Forest Plan), which is available upon request. This documentation is also located at the website link above; see the Interior Vegetation Management Project link within the "Under Analysis" section.

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1.0 Introduction

The Ottawa National Forest is proposing to address a variety of needs to maintain or improve resource conditions to move resource conditions toward the desired conditions outlined in the Ottawa's Forest Plan. The Interior Vegetation Management Project (VMP) encompasses portions of the Kenton and Watersmeet Ranger Districts. The Responsible Official for the Interior VMP is Norman E. Nass, District Ranger for the Bessemer, Iron River and Watersmeet Ranger Districts of the Ottawa National Forest. The project is named after the former townsite of Interior, which is located within the project area.

The Forest Service has prepared this Environmental Assessment (EA) to determine whether the effects of vegetation management (e.g., timber harvest), transportation system refinements, hazardous fuels reduction, recreation improvements, and habitat improvement for a variety of species may result in significant effects to the human environment, and thus, require the preparation of an Environmental Impact Statement (40 CFR 1500.4). No significant effects have been determined to be present based upon public input and the expected outcomes of implementing the Proposed Action (see Sections 2.2 and 2.3). A summary of the Responsible Official's determinations are located in the Finding of No Significant Impact (see Section 4). A draft Decision Notice also accompanies this EA. Pending the outcome of the pre-decisional administrative review process, or objections process, the Responsible Official will make a final decision for whether implementation of the proposed activities will occur. Instructions for the objection process pursuant to 36 CFR 218 is located in the cover letter of this EA.

By preparing this EA, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA) and other relevant Federal and state laws and regulations. For more details about the Proposed Action, see Section 2.3 of this document.

1.1 Decision Framework

The Responsible Official can decide to select the no action alternative, to defer activities, or to implement a management alternative or portions of an alternative. From this analysis, as well as the information in the project file and public input, the Responsible Official will decide which alternative to implement. If the Proposed Action is selected, the Responsible Official will also determine the site-specific location, type of activity and amount (i.e., acres, miles) implemented within the project area.

1.2 Proposed Project Area

The Interior Project area is located about six miles north of Watersmeet, Michigan, as displayed in Figure 1. The project area encompasses approximately 44,200 acres, of which about 32,300 acres are managed as part of the Ottawa National Forest.

The Interior Project is located within the following legal description: Gogebic County, Michigan, Township (T) 45N, Range (R) 38W, Sections 3-5, 9 and 10; and Ontonagon County, Michigan, T46N, R38W, Sections 3-10, 15-22 and 28-33; T46N, R39W, Sections 1-18, 22-27, 34 and 36; T47N, R38W, Sections 7, 8, 16-21 and 28-33; and T47N, R39W, Sections 13-36. The

attached maps in Appendix 3 offer additional information about the project's location; larger scaled maps are available upon request.

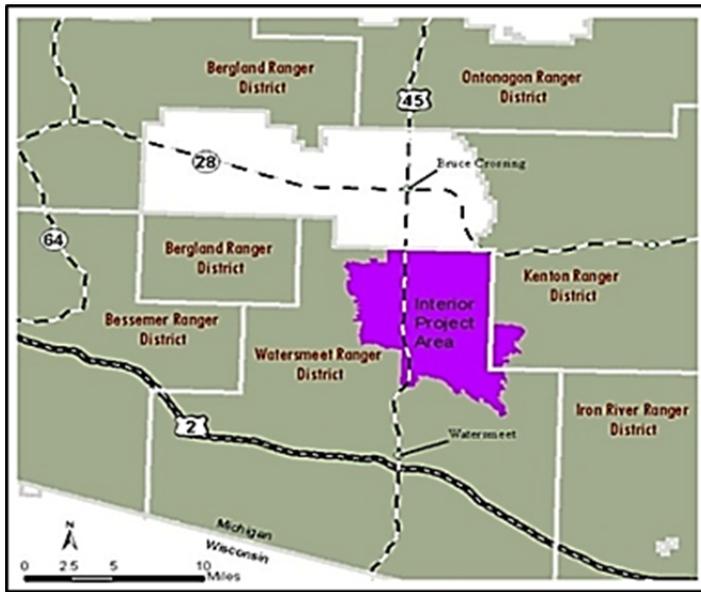


Figure 1. Vicinity map

The Ottawa is divided into several management areas (MAs) with differing vegetative emphases (Forest Plan, p. 3-1). The Interior Project area falls mostly in MA 3.1a (87% of the project area), with the remainder encompassing a portion of MA 8.1 (13%) as displayed on Map 6 of Appendix 3.

The following summary outlines the management emphasis for each MA. More information about the MA desired conditions is described in Sections 1.3; 2.3; Forest Plan (pp. 3-16 to 3-20; and 3-71 to 3-81.9); and Comprehensive River Management Plan (CRMP) (pp. 3-1 to 3-3; and 3-6 to 3-7).

- Approximately 28,300 acres of the project area are in MA 3.1a. This MA provides a transitional landscape between areas that feature both early- and late-successional forest types, which provides a diversity of wildlife habitat. This MA includes a moderately-roaded environment, with both open and closed roads that provide a mix of motorized and non-motorized recreation opportunities (Forest Plan, p. 3-18).
- Management Area 8.1 emphasizes protection and management of Wild and Scenic River (WSR) corridors via direction provided by the Ottawa's CRMP. Approximately 4,000 acres of the project area are within MA 8.1, and encompass portions of the Scenic I and Recreational II segments of the Middle Branch Ontonagon River. The WSR corridor includes a semi-primitive motorized recreational environment in the Scenic segment and a roaded natural motorized recreational environment in the Recreational segment. Section 1.3 outlines the outstandingly remarkable values per river segment.

1.2.1 Best Available Information

The information presented in this EA is based on the best available information. It is important, however, to understand that the acreages and other figures for proposed management are approximate and may vary during project implementation due to site-specific conditions and application of design criteria (see Appendix 1).

One example is our use of full stand acreages for timber harvest as displayed in Appendix 3. Project design criteria, such as buffers established to protect riparian areas and aquatic features, can (and often does) reduce the acreage that is harvested (see Appendix 1).

Field surveys by project specialists were crucial in calculating and analyzing the data used in resource evaluations. Calculations are based on skilled interpretations of aerial photos and maps; application of professional judgment from observations and evaluation of data; and information acquired from review of relevant, scientific literature.

1.3 Affected Environment and the Purpose and Need for the Proposal

The purpose and need for action has been developed based upon a comparison between the existing resource conditions (or the affected environment) in the project area described in this section and the desired conditions for these resources, which are outlined in the Forest Plan. Therefore, one primary purpose of this project is to maintain or progress existing conditions, to contribute toward the attainment of Forest Plan goals, objectives and desired conditions, where this can be partially or fully met through project implementation. Additional needs and opportunities have been identified through scoping¹, which included public collaboration meetings and two public comment periods. Together, these needs and opportunities have influenced the scope of this EA's analysis as directed in Forest Service Handbook 1909.15, section 41.21.

The remainder of this section describes the purpose and need for this proposal within MAs 3.1a and 8.1 developed by the Interdisciplinary (ID) Team, by resource, based upon existing conditions and Forest Plan management direction. The overall objectives for management within MA 8.1 is to address the identified needs for the project area to bring the landscape closer to the desired conditions outlined in the Forest Plan (pp. 3-74 to 3-75). There is a need to protect and/or enhance the outstandingly remarkable values of the WSR corridor, which include Recreation, Fish and Wildlife for the Scenic segment; and Scenery, Recreation, Geology, Fish and Wildlife for the Recreational segment (CRMP, pp. 2-9 to 2-12).

1.3.1 Vegetation Management

The overall purpose and need for vegetation management is to contribute towards maintaining or progressing toward the desired conditions as outlined in the forest-wide goals and objectives, and the desired conditions outlined in the Forest Plan. Table 1 outlines the differences in the desired and existing forest type percentages at the forest-wide, MA 3.1a scale. This table shows that all forest types are within the desired condition, albeit at the lower end of the range for the aspen/paper birch, long-lived conifer and short-lived conifer forest types. In addition, to maintain forest types within their target desired range, Forest Plan goals include restoring structural diversity and species composition (Forest Plan, p. 3-16).

Vegetation management outlined in this section focuses on progressing or maintaining desired conditions as appropriate for site-specific conditions. The Forest Plan does not assign desired conditions to MA 8.1 for vegetative conditions; and therefore Table 1 does not include information for MA 8.1.

¹ Scoping is a process that is conducted early in a project's development to help the Responsible Official determine the range of actions and alternatives to be included in a project's design, and whether issues related to the Proposed Action exist (40 CFR 1501.7).

Table 1. Comparison of the Percentages for Forest Types in MA 3.1a

| Forest Type | Forest Plan Desired Condition % at the forest-wide MA 3.1a Scale | Ottawa Existing Condition % at the forest-wide MA 3.1a Scale |
|---------------------|--|--|
| Aspen/Paper Birch | 35-45% | 35% |
| Long-Lived Conifer | 10-20% | 13% |
| Short-Lived Conifer | 10-20% | 10% |
| Northern Hardwoods | 25-45% | 33% |

Aspen/Paper Birch – Aspen is a pioneer or early succession species, short-lived and shade-intolerant. Unless there is a significant natural event such as wildfire or major storm damage or an intentional human-caused event such as timber harvest, aspen would eventually die out and give way to more shade-tolerant species including red and white pines, spruce/fir, oak and northern hardwoods.

There are no aspen stands within the 0-9 year age class in the project area, and therefore, the Interior VMP is not contributing toward the Forest Plan’s objective of maintaining 12,000 acres of aspen on the Ottawa’s landscape (Forest Plan, p. 2-8). The average age of the aspen in the project area is currently 50 years old. In the Lake States, aspen stands begin to deteriorate very rapidly when they reach 50 to 60 years old due to white trunk rot (Ostry, et al. 1989, p. 54). Field evaluations (ocular estimations) of aspen stands noted many occurrences of aspen stands with significant levels of white trunk rot (*Phellinus tremulae*). There is no direct control known for stopping the spread and volume loss associated with this disease. This disease becomes more severe as stands age. As individual trees die, canopy holes increase and expose the stand to the stresses of increased wind, sunlight, and evaporation. Aspen physiology is not adapted to tolerate these sudden stresses, which further increases the rate of mortality.

Paper birch is a minor component of the project area. Although paper birch is typically a small component of mixed birch/aspen/spruce forest types, it often succumbs to mortality in overmature stands due to insect and/or disease agents. One insect pest, the Bronze Birch Borer (*Agrilus anxius*) is evident in paper birch. However, this agent acts more as an inciting or contributing factor rather than a predisposing factor, which in this case is old age that makes trees more susceptible to mortality.

There is a need to maintain the aspen/paper birch forest type where it currently exists and to increase this component within MA 3.1a. To maintain current aspen stands, regeneration harvests of mature stands must occur within the next 10-20 years or the opportunity would be lost (2011 Monitoring and Evaluation [M&E] Report, p. 22; Forest Plan, p. 2-8). In order to increase aspen across the landscape, there is a need to convert other forest types where site conditions, and adequate aspen abundance, are present to foster aspen regeneration. Forest Plan aspen acreage goals focus on the aspen forest type value to ruffed grouse and other species dependent on young aspen forests (Forest Plan, pp. 2-2, 2-6, 2-8 and 3-20).

Long-lived Conifer – Within the project area, long-lived conifer forest types are comprised mostly of red pine and white spruce. Red pine stands were established through artificial regeneration (e.g., planting) mostly in the 1940s. Some of these plantations have never been

treated, which has resulted in stands with small crowns, slow growth rates, and increased susceptibility to mortality. Most of the white spruce stands were established from Civilian Conservation Corp (CCC) planting efforts throughout the 1930s, and oftentimes occurred on fairly productive sites that support the better-suited hardwood species. On less productive sites, some of these stands are slowly giving way to a mixed understory of balsam fir, spruce, and some hardwood species. Many of these spruce plantations have never been thinned and mortality is related to high densities, drought, and spruce budworm (*Choristoneura fumiferana* [Clemens]) defoliation. There are also signs of “Spruce Decline”, which was first observed in 2005 and 2006, is now present in most stands forest-wide. Most spruce stands have either significant mortality, or have near complete stand mortality. There is a mature aspen overstory in many portions of these plantations. Though growth is high for spruce on these sites, tolerant hardwoods also grow well on these sites and are already established in the understory within most of these stands. The growth and development of the understory is being accelerated due to increased growing space that is provided by a declining canopy among white spruce.

Conifer ecosystems offer wildlife habitat features including hiding cover, winter thermal cover and forage for small mammals. In red pine plantations, there is a need to diversify tree species to improve wildlife habitat. Addressing conditions within these stands would allow existing trees to develop further “big tree character” as called for in the Forest Plan, while encouraging the growth of other species, through natural regeneration, or by planting, to increase habitat diversity and structural complexity. This would also enhance visual variety wildlife outstandingly remarkable value in the WSR corridor (CRMP, p. 2-19; Forest Plan, pp. 81.5-81.6). In addition to the fuels reduction proposal described ahead, there is also a need to improve the growth, vigor and quality of long-lived conifer where applicable as outlined in the Forest Plan (pp. 2-2, 2-6 and 2-8). There is a need to address the current stand densities of red pine plantations to improve growth and tree vigor, and address conditions that are making trees more susceptible to insect and disease problems. White spruce plantations also need to be addressed to remove dead and dying trees resulting from factors associated with spruce decline.

Short-lived Conifer – Short-lived softwoods include a diverse grouping of forest types, but the most common types found within the project area include the: balsam fir/spruce/aspens/paper birch forest type; mixed swamp conifers and jack pine. Documented forest health problems found within the project area that are known to affect jack pine include damage by jack pine budworm, ips pine beetles, root rots, as well as snow and wind damage in addition to continued decline in vigor from advancing age.

All of the jack pine were established from CCC planting efforts throughout the 1930s, and oftentimes occurred on fairly productive sites that support the better-suited hardwood species. Some stands experienced partial failures after planting and now support mature aspen and hardwood species. Most stands also experienced partial defoliation in 2006 and 2007 from a spruce budworm outbreak. The partial defoliation coupled with the age of the jack pine plantations resulted in high levels of tree mortality. Spruce budworm attacks have caused mortality in other areas as well, especially in stands where balsam fir is the most abundant tree species. Some stands have an aspen component with adequate distribution to convert to an aspen or mixed conifer-aspen forest type. Other stands lack aspen entirely due to mortality related to

old age. It has been observed that these stands typically replace themselves and continue to remain a mixed conifer type.

In areas where there is not an emphasis on converting the forest type to a less fire-prone species, there is a need to maintain the jack pine forest type for wildlife habitat (see Hazardous Fuels Reduction section). There is also an opportunity to convert some jack pine stands to aspen where it is currently well represented to regenerate successfully. It is important to weigh these needs in consideration of what type of species can be supported on these sites; notably the more productive sites (or sites with aspen) would offer greater competition and would reduce the ability for jack pine establishment. In addition, it is important to recognize that the percentage of short-lived conifer in MA 3.1a is at the lower end of the desired range (see Table 1). There is also a need to address mortality from spruce budworm in those areas where balsam fir is a major component to reduce risk to remaining stands.

Northern Hardwoods - This forest type encompasses about 39% of the project area. Within these stands, sugar maple is typically the dominant species. All of these second-growth stands (outlined on Map 3) are in an even-aged condition, which lack diversity in age classes, size classes and tree species. Conditions in these stands include less than desirable growing space conditions that have contributed to disease problems, poor form, or weather related damage, which can limit a tree from achieving a quality sawlog product in the future. Common diseases found within the hardwood stands during field evaluations include: Eutypella Canker of maple (*Eutypella parasitica*), Black Knot of cherry (*Apiosporina morbosa*), and Canker-Rot of birch (*Inonotus obliquus*).

There is a need to improve the growth, vigor and quality of northern hardwood stands, while promoting the development of a balanced age/size class distribution to enhance structural complexity. This would also provide conditions for establishment of natural regeneration in northern hardwood forest types through uneven-aged structure (Forest Plan, pp. 2-2, 2-6 and 2-7).

Northern hardwood communities in the WSR corridors typically possess many of the conditions that emulate the desired conditions outlined in the CRMP. However, two stands are dominated by pole-sized sugar maple, and lack diversity in the canopy layers as well as snags and downed woody material. There is a need to improve structural and tree species diversity within these stands to enhance foraging and cover for many wildlife species (CRMP, p. 3-2). Maintaining the northern hardwood component, while diversifying tree species and enhancing structural complexity by increasing the snag and downed woody material component, would also protect and/or enhance the scenery and wildlife outstandingly remarkable values in the Scenic segment of the WSR corridor (CRMP, p. 2-10).

Essential Reforestation Measures – To ensure compliance with the National Forest Management Act and the Forest Plan, there is a need to ensure that managed stands are adequately restocked with trees. Specifically, there is a need to include these measures in all areas proposed to receive a regeneration harvest.

Support to the Local Economy - The forest products industry is vital to the local economy of the western Upper Peninsula of Michigan. The Ottawa seeks to provide a mix of forest products to help support this local and regional industry, which includes providing a mix of species and products consistent with demand (Forest Plan, p. 2-6). In addition, timber receipts contribute to the 25% Fund, which returns money to local counties to fund schools and local roads (FEIS, p. 3-222). Additionally, revenue from the sale of timber may provide receipts, which support forest restoration work. Receipts that fund restoration work provide additional local employment opportunities.

1.3.2 Hazardous Fuels Reduction/Prescribed Fire Use

Portions of both the Bruce Crossing Area (BCA) and State Line Community Wildfire Protection Plan (CWPP) areas are delineated within the Interior Project. As stated, these plan areas identify the project area as being within the wildland-urban interface. This project incorporates the goals and action plans of these CWPPs. The CWPPs are available upon request, and have been posted to the Ottawa's website: <http://www.fs.fed.us/nepa/fs-usda-pop.php/?project=37967>.

The purpose and need of this project is to restore and/or maintain healthy, vigorous conditions by treating insect and disease-infected, short- and long-lived conifer stands (i.e., jack and red pine plantations, as well as white spruce); and converting selected areas of fire-prone tree species to species that are less fire-prone. In addition, there is a need to reduce forested stand densities, decrease the amount of ladder fuels² and downed woody material (e.g., logging slash on the forest floor). In some instances, this woody material is desired to remain on site to satisfy other habitat requirements and often is used during logging operations to protect the soil resource (see Appendix 1).

Mitigating fuel hazards and restoring fire into the ecosystem - There is a need to mitigate fuel hazards as part of an important strategy for reducing wildfire risk. The overall purpose and need for fuels management is to reduce fuel loading, with priorities around human development in fire-prone forest types (Forest Plan, p. 2-11). This need is outlined in the actions identified in the BCA and State Line CWPPs (pp. 41, respectively). Although fuels reduction has several objectives, there is an overarching need to enhance ecosystem resiliency as well as protect public and private resources through the reduction of hazardous fuels. There is a need to balance the objectives between the extent of addressing fuel hazards where other resource considerations are necessary, such as soil productivity. In MA 8.1, addressing fuel loading also serves to enhance forest health, thereby minimizing threats to those outstandingly remarkable values that are dependent upon forest vegetation.

The Forest Plan allows fire to be used as a tool, such as prescribed burning, to achieve resource objectives (p. 2-11). There is also a need to restore fire to these systems where feasible and appropriate. For example, field review has revealed an opportunity to promote tree species diversity by creating conditions favorable to establishing paper birch and red oak forest types on the landscape. Preparing sites to create conditions that favor regeneration of these species can be

² Ladder fuel refers to any type of vegetation, specifically branches from trees or shrubs, which hang down low and/or touch the ground. Ladder fuels allow fire to "climb up" the branches and get into the upper portions of the tree crowns. This causes large trees to torch out, causing extreme heat output and tall flame lengths.

enhanced through the use of prescribed fire in lieu of, or in conjunction with, mechanical means. However, fuel reduction efforts in MA 8.1 would only occur through mechanical methods only to protect wildlife habitat needs.

Fuel Management Zones - The Forest Plan calls for fire suppression techniques to provide protection for public and firefighter safety, property, and other threatened resources (p. 2-35). As such, a need has been identified to provide cleared areas adjacent to primary system roads within the project area to serve as fuel management zones. These zones would serve as fuel breaks to increase firefighters' ability to safely and effectively control wildfires if they occur and/or assist in areas determined eligible for prescribed fire use. Providing these zones would be consistent with the CWPPs for developing strategically located fuel breaks within the Townships (BCA and State Line CWPPs, p. 41, respectively).

1.3.3 Transportation System

Primary access to the area is provided by Highway US 45, as well as higher standard county roads including Bond Falls Road, Calderwood Road, Himanka Hill Road, Sleepy Hollow Road, and Tanlund Lake Road. Forest Service operational maintenance level (OML) 3 roads also provide access within the project area, including Forest Roads (FRs) 4700, 5250, 5320 and 5350 (see attached map; and page 13 of this EA for OML definitions). The remaining roads in the project area includes lower standard OML 1 and 2 roads and unclassified/unauthorized roads under Ottawa jurisdiction, and more than a dozen private roads. Several of the lower standard roads are under special use permit for access to private inholdings and UPPCO camp leases.

The current road density within MA 3.1a is about 2.89 miles of road per square mile of land (mi/mi^2), which is below the desired condition range of 3 to 4 mi/mi^2 (see project file document 282). Within the MA 3.1a portion of the project area, the road density is slightly lower at approximately 2.7 mi/mi^2 .

The overall purpose and need for transportation management is to provide a safe, efficient, and effective road system that supports both public and administrative uses (Forest Plan, p. 2-12). There is also a need to ensure that management of the transportation system promotes resource protection.

Access for Management Needs - For management planning purposes, it is necessary to determine the minimum transportation system needed. A display of the existing transportation system, including road maintenance levels³, is shown on Map 1. Based on field inventory, the ID Team has identified a need to refine the transportation system in consideration of current and long-term

³ The operational maintenance level (OML) of a road is classified by the existing level of use and maintenance received; and the objective maintenance level is the level of maintenance commensurate with the planned function and use of the road. An OML 1 road by definition is closed to passenger vehicles, but can be co-designated as a motorized trail for OHV use; and OML 2 and 3 roads can be open to both highway legal vehicles and OHVs (Forest Plan Final Environmental Impact Statement, p. 2-17). A road categorized as an OML 4 or 5 is only open to highway legal vehicle traffic.

needs. For example, some existing road conditions would need to be enhanced to facilitate vegetation management needs.

Several roads were found during field inventory that are not included as part of the transportation system. These unclassified⁴ roads have conditions that range from those that are grown-over with vegetation to those roads that have been created, or kept open, through unplanned or unauthorized uses. Some of these unclassified roads offer routes that can improve access for administrative and/or public access needs. Thus, there is a need to determine which of these roads would contribute to an effective and efficient minimum transportation system; and thus reclassify them as system roads.

In MA 8.1, transportation system refinements need to protect or enhance the outstandingly remarkable values of the WSR, in terms of administrative and public access. There is a need to decommission unclassified roads in the WSR corridor, including those access routes currently associated with lease agreements. Decommissioning activities would not occur in these areas until after lease termination.

Addressing Resource Concerns - Field inventory also revealed a need to address road-related resource damage. Unlike the unclassified roads that can meet the needs for administrative and public use as described above, motorized uses of some system and unclassified roads has caused resource damage, such as effects to water quality, fish and wildlife habitat and other forest resources. In addition, public motorized use of unclassified roads is not supported by Forest Plan direction (p. 2-4). Effective closure of these roads and/or decommissioning activities are necessary to stop motorized access, address resource protection needs and ensure management of the most efficient transportation system. Decommissioning and associated road closures is also needed for any temporary roads created that are not planned for future use to inhibit all forms of motorized use.

1.3.4 Recreation

The Forest Service uses a nationally recognized classification system called the Recreation Opportunity Spectrum (ROS) to describe different recreation settings, opportunities, and experiences to help guide recreation management activities (Forest Plan, Appendix B). The ROS is the direction recreation management actions take to achieve the desired recreation setting. Each MA is assigned a desired ROS in the Forest Plan. Management Area 3.1a and the Recreational segment of the WSR provide a roaded natural setting, while the Scenic segment of the WSR provides a semi-primitive motorized environment (Forest Plan, p. 3-18 and 3-81.4).

The project area is used for a wide range of recreation activities. Several miles of snowmobile trail routes traverse the project area, which are maintained by three different organizations, the Iron Range Snowmobile Club, Sno Valley Riders Snowmobile Club, and the UP Thunder Riders. The existing transportation network also currently supports several miles of designated public access available on the Ottawa's Motor Vehicle Use Map (MVUM).

⁴An unclassified road is not categorized as a forest road, trail, temporary road or trail, and is not included in a forest transportation atlas (Forest Plan FEIS glossary, page 20; Travel Management Rule 36 CFR 212.1). Public vehicle use of unclassified roads is prohibited.

The overall purpose and need for recreation management is to provide for safe, quality recreation experiences while improving the condition of the natural resources in the project area (Forest Plan, pp. 2-3, 2-4, and 2-14).

Designated Public Access - The Ottawa's MVUM displays the roads and trails open to motorized use, and the type of vehicles (e.g., off-highway vehicles [OHVs] only, highway legal vehicles only, or both) (see Table 12 and Appendix 3, Map 4). There is a need to improve the public access system to provide one that is efficient and enforceable. In some areas, it is necessary to remove designated access for resource protection. However, a large portion of the project area's resource conditions can support motorized access and there is a need to maintain and improve recreation opportunities, including offering new roads, trails and local route connections (e.g., loops) for OHV recreational riding. Conditions in areas where new system road is needed to support vegetation management access has also been evaluated.

For the Scenic segment of the WSR, there is an additional need to adhere to the Forest Plan's direction for providing a semi-primitive motorized (SPM) recreation environment (Forest Plan, p. 3-81.4). There is a need to remove OHV access in some cases, emphasize the use of existing routes (in lieu of road construction) and decommission roads would help to promote and enhance the Recreation outstandingly remarkable value in the Scenic segment for providing a semi-primitive motorized recreational environment.

Dispersed Recreation - Motorized access on the user-created boat launch sites at Erickson and Tanlund Lakes has led to soil erosion and subsequent sediment delivery into the lakes. There is a need close this unauthorized, motorized access and restore shorelines impacted from this use. Dispersed recreation sites such as Erickson and Tanlund Lakes currently offer, and can continue to offer, carry-in boat access. However, there is a need to clarify this recreation opportunity through more appropriate signing at Tanlund Lake for Forest visitors. Due to the unsafe parking access adjacent to Erickson Lake (due to the location of the County Road in relation to the lake), there is also a need to close the pull-off motor vehicle access currently being used to address safety concerns.

Snowmobile Trail Re-route - Trail 3 is currently co-located with Forest Road 5255 where soil types only allow timber harvest activities during frozen ground conditions, thus creating a conflict between logging traffic and recreational snowmobile use. Due to the location of the road and surrounding topography, there are no options to provide a safe, dual-use environment for snowmobile traffic during times when winter logging would occur. There is a need to provide a permanent re-route for snowmobile traffic in this location to avoid potential dual-use access concerns identified for this project, as well as into the future (see Map 6).

1.3.5 Old Growth

Old growth forest is desired to maintain healthy, diverse, and productive ecosystems, as well as provide recreational opportunities (Forest Plan, p. 2-2). Old growth provides late-successional habitat components, including diversity of tree age-classes, structural complexity, and downed woody material. The Forest Plan calls for 4-7% of the landbase within MA 3.1a to be classified as old growth (p. 3-18). At the forest-wide MA 3.1a scale, the percentage of old growth is

already within the desired condition range at 5.7%. Adjustments to classified old growth may be made in accordance with Forest Plan guidelines (p. 2-24). The overall purpose and need is to refine the amount of classified as old growth in a manner that maintains the current percentage of old growth within the desired condition range, while more fully meeting Forest Plan old growth direction (pp. 2-23 to 2-25).

Forested areas allocated to provide old growth was accomplished in the Forest Plan. These areas are distributed among many of the Forest Plan's management areas and are described as a percentage of the individual MAs, such as 4 to 7% of MA 3.1. In other words, the Forest Plan previously identified the proportion of forest which is allocated to old growth conditions. This area is shown as a percentage range in the desired condition descriptions for each management area. Identifying site-specific locations of classified old growth during project planning does not change the total old growth allocation for the Ottawa as a whole nor for the desired condition percentage range of the management areas. However, changes in the areas classified as old growth may occur at the project level to achieve or retain desired conditions when such changes result in more effectively meeting old growth objectives for patch size and their distribution (Forest Plan p. 2-24).

A review was performed to determine whether the currently classified old growth contains the required characteristics outlined in the Forest Plan (p. 2-25). Based on this review, a need has been identified to retain old growth in some areas, and declassify those areas that do not possess or meet the Forest Plan criteria for old growth. There is an additional need to classify stands in different areas where conditions would support Forest Plan old growth criteria to replace those acres declassified, and to more fully meet the Forest Plan's old growth objectives.

1.3.6 Aquatic and Riparian Resources

Water quality within the project area is rated good to excellent. Water quality in wetlands is thought to meet State standards due to the lack of development or activities associated with them, and therefore, designated uses are met. While sediment is discussed in this section as a concern for water quality, it has not occurred to a level to warrant a finding that water quality levels below current ratings or that there is water quality impairment.

Numerous roads throughout the project area have undersized culverts at intermittent streams, drain ways, and a few perennial streams. Typically, there is erosion around these culverts, resulting in stream sedimentation. Numerous roads are in poor condition with inadequate drainage features that lead to increased erosion and sedimentation into streams and wetlands.

The overall purpose and need for riparian and watershed resource management is to move the project closer to the forest-wide goals and objectives set forth in the Forest Plan for providing ecologically healthy watersheds and habitat (2-3, 2-7, 2-8 and 2-10).

Erosion Reduction and Resource Protection - There is a need to prevent erosion, which results in sedimentation to water resources. There is also a need to address stream and/or drainage channels on system and unclassified roads. These water courses are no longer located in their original locations due to historical road construction activities. Additionally, there is a need to

improve conditions for wetland function and aquatic organism passage in areas where roads or railroad grades are currently impeding water flow.

Riparian Habitat - Some areas adjacent to Bluff and Interior Creeks and the Scenic segment of the Middle Branch Ontonagon River are non-forested and lack structural diversity (Forest Plan, p. 2-7). Within these areas, some stands are experiencing the effects of spruce budworm infestations, and therefore a component of long-lived species is being lost through mortality. For enhancements to riparian habitat, there is a need to provide for ecologically healthy riparian systems through enhancing structural diversity and increasing the long-lived tree species component.

Ford Closures - The State of Michigan's off road vehicle rules prohibit fording rivers and other water features. The Forest Service's Travel Management Rule also reflects the need to protect watershed resources (36 CFR 212.55). There are unauthorized fords across the Recreational segment of the Middle Branch Ontonagon WSR and McGinty Creek, which is within the corridor of the Scenic segment of the Middle Branch Ontonagon WSR. Stream banks at the ford sites are in need of restoration measures to reduce erosion and prevent sedimentation to benefit aquatic and riparian habitats.

1.3.7 Fisheries Resources

All streams within the project area are "designated trout streams" (MDNR 2012b). The Middle Branch Ontonagon River has also been classified by the Michigan Department of Natural Resources as a Blue Ribbon Trout Stream. Paulding Pond is the only lake in the project area protected as a "designated trout lake," and it is also protected as a "coldwater lake" (MDNR 2012a, MDNR 1976).

To improve fisheries habitat, a need has been identified to increase the amount of shoreline large woody material (LWM) within identified project area lakes, as well as increase offshore woody structure to provide spawning habitat and cover. Shoreline LWM provides spawning and feeding cover for many species, like bluegill and bass. Submerged LWM provides spawning areas for fish, such as yellow perch. In streams, LWM is a very important channel forming element, and its lack has led to simplified (i.e., lacking pools) and often straighter stream channels.

Within streams, there is a need to increase the amount of LWM to restore habitat diversity, and provide cover for trout and other aquatic species. Portions of the Middle Branch Ontonagon WSR lack a long-lived conifer component. The riparian area lacks diversity in the age of trees, number of snags and amount of downed woody material, which has led to a reduced amount of habitat complexity and cover for trout. There is a need to increase the amount of LWM to improve fisheries habitat and to enhance the Fish outstandingly remarkable values for both WSR segments, but especially for the Blue Ribbon Trout Stream habitat in the Recreational segment of the WSR corridor. Improving riparian area composition and channel habitat complexity along the Middle Branch Ontonagon WSR would also provide shelter for aquatic organisms, reduce solar heating of the water and reduce the amount of fine sediment that can cover spawning gravels and fill in pools. Providing these habitat elements would enhance the Fish and Wildlife

outstandingly remarkable values for the Recreational and Scenic segments of the WSR. Reducing sediment would also enhance the water quality river value.

1.3.8 Wildlife Resources

The project area provides a variety of suitable habitat for many wildlife species including a range of both early successional habitat from aspen, grass, forb, and sedge openings, riparian areas, to mature hardwoods and mixed conifer forests that provide interior forest habitat. More information about existing forest type conditions is presented in the vegetation management section. Additional discussion specific to the affected environment for wildlife is outlined in the following section, by topic. The purpose and need for wildlife resources is to bring the landscape closer to the forest-wide goals and objectives.

Long-Lived Conifer - Long-lived conifer, such as hemlock, white pine, red pine and white spruce provide habitat features that are generally lacking in some hardwood stands across the project area. There is a need to maintain the existing long-lived conifer component in these areas to promote natural regeneration when conditions are suitable and on appropriate ecological sites (Forest Plan, pp. 2-2, 2-6 and 2-7). Retaining long-lived conifers would promote species diversity in hardwood stands and provide structural complexity, wildlife foraging and denning habitat, and late successional habitat desired in MA 3.1a (Forest Plan, pp. 2-19, 2-31, 3-18 and 3-19).

Upland Openings – At the forest-wide MA 3.1a scale, the percentage of openings on the landscape is at 3.1%, which is above the desired condition range of 1 to 3%. However, several of these existing openings are becoming overgrown with vegetation ranging from trees to dense shrubs and seedlings. There is a need to maintain these openings to provide grass and forb habitat for many wildlife species, such as sparrows, butterflies, flycatchers, meadow voles and their predators (Forest Plan, pp. 2-2, 2-8, and 3-8). There is an emphasis to provide larger openings that are generally lacking across the forest (Forest Plan, p. 2-33).

Brush Piles – There is a need to develop habitat characteristics where appropriate for snowshoe hare and other prey species that support predators (Forest Plan, p. 2-9 and 2-30). Providing brush piles can help meet this need by mitigating the change from forested habitat to temporary openings remaining after regeneration harvests. Brush piles provide shelter and denning opportunities for a variety of wildlife species including bear, birds reptiles, small mammals and prey, like the snowshoe hare.

Wild Rice - There are no known wild rice beds within the project area. Wild rice provides a food source for both people and wildlife species, and provides cover and foraging habitat for a variety of aquatic invertebrates, fish, waterfowl, birds and other wildlife species (Final Environmental Impact Statement [FEIS], p. 3-99). There is a need to establish wild rice in the project area to help increase the number of wild rice beds across the Forest (Forest Plan, p. 2-3). Erickson Lake has been identified with the potential habitat requirements for wild rice establishment. It also provides a high-fat food source for waterfowl prior to migration. Wild rice has been a central component of Native American Ojibwe culture in the region for hundreds of years. Therefore,

establishing wild rice would also provide an opportunity to gather rice for tribal needs as well as public use.

1.3.9 Mineral Resources

There are a total of four gravel pits within the project area (Amber Lake, North Flume, Sleepy Hollow and Himanka). Survey of the Amber Lake and North Flume pits determined that portions of these pits no longer have sufficient mineral material. The slopes were not addressed after past gravel extraction, which has resulted in unstable slope conditions in both of these pits. Himanka Pit has not been reclaimed and there appears to still be material present. Sleepy Hollow Pit is currently inactive and reclamation measures have been completed.

The purpose for the mineral resource is to rehabilitate only those portions of existing sand and gravel pits, where mineral resources are depleted. Specifically, there is a need to address steep, undercut slopes in a portion of the Amber Lake pit as well as the slopes in the North Flume pit to prevent erosion and address safety concerns.

1.3.10 Cultural Resources

The Interior Cemetery contains the graves of thirty-two individuals who were residents of a logging town of Interior during the time period from 1888 to 1897. Trees and understory shrubs have encroached on the site; their continued growth and development threaten the eventual loss of the character of the area as a cemetery. A need has been identified to remove trees from within the cemetery to help restore the characteristics of the site (e.g., address overgrown conditions and improve visibility of site) as well as reduce the risk of trees damaging grave markers. A need to restore an existing split-rail fence has been identified to provide a visual aid in defining the cemetery's perimeter.

2.0 Public Participation and Alternatives

This chapter includes a summary of the public participation, and the descriptions of the alternatives considered. In addition, information is presented to assist with comparing the effects of implementing the proposed alternatives by resource area.

2.1 Public Collaboration and Input

Public participation helps identify concerns and issues with the Proposed Action disclosed during the scoping period. Planning for this project has included collaboration with interested and affected parties through public meetings held in May and June of 2012, as well as scoping comment periods in December 2012⁵ and July 2013. The most recent comment period was held for the Proposed Action as described in Section 2.3.3.

⁵ The December 2012 scoping letter outlined that the Interior Project intended to use the regulations under the Healthy Forest Restoration Act (HFRA) for project planning. This is no longer the case; this project is now subject to the pre-decisional administrative review process as outlined in the cover letter for this EA.

A scoping letter explaining the purpose and need for action, as well as the location and description of the initial set of proposed actions, was sent to more than 550 interested and affected parties in December 2012. About 120 parties that participated during the 2012 scoping effort were sent the entirety of the revised scoping package in July 2013; all other parties were sent a project update letter.

The scoping documents were posted on the Ottawa's web page and listed in the Forest's Schedule of Proposed Actions, which is a Forest-published document used to inform the general public about proposed projects. The Schedule of Proposed Actions is sent to approximately 130 individuals, groups and public agencies. A legal notice was published in the *Ironwood Daily Globe* newspaper on December 20, 2012 for the original scoping letter, in addition to press releases shared with local news sources on April 13 and May 9, 2012 that served as invitations to the project's public meetings. The most recent scoping period was announced in the July 30, 2013 edition of the *Ironwood Daily Globe*.

Tribal Governments

The Forest Service shares in the United States' legal responsibility and treaty obligations to work with federally-recognized Tribes on a government-to-government basis to protect the Tribes' ceded territory rights on lands administered by the Forest Service. The scoping documentation was sent to several Tribes, including local representatives of the Lac Vieux Desert Band of Lake Superior Chippewa and Keweenaw Bay Indian Community.

Other Agencies

The scoping documentation was also sent to local government agencies for Gogebic and Ontonagon Counties; Michigan Township Supervisors for Bergland, Bohemia, Duncan, Haight, Interior, Marenisco, Stannard, Wakefield and Watersmeet townships; as well as the Michigan Department of Natural Resources.

2.2 Public Comment Review Process

A total of 65 comment letters were received in response to the public meetings and the December 2012 and July 2013 scoping letters. Pursuant to NEPA regulations (40 CFR 1503.4), all comments were evaluated by the ID Team and Responsible Official (project file document 188). Each comment was reviewed to ensure that concerns raised were within the scope of the proposal and relevant to the decision being made.

Comments were then reviewed to determine if the commenter believed an alternative to the Proposed Action was necessary because the project proposal (e.g., cause) would produce an undesirable result (e.g., effect) that could not be addressed through protection measures afforded by law, regulation, policy, Forest Plan direction or proposed design criteria. This cause-effect relationship identifies an unresolved conflict or concern, and thus is defined as an issue. Issues serve to highlight effects or unintended consequences that may occur from the proposed action, providing opportunities during the analysis to explore alternative ways to meet the purpose and need for the proposal while reducing adverse effects (FHS 1909.15, Section 12.4).

Based on the Responsible Official's determinations, comments received that are relevant to this project can be resolved through modifications to the proposed action or through clarifying the proposal; these concerns do not constitute issues with the Proposed Action. The Responsible Official decided that the following comments (non-issues) warranted further consideration. These comments have been addressed in a variety of ways as summarized below. The following modifications were disclosed as part of the July 2013 scoping proposal as outlined below. Incorporation of the individual actions into the proposal does not change the scope of the proposal or the decision to be made. No additional input received as part of the July 2013 scoping period served to further refine the Proposed Action.

- OHV Trail: Input received during the public collaboration meetings led to the proposed OHV trail construction action outlined on Map 3 of Appendix 3 (project file documents 115 and 140).
- Road Decommissioning: A portion of Forest Road 5288-K is now proposed to discourage unauthorized motorized use (project file document 140).
- Road Construction: There is a 0.5 mile decrease in system road construction to address commenter's concern regarding the extent of construction necessary for harvest operations in some stands (project file documents 132 and 144).
- Minor changes to the MVUM Proposal: Comments received as part of the December 2012 scoping letter resulted in the following modifications (project file documents 144, 154, 158 and 162):
 - A 0.2 mile decrease in all motorized vehicle access on Forest Road 4745-B1 as no new construction would occur in this location;
 - A 0.8 mile decrease in OHV access on Forest Road 5299;
 - A 0.3 mile increase in all motorized vehicle access on Forest Road 5255-B; and
 - Removal of Forest Road 5299 from the OHV access proposal due to lack of road easement needed to cross private land. Due to this change, a new proposal to maintain this road as closed, remove culverts on this road and provide additional stream bank restoration measures for the protection of soil and water resources was added to the Proposed Action.
- The Responsible Official decided not to modify the Proposed Action for the following comments because they either did not warrant a modification (e.g., simple clarifications) or modifications would not meet the purpose and need for the proposal.
 - A portion of the public input received has been addressed by providing clarifications or answering questions posed.
 - Some comments received have led to the development of alternatives that were considered, but eliminated from detailed analysis as outlined in Section 2.3.1.

- Other comments included recommendations that have been identified as potential activities to consider for implementation under separate processes (see Table 29).

In addition to NEPA regulations, the pre-decisional administrative review process (36 CFR 218, Subpart B) includes commenting instructions for interested parties to ensure that comments submitted meet the requirements for submission of timely, handwritten, site-specific comments (36 CFR 218.25[a][3]). For each party submitting input, the Responsible Official determined whether information received constitutes a comment as defined by 36 CFR 218. This determination included an evaluation for whether public input received: (1) is within the scope of the proposed action; (2) has a direct relationship to the proposed action; and (3) includes supporting reasons for consideration. These elements determine the eligibility for a party to object to this project.

2.3 Alternatives

Section 102(e) of NEPA states that; “all Federal agencies are required to study, develop, and describe appropriate alternatives to any proposal, which involves unresolved conflicts”. As stated in the previous section, the Responsible Official has determined that there are no unresolved conflicts with the Proposed Action, and therefore, only two alternatives have been developed and analyzed in detail. Alternative 1 (the no action alternative) serves as a baseline for alternative comparison and documents the existing condition. Alternative 2, the Proposed Action, consists of a slightly modified version of the original Proposed Action disclosed in December 2012. The Proposed Action includes activities that would meet the purpose and need for this project. These alternatives are described in 2.3.2 and 2.3.3.

2.3.1 Alternatives Considered, but Eliminated from Detailed Analysis

The following alternatives to the original proposed action were developed through project planning in ID Team meetings brought forth during the scoping period. For reasons explained below, the Responsible Official has deemed implementation of the following alternatives as not possible due to being impractical; not feasible due to being inconsistent with Forest Plan direction; or would produce unacceptable environmental effects. Therefore, these alternatives have been eliminated from further detailed analysis.

Use of the Healthy Forest Restoration Act for Project Planning

The December 2012 scoping letter disclosed that the planning for the Interior Project followed provisions allowed under the Healthy Forest Restoration Act (HFRA; 36 CFR 218[c]). In consideration of comments received, the Responsible Official reviewed the entirety of the Proposed Action and concluded that only part of it, specifically those actions intended to facilitate the reduction of hazardous fuel conditions, could be planned under HFRA. Instead of moving forward with only these opportunities, the Responsible Official decided to maintain all activities of the Proposed Action to meet the purpose and need of this project. The project is still being planned in accordance with NEPA; and additionally, it is now subject to the pre-decisional administrative review process that became effective in March 2013 (36 CFR 218[b]), which replaced the procedures developed for the previous appeals process.

Hazardous Fuels Management on Private Land Only

One commenter requested an alternative that would implement hazardous fuels reduction projects on private land only. This commenter requested consideration for no hazardous fuels reduction on National Forest System land because the commenter feels that it would not change the likelihood of home ignition during a wildland fire event (project file document 143). This alternative was excluded from detailed analysis as it would not meet the purpose and need for the Interior Project. There is no cause and effect relationship between the Proposed Action and the commenter's concern's regarding home ignition vulnerability (due to building materials and the presence of hazardous fuels on private lands alone) in this landscape where National Forest System lands are intermixed with other ownerships. Additionally, the Proposed Action does not alter the recommendations, nor decrease the need to implement FIREWISE practices at residential sites as described in the CWPPs. Therefore, the Responsible Official did not instruct the ID Team to analyze this alternative in detail. The option to use the Wyden Act authority to allow expenditure of federal dollars for addressing resource concerns on private land was disclosed at the public meetings held in Summer 2012. We received no input or request for managing fuels on private land during this outreach.

The entirety of the project area is within the Bruce Crossing Area (BCA) and State Line CWPP areas. These Plans do include several action items to be conducted at the local county level for several items, including raising public awareness of FIREWISE principles (BCA CWPP, p. 49-51 and State Line CWPP, pp. 47-49). FIREWISE measures also include additional guidance for homeowners, including the following actions to be taken within a minimum of 30 feet of a structure, while recognizing that expanding these measures (such as 100 feet or more) can be more effective for structure protection. Specifically, the following CWPP Action Items incorporate FIREWISE principles to be implemented through education of landowners by local township governments using resources available through Michigan State University's extension office and the Department of Natural Resources. These FIREWISE principles have the same objective as the information outlined by the commenter, including addressing hazardous fuels on private land through creating a defensible space, and recommended measures to reduce structural ignitability (BCA CWPP, p. 49-51 and State Line CWPP, pp. 47-49).

Copies of the CWPPs were available at the 2012 public meetings, and have been posted to the Ottawa's website since that time. Notice of their availability was also included in the 2012 and 2013 scoping letters. The development of these CWPPs was a collaborative effort between several entities, including the Forest Service, Department of Natural Resources, MSU Extension and local county governments and their fire department staff. For the State Line CWPP specifically, the collaborative effort also included federal, state and local government agencies from both Michigan and Wisconsin.

Amount of Aspen Regeneration Proposed

Some comments were received requesting additional acres of aspen forest; and one commenter specifically requested consideration for additional aspen regeneration harvest in the corridor of the Middle Branch Ontonagon Wild and Scenic River (Recreational segment) (project file document 138). While it is noted that opportunities do exist to regenerate aspen in terms of site capability for supporting this forest type, the Responsible Official determined that harvest

methods used to maintain amounts of aspen would not protect or enhance the outstanding remarkable values for the river segment (CRMP, pp. 2-9 and 2-10).

During project planning, the ID Team included aspen regeneration harvest in areas that are scientifically appropriate and feasible for management. The ID Team reviewed each stand to recommend those that would be most appropriate at this time to align the project area's existing conditions with Forest Plan desired conditions. A list of stands reviewed is located in the project file (document 387). Among the factors that led to stands being deferred from aspen regeneration harvest are: a) lands that are not physically suited for management activities (as defined by the Forest Plan's FEIS, Volume II, Appendix A); b) current stands are well into the conversion stage to other species that has led to poor abundance and distribution of aspen; and c) lack of feasible access.

Miles of Designated Public Access Proposed

The ID Team reviewed each existing road and trail, and each road proposed for construction, within the project area based on several factors as outlined in the Transportation Analysis Process documentation (project file document 282). This analysis included whether changes to the current MVUM (see Map 4) would align with the Forest Plan's direction, and whether resource management objectives would be met.

Public input received requested consideration for: both fewer and an increase of miles for public access in general terms; and some comments received requested specific roads/trails to be added to the proposal. The MI-TRALE organization requested an increase to the designated public access system, through a local connector route that would use existing roads between Sleepy Hollow Road and Tanlund Lake Road in the northwestern portion of the project area. Additional field survey was performed by the ID Team in response to this request (project file document 282). This route was not carried forward for detailed analysis by the Responsible Official because the surveys determined that the road segments needed to create this connector route are located in areas where soil and water resources cannot support sustained motorized use (project file document 282). Designating motorized use in this area would lead to unacceptable environmental effects. In addition, this area is best suited for winter only motorized uses including winter season timber harvest operations due to soil type.

The majority of the project area is within a Roded Natural setting through the Forest's Recreation Opportunity Spectrum – a classification system that outlines a management for a range of recreation settings, opportunities, and experiences. Therefore, the proposed designated access system does align with the Roded Natural setting, as well as direction outlined in the Forest Plan (p. 2-4) for MAs 3.1a and the Recreational river portion of MA 8.1 (Forest Plan, pp. 2-4 and 3-81.4). The Scenic river portion of MA 8.1 is classified as a semi-primitive motorized recreational environment.

A decrease in designated access was not considered in detailed analysis because several roads and trails had already been removed from the MVUM due to resource concerns. In addition, there is a specific need to carry forward the removal of specific segments of OHV access due to the semi-primitive motorized recreation environment within the Scenic segment of the Middle Branch Wild and Scenic River corridor, and remove other trails that are not available due to a

lack of easement across private land. Of all routes reviewed, there is a net increase of 3.2 miles for designated OHV access under the Proposed Action, whereas about 29 miles of OHV access is proposed to be removed from the MVUM.

2.3.2 Alternative 1 – No Action Alternative

Alternative 1 was developed as required in 40 CFR 1502.14(d), and serves as the baseline for evaluating all other alternatives. In summary, Alternative 1 does not propose any new ground disturbing activities or changes in management strategies in the project area. Therefore, no actions would be implemented on NFS lands to align the project area's existing conditions with the desired conditions outlined in the Forest Plan for MAs 3.1a and 8.1 (pp. 3-16 to 3-20; and 3-71 to 3-81.9). Overall, Alternative 1 would not meet the purpose and need for this project. The environmental consequences of implementing this alternative are included in the Expected Outcomes as well as the Direct and Indirect Effects sections (Sections 2.3 and 3.2, respectively). This alternative does not propose any new ground disturbing activities or changes in management strategies in the project area.

2.3.3 Alternative 2 – Proposed Action and Resulting Outcomes

To meet the purpose and need for this project, the following activities are proposed. All actions would be implemented in accordance with applicable Forest Plan standards and guidelines (pp. 2-12 to 2-37). Implementation of the following actions would bring the project area conditions closer to the desired conditions for MAs 3.1a and 8.1 as outlined in the Forest Plan.

In order to analyze the outcomes and effects for the Interior Project, the ID Team developed a set of measurement indicators⁶ per resource to outline how the Proposed Action can meet the purpose and need for this project. These indicators help show the cause and effect relationship that occurs between the proposed activities (actions) and the results that occur to the existing resource conditions from implementing these activities.

The following tables and narrative outline a detailed description of Alternative 2, by resource area, as well as summarize the expected outcomes of Alternatives 1 and 2 based on the measurement indicators. The outcomes (or results) show how the current project area conditions would be changed in response to implementing the proposed alternatives and demonstrate how the proposal meets the purpose and need.

The Forest Plan includes direction in the form of Forest-wide goals, objectives, standards and guidelines, as well as management area-specific standards and guidelines. Together, all of these elements outline the desired conditions for the entirety of the Ottawa's landscape. The analysis that was performed in the Forest Plan's FEIS included the expectation that the desired conditions would not be achieved immediately. Instead, the Forest Plan's desired conditions is used as the

⁶ Measurement indicators are typically used to compare the difference in effects between action alternatives, which assists to show how issues are addressed by an effects analysis. However, as outlined in Section 2.2, the Responsible Official has determined that there are no issues with the Proposed Action. Therefore, the analysis has been prepared for only Alternatives 1 and 2.

foundation for how management strategies are developed to strive towards achieving, or maintaining, the desired conditions through site-specific projects (Forest Plan, p. 1-10).

The outcomes of implementing Alternative 2 are expected to occur, and accounted for, as part of site-specific project planning for this project to align existing conditions with the desired conditions (Forest Plan, pp. 2-1 to 2-37; 3-16 to 3-20; and 3-71 to 3-81.9; CRMP, pp. 3-1 to 3-3; 3-6 to 3-7 and 3-15 to 3-22). The purpose and need outlined in Section 1.3 highlights the differences between the current conditions within the project area and the desired conditions outlined in the Forest Plan. Alternative 2 is designed to contribute towards these desired conditions through implementing the Proposed Action.

The following discussions are specific to only those resources that have proposed activities designed to contribute towards meeting the desired conditions. The resource discussions below include measurement indicators display how the existing conditions would be changed through implementation of the proposed alternatives. The outcomes of Alternative 1 are provided to disclose how following a course of taking no action would change the current resource conditions. The direct and indirect effects of Alternatives 1 and 2 (or unintended consequences) are outlined in Section 3.2. Data and information corrections have been made since the release of the July 2013 Scoping Letter, and therefore, some information outlined in the alternative descriptions has been changed.

2.3.4 Vegetation Resource Proposed Actions and Outcomes

Table 2. Vegetation Management Proposed Actions

| Proposed Actions | Acres (MA 3.1a) | Acres (MA 8.1) |
|---|----------------------------|---------------------------|
| Salvage Harvest - The removal of dead trees and/or trees being damaged or dying due to insect or disease to recover value that would otherwise be lost. Of this acreage, 49 acres of jack pine would remain as jack pine, and the remainder would be converted to other forest types.. | 380 | 0 |
| <p>Clearcut Harvest – The removal of all or almost all trees in the stand in a single cutting. Regeneration of a new age class of trees is usually natural, but planting can occur (typically in conifer forest types), resulting in an even-aged (or same-aged) stands of trees.</p> <p>Of this acreage:</p> <ul style="list-style-type: none"> • 2,313 acres would be regenerated to aspen. About 1,640 acres of these acres are currently aspen and the remaining acreage (about 673 acres) consists of other forest types, such as short-lived conifer (spruce/fir), northern hardwood and jack pine, that would be converted to aspen. • 182 acres of jack pine would be regenerated to jack pine forest type. | 2,711 | 0 |

| Proposed Actions | Acres (MA 3.1a) | Acres (MA 8.1) |
|--|----------------------------|---------------------------|
| <ul style="list-style-type: none"> 139 acres are overstory removal, where even-aged management would result in northern hardwood forest types. | | |
| <p>Selection Harvest - A cutting method where individual trees are harvested within a stand in order to create the desired size class and species diversity. Regeneration of a new age class of trees is usually natural, resulting in an uneven-aged or all-sized stands of trees.</p> <p>Structural improvement treatment is a selection harvest that is designed to retain larger trees, snags, and result in the development of greater structural complexity and diversity for wildlife habitat. Structural improvement would take place on 41 acres in MA 3.1a and 30 acres in MA 8.1.</p> | 6,189 | 30 |
| <p>Long-lived Conifer Enhancement / Group Selection / Intermediate Thinning: This treatment incorporates elements of a regeneration harvest and intermediate harvest to create areas openings where the natural regeneration of long-lived species can occur (or be planted) to enhance the structural and compositional complexity of red pine plantations. This treatment would result in more natural, wildlife habitat conditions, while improving health, vigor and quality of overstory trees.</p> | 7 | 436 |
| <p>Shelterwood Cut – Removal of some trees in a stand managed as even-aged to promote the establishment of a new age class of trees beneath the shelter of residual trees. This effort includes removal of timber to promote the establishment of a new age class of trees (e.g., overstory trees harvested) within 3 to 5 years following the initial shelterwood cut.</p> | 99 | 0 |
| <p>Thinning Harvest (including Improvement Cut) - Treatment where trees are removed to provide improved growing conditions for remaining trees. This method is used in immature stands to reduce stand density of trees primarily to improve growth and enhance forest health.</p> | 6,785 | 0 |
| <p>Pre-Commercial Thinning - A non-commercial treatment where trees generally less than 5 inches in diameter are cut to reduce stocking levels to provide better growing conditions for remaining trees. Cut trees are normally left on site. Slash resulting from thinning may be treated by prescribed fire (i.e., pile burning) especially when necessary to reduce hazardous fuels to improve visual quality or to provide desirable wildlife habitat conditions.</p> | 106 | 0 |
| Total Acres | 16,277 | 466 |

| Proposed Actions | Acres (MA 3.1a) | Acres (MA 8.1) |
|---|----------------------------|---------------------------|
| As part of reforestation activities, site preparation would take place in stands receiving clearcut, group selection, shelterwood and any other treated area to encourage regeneration and enhance species diversity. | 2,817 | 436 |
| First and third year stocking surveys would occur for those stands receiving clearcut, selection, group selection and shelterwood treatments. | 9,006 | 466 |

Table 3. Expected Outcomes – Change in Forest Types within MA 3.1a

| <i>Measurement Indicator 1: Percent of change in forest types at the MA 3.1a scale.</i> | | | | |
|---|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Forest Types | Aspen/Paper birch | Long-lived conifer | Short-lived conifer | Northern hardwood |
| Forest Plan’s Desired Condition Percentage | 35-45% | 10-20% | 10-20% | 25-45% |
| Current Forest Type Percentages | Within the desired range at: 39% | Within the desired range at: 13% | Within the desired range at: 11% | Within the desired range at: 37% |
| Alternative 1 Total Percentage Change in Forest Type on Landscape | -0.005% | -0.002% | -0.15% | 0.00% |
| Alternative 1 Forest Type Percentage Outcome | Within the desired range at 39% | Within the desired range at 13% | Within the desired range at 10.63% | Within the desired range at 37% |
| Alternative 2 Total Percentage Change in Forest Type on Landscape ⁷ | + 0.26% | +0.06% | -0.47% | + 0.16% |
| Alternative 2 Forest Type Percentage Outcome ⁸ | Within the desired range at 39.08% | Within the desired range at 13.69% | Within the desired range at 10.32% | Within the desired range at 36.91% |

Measurement Indicator 1: Percent of change in the aspen, long-lived conifer, short-lived conifer and northern hardwood forest types at the MA 3.1a scale.

Alternative 1: Without treatment, these forest types would remain on the landscape at the current percentages as outlined in Table 3. Overall, there would be slight progression toward, or maintaining percentages within, the desired condition ranges for the four forest types. However,

⁷ The resulting percentages account for both gains and losses in forest types through species conversions resulting from vegetation management.

⁸ The percentages are based on an average re-evaluation of stands every 15 to 20 years.

for some areas, the lack of management would result in slight shifts in the type of tree species present, or a forest type conversion. Under Alternative 1, this would occur in all forest types, except for northern hardwoods. These forest type conversions would reduce the potential for managing for aspen and jack pine in the future. Without treatment, the jack pine component in the project area would eventually be lost, and the majority replaced by balsam fir, which is also a short-lived species.

Aspen/paper birch – There would be a 0.005% decrease in this forest type due to the succession of aspen to other forest types. Without treatment, aspen in the project area would become more difficult to maintain, and it would reduce the potential for retaining it on the landscape. In the short-term, mature aspen stands would gradually die, giving way to another age class of tree species. Over time these stands would convert to more shade-tolerant hardwood forest type. The outcome of this conversion would be a slight increase in northern hardwood type, but this change would be inconsequential at the MA 3.1a scale. This alternative would not include an opportunity to convert more abundant hardwood acres to aspen to assist in increasing the aspen/paper birch forest type. As a result, there would be no regeneration of a 0-9 year age class, and therefore, this alternative would not be consistent with the Forest Plan’s objective (p. 2-8) for providing this young age class of aspen for wildlife species dependent upon early successional habitat.

Long-lived conifer – The outcome of this alternative would be a 0.002% decrease in this forest type. This percentage change would occur due to the conversion of white spruce plantations to northern hardwood and balsam fir; the latter is a short-lived conifer species. Without management, the red pine plantations would undergo minor stand development over time. However in the long term, growth would slow considerably and trees would begin competing for resources within an over utilized growing space. This would create stressed and low vigor conditions resulting in weakened trees suffering mortality from insect and disease.

Red pine plantation conditions within the Wild and Scenic River corridors would not be improved for species diversity. Therefore the purpose and need would not be met to enhance the Wildlife outstandingly remarkable value for these areas.

Short-lived conifer - There would be a 0.15% decrease in this forest type due mostly to conversion of jack pine to other forest types. Conversion of some short-lived conifers to northern hardwood is expected to occur in some stands, resulting in an inconsequential change to the northern hardwood forest type at the MA 3.1a scale. Loss of some short-lived conifer would be offset due to small amounts of mature aspen in riparian areas that would convert to short-lived conifer species. Some jack pine stands are anticipated to develop a balsam fir understory; this shift in species composition would not affect the forest type percentage because balsam fir is part of the short-lived conifer forest type. However, it is expected that jack pine stands would suffer mortality over time and have decreased abundance and distribution due to a lack of adequate seed source, resulting in less potential to maintain jack pine in the future.

Northern hardwood - It would be expected that northern hardwoods stands would be maintained in an overstocked condition. Over time, stand conditions would develop slowly to where mortality equals growth and remain in an even-aged condition. Any changes within these slow growing ecosystems would rely on wind-driven events in the form of fine-scale blow downs,

relatively rare broad-scale catastrophic storms, and even rarer fire events (USDA Forest Service [Cleland et al.] 2004b, Woods 2000, Canham and Loucks 1984, Frelich and Lorimer 1991, Grimm 1984, Runkle 1982). There would be no changes in composition other than noted in the aspen and short-lived conifer sections above, and therefore, this forest type would remain within desired condition for MA 3.1a.

These conditions would be expected to continue in the two northern hardwood stands within the Wild and Scenic River corridor as well. Without structural and species improvement, no northern hardwood habitat loss would occur. However, the quality of habitat in these stands would continue to be poor until components of late successional forests develop (such as large tree size, cavity trees, snags, and downed woody material), which can take decades to occur.

Alternative 2: The outcome of this alternative would be to meet the purpose and need for contributing to the desired condition for the four forest types (see Appendix 3, Map 3). Implementation of Alternative 2 would result in maintaining all forest type percentages within the desired ranges outlined in the Forest Plan. There would also be slightly positive percentage change for the aspen and northern hardwood forest types at the MA 3.1a scale as outlined in Table 3.

Aspen/paper birch - There would be a 0.27% percentage increase in this forest type, leading to a positive contribution to the desired condition at the MA 3.1 scale (see Table 3). The outcome of implementing Alternative 2 would be a slight increase of aspen/paper birch on the landscape. However, the percentage of aspen/paper birch is expected to be maintained within the desired condition range at 39%. Alternative 2 includes clearcut harvest to regenerate aspen where it exists today, as well as convert short-lived conifer and northern hardwood forest types to aspen. Converting short-lived conifer (jack pine and spruce/fir stands experiencing substantial mortality) and northern hardwoods to aspen would not reduce the percentage of these forest types outside their respective desired condition ranges.

Alternative 2 also would result in creating a 0-9 year age class in aspen on about 2,300 acres. Therefore, it would contribute to the Forest Plan's objective for providing this age class of aspen on the landscape to benefit early successional wildlife species. The regeneration of existing aspen types (about 1,640 acres) would not change the current percent of this forest type, but would alter the age-class distribution.

Long-lived conifer – This forest type would be slightly decreased (0.13%) at the MA 3.1a scale (see Table 3). The amount of long-lived conifer on the landscape would be maintained, however, at about 13%, which is within the desired condition range forest-wide. This outcome would occur due to salvage and shelterwood harvest. The long-lived conifer forest type would lose minimal presence (< 1%) as unsubstantial exchanges occur between the acres converted (e.g., white spruce converted to northern hardwood and aspen forest types) versus acres gained (e.g., jack pine converted to white pine). The shelterwood harvest is proposed to enhance growing conditions for long-lived conifer and consequently expand the forest type by about 1% through the removal of northern hardwood.

The majority of red pine plantations would receive a thinning harvest to improve growing conditions for residual trees. This treatment would allow more light available and improve the overall growing space in these plantations. Trees would also develop greater resiliency to better withstand threats from insect, disease and periods of drought.

Some red pine plantations, located mostly in MA 8.1, would receive an intermediate thinning/group selection treatment, with an associated long-lived conifer enhancement action to maintain long-lived conifer on the landscape, while promoting greater tree species diversity. The combination of these actions would result in a mosaic of near continuous canopy and “group” openings that allow for accelerated development of another age class, while providing opportunities for increased species diversity and more complex stand structure that would provide more natural or characteristic wildlife habitat.

The resulting plantation conditions from intermediate thinning would range from un-thinned; thinned to recommended stocking levels; to removal of trees in some areas to create group openings. These openings would range from ¼ to 2 acres in size, and together with trees removed through thinning, would be limited in number so that no more than 40% of relative red pine stocking level would be harvested. Thinning in-between the group openings would increase the growth rate of the remaining trees leading to more rapid development of big tree characteristic as called for in the Forest Plan for MA 8.1 (p. 3-81.6).

The group openings would be located variably throughout the stand, based on available seed source of other long-lived or mid-tolerant species, existing regeneration, or suitability for planting other species. These openings would support improved growing conditions for desired, established regeneration and/or planted long-lived conifer species to enhance wildlife habitat. These varying-sized group openings would enhance structural composition, species diversity, wildlife habitat and promote larger-diameter trees to support greater cover and forage for wildlife than plantation conditions can provide. These resulting conditions would meet the wildlife outstanding remarkable values of both segments of the WSR, and would also enhance the visual variety in these corridors, which is consistent with both the CRMP (p. 2-19) and Forest Plan (pp. 81.5-81.6).

Short-lived conifer – Short-lived conifer stands would be converted to aspen/paper birch, long-lived conifer and northern hardwood in efforts to address insect and disease factors, provide opportunities to increase aspen on the landscape, and assist to meet the objectives outlined in the hazardous fuels reduction proposal. Vegetation management in the short-lived conifer forest types would lead to a minor reduction in the overall percentage of short-lived conifer at the MA 3.1a scale, to about 10% (see Table 3). The balsam fir/spruce and jack pine forest type would lose minimal presence on the landscape through conversion to long-lived conifer and northern hardwood forest types. The now partially released understory of shade tolerant hardwoods and conifer would respond to the increased light within the stand. Clearcut harvest would address stands in decline from insect and disease factors and assist in converting fire-prone species to less fire prone habitat. The resulting condition of clearcut in some jack pine and spruce/fir stands would be a conversion to the aspen forest type. However, this would result in a minimal reduction to the short-lived conifer forest type at the MA 3.1a scale as outlined under the aspen section. Shelterwood harvest would include removal of short-lived conifer, which would result in

a minimal reduction (1%) of this forest type. Although there would be a slight decrease in short-lived conifer percentage, Alternative 2 would not progress this forest type's percentage to the degree as other species.

Northern Hardwood – This forest type would be slightly increased, resulting in a forest type percentage change of 0.16% at the MA 3.1a scale (see Table 3). This minor change is a net result of the clearcut, salvage, shelterwood treatments proposed, in consideration of the improvement and selection harvests; the latter of which would maintain the northern hardwood forest type where it exists today. The outcomes of these actions are intended to result (over time) in a stand that contains trees of all sizes and ages, from seedlings to large mature trees. However, since these stands are even-aged, the desired uneven-aged structure would not be fully achieved with implementation of this project. The changes to northern hardwood are outlined in the sections above. In summary, northern hardwoods would be: (1) reduced through conversion to aspen via clearcut harvest and conversion to long-lived conifer through shelterwood; and (2) increased through conversion of white spruce with salvage harvest.

Stand structural improvements in three adjacent stands (one in MA 3.1a and two in MA 8.1) would receive a selection harvest that emphasizes large tree retention and providing variable stand densities to creating structural and species diversity in these stands. Canopy gaps would vary in size to better mimic wind-driven natural disturbance events and be located near mid-tolerant species in efforts to enhance tree species richness within these stands. The stands proposed for treatment within the WSR lacks snags, coarse woody debris and species diversity.

The structural improvement treatment would have objectives to mimic older forest conditions by retaining larger trees, snags and trees with defect. Within these stands, a few acres of group selection would promote new regeneration and greater species diversity, which would also provide greater forage and cover for wildlife. Trees may also be felled and left on site to create coarse woody-debris as cover for small mammals, enhancing structural complexity. This treatment would also allow existing trees to more rapidly develop and create “big tree character” called for in the MA 8.1; this would also meet desired future conditions of a diverse habitat with features, like snags and downed-logs necessary to support wildlife species and meet wildlife outstandingly remarkable values (CRMP, p. 3-2). The outcome of this action would enhance forage and cover for many wildlife species, and therefore meet the purpose and need for this project by enhancing the Wildlife outstandingly remarkable value.

Essential Reforestation Measures - As part of reforestation activities, site preparation would take place in stands receiving clearcut, group selection, shelterwood, but can also take place in any treated area to encourage regeneration and enhance species diversity. Post-harvest site preparation activities would establish or develop regeneration in all or portions of a stand to prepare the seed bed and control competing vegetation to benefit species such as hemlock, white pine, oak, most hardwood species and paper birch. Activities may include ground scarification, prescribed fire and felling of sub-merchantable vegetation that would be undesirable, and/or to reduce competition of desired tree species. First and third year stocking surveys would occur for those stands receiving clearcut, selection, group selection and shelterwood treatments to ensure the stand has been regenerated and adequately stocked with acceptable native species.

2.3.5 Hazardous Fuels Proposed Actions and Outcomes

Table 4. Hazardous Fuels Proposed Actions

| Activities | Unit of Measure (MA 3.1a) | Unit of Measure (MA 8.1) |
|--|---------------------------|--------------------------|
| Prescribed fire and/or mechanical treatment (i.e., timber harvest, chipping, biomass removal) to reduce hazardous fuels conditions, such as ladder fuels and slash management. If desired fuel conditions are not met through vegetative treatments within 1 ½ mile of private lands, further fuels reduction treatments would take place to address needs. The use of prescribed fire may occur when there is a need to reduce natural fuel loading or treat post-harvest slash unless material is needed on site for other resource considerations. Prescribed fire would not be used in MA 8.1. | 2,810 Acres | 436 Acres |
| Prescribed fire and/or mechanical treatment for site preparation needs in stands identified for regeneration of paper birch and red oak. | 85 Acres | 0 Acres |
| Establish fuel management zones adjacent to identified system roads through the removal of vegetation about 50 feet from the forested edge of the road. This activity would include limbing of tree branches to reduce ladder fuels; the removal of some of the understory vegetation, and subsequent slash treatment from these activities as needed. | 16 Miles | 0 Miles |

Table 5. Expected Outcomes - Fuels Treatment Adjacent to Private Property

| Measurement Indicator 2: To what extent does the project minimize hazardous fuels in areas identified within 1 ½ miles from private property and adjacent to system roads? | |
|---|---|
| Alternative 1 | No hazardous fuels would be addressed in these areas. |
| Alternative 2 | 3,486 acres. Includes 3,246 stands identified within 1 ½ miles of private property, in addition to 240 acres of land adjacent to system roads would be treated. |

Measurement Indicator 2: To what extent does the project minimize hazardous fuels in areas identified within 1 ½ miles from private property and adjacent to system roads

Alternative 1: This alternative would not address hazardous fuels conditions, allowing continued high-hazard fuel loading resulting in an increased risk of wildfire events. This would reduce the flexibility to provide for public and firefighter safety in the event a wildfire. The lack of management under Alternative 1 would not progress conditions toward the Forest Plan’s

direction and CWPP goals for reducing the risk of hazardous fuels within the wildland urban interface.

Alternative 2: As displayed in Table 5 and Map 2, implementation of Alternative 2 would meet the purpose and need of this project by reducing hazardous fuels conditions on approximately 3,486 acres to progress the project area's landscape toward the desired conditions outlined in the Forest Plan (p. 2-11) and the CWPPs (p. 41 of each document). The outcome of vegetation management displayed on Map 3 (see Appendix 3) is expected to partially address the reduction of hazardous fuels by reducing forest stand densities, removing unhealthy trees, and decreasing the amount of ladder fuels.

Vegetation management activities, however, would also lead to an increase of downed woody material on the forest floor of these areas (e.g., logging slash), which can temporarily increase the risk of wildland fire. A design criterion has been developed to ensure that hazardous fuels conditions are addressed within 1 ½ miles from private property (see Appendix 1). This need is identified by the CWPPs as well as the Forest Plan (p. 2-35) to reduce risk of wildland fire on federal and non-federal lands. This design criterion would be implemented on 3,246 acres in areas of fire-prone tree species, primarily jack pine and red pine.

Reduction of logging slash could be addressed in a variety of ways, which may include removal through biomass harvesting; mechanical means through chipping or crushing of logging slash; or burning through prescribed fire techniques. Logging slash would need to be retained on 2,063 acres to protect soil productivity (see Appendix 1). Therefore, prescribed fire use would not be used in these areas. In addition, prescribed fire would not be used in MA 8.1 to ensure the protection of the outstandingly remarkable values. Post-treatment surveys would ensure that vegetation management reduced the level of hazardous fuels within the stands identified, or if follow-up hazardous fuels reduction measures are needed.

Additional fuel reduction would take place within the fuel management zones identified on Map 2 (see Appendix 3). Creating these zones would result in about 240 acres of land treated adjacent to the primary system roads within MA 3.1 outlined on Map 2. In the event of a wildland fire, these zones would act as fuel breaks to support firefighters' ability to control fire. Due to the strategic placement of these zones, they would also provide additional protection to private property.

Fuel reduction in these zones would focus on removing ground vegetative fuels through mechanical means, such as mowing and chipping. There are no restrictions in these zones for the removal of this woody material off-site; however prescribed fire would not occur as part of addressing fuel reduction in these zones. Establishment of these zones would adhere to the objectives outlined on page 41 of each CWPP. Downed woody material resulting from creation of fuel management zones would be addressed to reduce the risk of hazardous fuels accumulation as described above.

Table 6. Expected Outcomes - Conversion of Fire Prone Species

| | |
|---|---|
| Measurement Indicator 3: The number of acres converted from a fire-prone species to a less fire-prone forest type. | |
| Alternative 1 | 0 acres would be converted |
| Alternative 2 | 350 acres of jack pine would be converted to a less fire-prone type through salvage and clearcut harvest. |

Measurement Indicator 3: The number of acres converted from a fire-prone species to a less fire-prone forest type.

Alternative 1: This alternative would not convert jack pine plantations to other forest types through vegetation management. As the trees in these plantations die and stands begin to break-up, downed woody material would build up in the stands’ understory. Therefore, these mature to over-mature stands would continue to contribute an additional risk of hazardous fuel conditions..

Alternative 2: Approximately 350 acres of jack pine plantation would be converted to less fire-prone species, such as aspen, through clearcut harvest or the salvage of dead and dying trees (see Table 6). This would to further reduce the risks of hazardous fuel accumulation in the wildland-urban interface. This alternative would meet the purpose and need to restore and/or maintain healthy, vigorous forest conditions and reduce the amount of fire-prone tree species in the project area; both of which are supported by the Forest Plan and CWPPs.

2.3.6 Transportation Management Proposed Actions and Outcomes

Table 7. Transportation Proposed Actions

| Activities | Miles (MA 3.1a) | Miles (MA 8.1) |
|---|------------------------|-----------------------|
| System road construction includes the creation of new road that would be used for administrative use. About one mile of new road would be available for public use. This activity includes clearing trees, grubbing stumps, installing culverts, placing gravel where needed for road stabilization, as well as the ditching and shaping of roads. | 9 | 0 |
| Temporary road construction includes clearing trees, grubbing stumps, installing culverts, placing gravel where needed for road stabilization, as well as the ditching and shaping of roads. These roads would be decommissioned after use, including road entrance closure. They would not be available for public access unless specifically identified for conversion to a system road available for such use. | 5 | 0 |
| Reconstruction includes clearing brush, limited road widening and gravel placement where needed, installing and/or repairing culverts, as well as ditching and shaping of roads. | 5 | 0 |

| Activities | Miles (MA 3.1a) | Miles (MA 8.1) |
|---|-----------------|----------------|
| Decommissioning typically includes removal of culverts and crossing structures, berming roads to prohibit motorized vehicle access, and allowing the road bed to naturally revegetate. About 14.4 miles of system road would be decommissioned. Approximately one mile of decommissioned road segments would be converted into motorized OHV trail (see Appendix 3, Map 3). | 58 | 8 |

Table 8. Expected Outcomes - Change in System Road Density

| <i>Measurement Indicator 4: Change in the total, system road density in MA 3.1a at the project and Forest-wide scales.</i> | |
|--|---|
| Alternative 1 | No change. Road density would remain below the desired range at 2.89 mi/mi ² within MA 3.1a Forest-wide and 2.74 mi/mi ² in the project area's portion of MA 3.1a. |
| Alternative 2 | The road density would increase to 2.92 mi/mi ² within MA 3.1a Forest-wide, and 2.86 mi/mi ² within the project area's portion of MA 3.1a. This minor change would maintain the road density below the desired range. |

Measurement Indicator 4: Change in the total, system road density in MA 3.1 at the project and Forest-wide scales.

Alternative 1: The existing transportation system would remain unchanged as displayed on Map 1 (see Appendix 3). The total road density within the project area would remain at 2.74 mi/mi² for the project scale, and 2.89 mi/mi² for MA 3.1a at the forest-wide scale, which is below the desired condition range of 3 to 4 mi/mi² outlined in the Forest Plan (p. 3-18). The road system would continue to undergo routine maintenance on collector system roads and basic custodial care on the local system roads. However, there would be no changes to the miles of system roads, such as through construction, decommissioning or conversion of unclassified roads to system roads and therefore the purpose and need for providing access for vegetation management and resource considerations would not be met.

Alternative 2: Road density would be changed through construction of system roads to facilitate timber harvest, conversion of unclassified road to system road (4.3 miles), and decommissioning of system roads (14.4 miles) where road segments have been determined to not be needed in the future (see Map 3 of Appendix 3). These activities would meet the purpose and need for this project as outlined in Section 1.3.

There are 87,800 acres of land within MA 3.1a at the Forest-wide scale, of which 28,300 acres (or 32%) is located in the project area. As shown in Table 8, the road density at the project scale would be increased to 2.86 mi/mi², resulting in an increase at the forest-wide MA 3.1a scale to

2.89 mi/mi², which is still slightly below the desired range⁹. The outcome of implementing Alternative 2 would result in a minor change to the system road density at the project area scale, which would not substantially change the road density as a whole at the MA 3.1a scale.

2.3.7 Recreation Proposed Actions and Outcomes

Table 9. Recreation Proposed Actions

| Activities | Location |
|---|---------------|
| Improve carry-in boat access and rehabilitation of the shoreline area to address resource damage at watercraft launching sites. | Tanlund Lake |
| Close user-created boat launch and rehabilitate shoreline area to address resource damage. Carry-in boat access is still allowable; however, no parking at the current site would be available. | Erickson Lake |
| Permanent re-route for Trail #3 for snowmobile traffic to avoid dual use access concerns identified for this project, as well as into the future. | 0.3 Miles |

Table 10. Expected Outcomes - Trail Management

| <i>Measurement Indicator 5: Miles of trail managed to address unsafe conditions and improve the recreational experience</i> | |
|---|---|
| Alternative 1 | 0 miles. Existing conditions would be maintained. |
| Alternative 2 | 0.13 miles. Closure of user-created trail leading to Erickson and Tanlund Lakes and removal of 0.10 mile of snowmobile trail #3 in favor of a relocating the trail to address safety concerns |

Measurement Indicator 5: Miles of trail managed to address unsafe conditions and improve the recreational experience.

Alternative 1: There would be no change in the present recreation environment towards those desired conditions outlined in the Forest Plan for managing dispersed recreation opportunities (pp. 2-4, 2-14 and 2-15). Motorized use of the user-created trails and boat landings leading to Erickson and Tanlund Lakes would continue to receive use. In addition, snowmobile trail #3 would remain in its current location in the project area. This presents a foregone opportunity to address a 0.3 mile section where the landscape’s topography constricts the trail to a narrow area that does not allow for safe, mixed vehicle use.

Alternative 2: The outcome of this alternative would be an improved recreational experience through addressing resource and safety concerns. This alternative would meet the purpose and need of this project through managing 0.13 miles of trail closure for of the user-created boat landings leading to Erickson and Tanlund Lakes that are leading to soil and water resource concerns, and relocating a portion of snowmobile trail #3 that poses safety concerns for

⁹ Project area road density includes unclassified roads, whereas the MA road density does not account for unclassified roads due to the lack of specific unclassified road locations and information.

simultaneous use of logging equipment and snowmobile traffic (see Tables 9 and 10; and Map 6 in Appendix 3).

Table 11. Designated Access Proposed Actions

| Proposed Designations | Miles Added | Miles Removed | Net Change in Miles Available on the MVUM |
|--|-------------|---------------|---|
| Roads Open to All Vehicles (Highway Legal Vehicles and OHVs) | 2.2 | 1.4 | + 0.8 |
| Roads Open to Highway Legal Vehicles Only ¹⁰ | 0 | 5 | - 5.0 |
| Roads Open to OHVs Only | 0 | 27.4 | - 27.4 |
| OHV Recreational Trail | 1.0 | 0 | + 1.0 |
| Total | 3.2 | 33.8 | - 30.6 miles |

Table 12. Changes in MVUM Designated Access

| <i>Measurement Indicator 6: Change in the number of miles designated for public access, by vehicle type, in the project area.</i> | |
|---|--|
| Alternative 1 | <p>0 miles of change. The existing condition of 210.4 miles of designated public access would be maintained as follows:</p> <ul style="list-style-type: none"> • 97.6 miles open to all vehicles • 25.2 miles open to highway legal vehicles • 87.6 miles open to off-highway vehicles |
| Alternative 2 | <p>30.6 miles less. A total of 179.8 miles of designated public access would be available for as follows:</p> <ul style="list-style-type: none"> • 98.4 miles open to all vehicles • 20.2 miles open to highway legal vehicles • 61.2 miles open to OHVs (includes 1 mile of recreational trail not co-located with a system road). |

Measurement Indicator 6: Change in the number of miles of designated for public access, by vehicle type, leading to an improved recreational experience.

Alternative 1: There would be no change in the present recreation environment or progress towards achieving desired conditions for roads and trails designated for public access outlined in the Forest Plan and it’s FEIS (pp. 2-4 and 3-81.6; and Volume I, p. 2-17, respectively). About 210 miles of road would remain available for public access. Some portions of currently designated OHV routes would remain open in areas that cannot support sustainable motorized vehicle use, and therefore impacts to soil and water resources would continue to occur.

¹⁰ One-tenth of a mile has been removed from OML 3 roads due to a data error in the designation on a portion of Calderwood Road. The Forest Service does not have an easement across private land in this location, and therefore cannot retain this access in the proposal. The miles of change have also been adjusted to accommodate adding Forest Road 5255-B to the MVUM and to correct minor data errors.

Alternative 1 also does not address additional access requested by commenters, especially for designating local connector routes to enhance the recreational riding experience. In addition, the routes on the current MVUM in areas of special designation would not be addressed, resulting in less passenger vehicle access.

Alternative 2: The outcome of the Proposed Action is an improved recreational rider opportunity through changes to the location and type of routes offered. Additional OHV access is proposed due to collaboration with the local, MI-TRALE organization, to provide more opportunities for recreational trail riding (see Section 2.2). This includes two, new local connector routes; conversion of roads currently designated as ‘open to all’ to OHV only; and additional opportunities for OHV trail use where sustainable trail use can occur (see Appendix 3, Map 5). One new local connector OHV route adds OHV access to Forest Road 5320 (locally known as the CCC Road), which is currently an OML 3 road that currently allows passenger vehicles only. A mixed use analysis was performed by the Forest’s Engineer for Forest Road 5320; this analysis found that with routine maintenance and additional signage, this road would provide safe conditions for use by OHVs and passenger vehicles. The other local connector OHV route features construction of one mile of recreational trail to provide a system that connects Old US 45 to Bond Falls Road in the southern portion of the project area. Other portions of this trail system would be located on existing roads, where road conditions would be addressed through measures to improve access for timber harvest.

This alternative provides approximately 180 miles of roads and trails for motorized recreational uses and public access. About 0.8 miles of the system road constructed would be open to OHV, and 0.2 miles would be open to all motorized vehicles. Changing special designation routes¹¹ in the project area is an important change. Many of these roads were designed to a standard that would support highway vehicles, but were gated through previous projects, thus restricting their use by passenger vehicles. The outcome of the Proposed Action is to either open these roads to OHV only or ‘open to all’, and therefore provides additional motorized access for passenger vehicles where this resource conditions can support this use. This is an important change as it allows motorized access of highway vehicles where road and resource conditions can support such use, and maintains berms/gates in some areas where OHV use is more appropriate.

Due to drier soil conditions in the project area, a portion of the new OHV access routes could be designated on the next edition of the MVUM. Exceptions would occur for those road segments that need to be constructed first (Forest Roads 5230-V, 5230-R, 5250-M4 and 5311-H3), or in areas where reconstruction measures could result in a temporary closure of OHV access to facilitate timber harvest. Restrictions to OHV access would also be in place on Forest Road 5320 during timber hauling operations.

Some trails to be closed to OHV use are proposed to address site-specific resource protection needs as outlined in the purpose and need for this project, which results in a decrease of 30.6 miles of OHV access (see Table 12). Removal of OHV access is especially important in the northwestern portion of the project area where the soil resource cannot support use during the

¹¹ In this example, special designation is referenced as those roads that are currently designated on the MVUM as OML 2 roads (open to highway vehicles), but function only as OML 1 roads open to OHVs only due to road closures (berms/gates).

snow free season due to the normally wet conditions. In addition, 0.6 miles of ‘open to all’ vehicle access and 1.3 miles of OHV access is proposed to be removed from the Wild and Scenic River corridor. For the Scenic segment, the proposal would lead to positive effects for dispersed recreation and provide an environment consistent with the Forest Plan standard for retaining a semi-primitive motorized recreation experience.

2.3.8 Old Growth Proposed Actions and Outcomes

It is important to note that identifying site-specific locations of classified old growth in this project area does not change the percentage of the landscape to be classified as old growth that was established in Forest Plan direction (p. 3-18). The total amount of old growth to be located in MA 3.1, via stand classification, is 4 to 7% of the 87,800 NFS acres encompassed within MA 3.1. Refinements to specific stands identified as classified old growth are intended to improve patch size and spatial arrangement, while striving to maintain the amount of classified old growth within the 4 to 7% at the MA scale and meet Forest Plan goals.

Table 13. Old Growth Proposed Actions

| Activities | Acres MA 3.1a | Acres MA 8.1 |
|--|--------------------------|-------------------------|
| Retain stands that are currently classified as old growth | 792 | 30 |
| Classification of old growth acreage in new areas improve patch size or distribution following Forest Plan guidelines. | 448 | 0 |
| Declassify stands where conditions do not include or meet the old growth criteria defined by the Forest Plan | 259 | 30 |
| Total Classified | 1,240 | 30 |
| Net Change | + 189 | - 30 |

Table 14. Expected Outcomes - Change in Old Growth Percentage

| Measurement Indicator 7: Percentage of change for old growth contributing to the desired condition of 4-7% at the Forest-wide, MA 3.1a scale. | |
|--|---|
| Alternative 1 | 0% change. The existing condition of 5.7% old growth would be maintained. |
| Alternative 2 | 0.2% increase in classified old growth, which would maintain the percentage within the desired range for MA 3.1a at 5.9%. |

Measurement Indicator 7: Percentage of change for old growth contributing to the desired condition of 4-7% at the Forest-wide, MA 3.1a scale¹².

Alternative 1: There would be no change in the percentage of old growth in the project area to contribute towards the desired condition percentage at the forest-wide scale. No classification of new areas or declassification of currently classified stands would occur. Alternative 1 would retain the 1,051 acres of currently classified old growth, and therefore the percentage of old

¹² The Forest Plan guidelines state that old growth classification should be based on landscape percentages by MA, and not at the project scale (p. 2-24).

growth would remain at 5.7%, which is within the desired range of 4-7% at the MA 3.1a scale. The forested conditions in these stands would naturally succeed toward supporting late successional forest types and old growth characteristics. This process could take several decades, or may not occur at all, in those areas that currently lack old growth characteristics due to their stand type and connectivity to other stands with old growth characteristics. The resulting spatial distribution of old growth under Alternative 1 would not meet the purpose and need for this project.

Alternative 2: This alternative would increase the percentage of old growth at the MA 3.1a scale by 0.2%, which would result in 5.9% of the MA 3.1a landscape classified in old growth (see Table 14). This increase would maintain the percentage within desired range for this MA scale. The outcome of this alternative would be 1,240 acres of old growth classified in the project area. Alternative 2 would retain 822 acres of currently classified stands; classify an additional 448 acres where potential old growth characteristics are present, and declassify 289 acres in areas lacking old growth characteristics (see Table 13 and Map 6 in Appendix 3). Thus, the outcome of Alternative 2 would be a net change of 189 additional acres classified, which equates to the 0.2% increase at the forest-wide MA 3.1a scale. Management Area 8.1 has no old growth desired conditions. Therefore, retention of one 30 acre stand, and declassification of two old growth stands (30 acres total) that do not contain required old growth characteristics would not affect the MA 3.1a old growth percentages¹³.

The forested conditions of the stands retained as old growth and proposed for old growth classification would naturally succeed and develop old growth characteristics defined in the Forest Plan (pp. 2-24 to 2-25). These characteristics include species diversity and elements of structural complexity, such as larger trees, multiple vegetation layers, snags, cavity trees and down woody debris. The areas proposed for declassification would not naturally develop these characteristics due to their stand type and lack of connectivity to other stands with old growth characteristics. The outcome of implementing Alternative 2 would lead to a set of old growth stands that better meet the Forest Plan’s desired conditions for old growth related to stand structure and position on the landscape.

2.3.9 Aquatic and Riparian Resources Proposed Actions and Outcomes

Table 15. Aquatic and Riparian Resources Proposed Actions

| Activities | Unit of Measure (MA 3.1a) | Unit of Measure (MA 8.1) |
|--|---------------------------|--------------------------|
| Stream bank restoration to prevent OHVs from fording streams. <ul style="list-style-type: none"> • 1 Site on the Middle Branch Ontonagon River • 1 Site on McGinty Creek | 0 Sites | 2 Sites |
| Stream bank restoration associated with culvert removal on Forest Road 5299. | 2 Sites | 0 Sites |

¹³ The acreages and percentages shown correct the information disclosed in the July 2013 scoping letter.

| Activities | Unit of Measure (MA 3.1a) | Unit of Measure (MA 8.1) |
|--|---------------------------|--------------------------|
| Planting of long-lived tree species in riparian areas to enhance structural diversity and increase the component of long-lived trees and future coarse woody debris. Tree species used would be tolerant of wet conditions, such as red maple, silver maple, tamarack or white spruce. | 160 Acres | 166 Acres |
| Large Woody Material placement to improve fisheries habitat through restoring habitat diversity, providing spawning habitat and cover for trout. <ul style="list-style-type: none"> • Camp, Erickson, Hobo and Tanlund Lakes (Total Acres) • Bluff, Deadman and Paulding Creeks and the Middle Branch Ontonagon River (Total Linear Miles) | 38 Acres 6 Miles | 0 Acres 15 Miles |

Table 16. Expected Outcomes - Sites Managed to Reduced Erosion and Sedimentation

| <i>Measurement Indicator 8: Number of sites addressed to reduce erosion and prevent sedimentation.</i> | |
|--|--|
| Alternative 1 | 0 sites would be addressed. |
| Alternative 2 | 6 sites, including three streambank restoration proposals, which includes closure of two illegal fords and removal of two culverts on Forest Road 5299, and blocking motorized use on user-created access points for Erickson and Tanlund Lakes. |

Measurement Indicator 8: Number of sites addressed to reduce erosion and prevent sedimentation.

Alternative 1: No sites would be managed to reduce erosion and prevent sedimentation. The illegal OHV fording of streams would not be blocked, and therefore streambank and riparian habitat would not be restored. The lack of corrective actions would lead to continued soil erosion and subsequent sedimentation into the Middle Branch Ontonagon River and McGinty Creek. This sediment would adversely impact water quality and aquatic organisms by leading to degraded spawning and rearing habitat, reduced fish egg survival and mortality of some aquatic species.

The culverts would not be removed from Forest Road 5299, and therefore no streambank restoration would be warranted. However, as this road would receive no management, there is a greater likelihood of culvert failure, which would lead to an increase in erosion and sedimentation. Finally, the continued motorized access on the user-created trails leading to Erickson and Tanlund Lakes and lack of shoreline rehabilitation would lead to further erosion and sedimentation into these lakes.

Alternative 2: This alternative would meet the purpose and need for resource protection through reducing erosion and preventing sedimentation for six sites (see Tables 15 and 16; and Map 6 in Appendix 3). The outcome of Alternative 2 would reduce soil erosion and sedimentation, leading to improved water quality for aquatic organisms and their habitats.

Ford closure and streambank restoration on the Middle Branch Ontonagon River would enhance the water quality river value, as well as the Fish outstandingly remarkable value for the Scenic segment of the WSR. Stabilization of road approaches and creek banks at two sites along Forest Road 5299 after culvert removal would benefit aquatic and riparian habitats. Once the user-created access points are closed to motorized access, the trail and shoreline rehabilitation activities for Erickson and Tanlund Lakes would also benefit aquatic and riparian habitats.

Table 17. Expected Outcomes - Roads Managed to Reduce Erosion and Sedimentation

| Measurement Indicator 9: Miles of road managed to reduce erosion and prevent sedimentation | |
|---|--|
| Alternative 1 | 0 miles |
| Alternative 2 | 98.2 ¹⁴ miles (66 miles decommissioned; 5 miles reconstructed; 27.4 miles removed from OHV designated access) |

Measurement Indicator 9: Miles of road managed to reduce erosion and prevent sedimentation.

Alternative 1: This alternative would not decommission or reconstruct roads, nor would it remove roads from the MVUM. Roads not decommissioned would continue causing erosion and sedimentation concerns, in addition to compacted soil conditions and resulting in reduced infiltration for those subject to motorized use. Motorized use of roads not receiving reconstruction activities, and those designated for public access in areas where resources cannot support motorized use, would continue to erode causing sedimentation in areas of stream crossings. Barriers to aquatic organism passage would not be addressed.

Alternative 2: This alternative would meet the purpose and need for this project by providing for resource protection through addressing erosion and sedimentation concerns (see Section 1.3). A total of about 98.2 miles would be managed to reduce risks to aquatic and riparian resources through the prevention of soil erosion and sedimentation (see Table 17). Decommissioning roads has a beneficial impact of improving infiltration and elimination of erosion and sedimentation. This is especially important on those roads that are currently receiving motorized use as vehicle-caused impacts would be addressed through removal of designated access on system roads and those under special use permit.

Road reconstruction design benefits water quality through improved road drainage; this addresses barriers to aquatic organism passage by replacing culverts. Roads proposed for reconstruction would not be designated for public access until reconstruction activities are

¹⁴ Note that 0.2 miles of road is both decommissioned and removed from the MVUM for OHV access, which has been accounted for in this total.

complete, which would provide additional protection for soil and water resources until corrective measures can be implemented.

Table 18. Expected Outcomes - Riparian and Aquatic Habitat Restored

| <i>Measurement Indicator 10: Acres and miles of riparian and aquatic habitat restored to meet Forest Plan objectives.</i> | |
|---|--|
| Alternative 1 | 0 acres; 0 miles |
| Alternative 2 | 364 acres (326 acres of underplanting and 38 acres of lake habitat) and 21 miles of stream habitat |

Measurement Indicator 10: Acres and miles of riparian and aquatic habitat restored to meet Forest Plan objectives.

Alternative 1: No activities would be implemented to restore aquatic habitat to meet the purpose and need of this project. The outcome of this alternative would be a general trend away from the desired conditions for these resources as outlined in the Forest Plan (pp. 2-2, 2-3, 2-7 and 2-10). With no tree planting, it is expected that riparian areas would continue to mature and large woody debris would slowly be recruited, but this may take decades to achieve.

In trout areas, spawning gravel would continue to be limited due to the lack of LWM-induced scouring and the deposit of fine sediment. The amount of woody material in lakes and streams would remain low and limit the amount of aquatic habitat. Although forested conditions in lakeshore and streamside riparian areas would continue to mature, the amount of woody structure contributed to these areas would accumulate slowly.

Alternative 2: Approximately 364 acres of lake and riparian habitat, and 21 linear miles of stream habitat would be enhanced under Alternative 2 to meet the purpose and need of this project (see Table 18 and Map 6 in Appendix 3). These actions would result in increasing the amount of habitat restored and available for aquatic and terrestrial species. The outcome of Alternative 2 includes enhancing tree species diversity through long-lived tree underplanting in the riparian areas adjacent to Bluff and Interior Creeks and the Scenic segment of the Middle Branch Ontonagon River. This underplanting effort would assist to provide a future condition that includes long-lived tree species in areas experiencing tree mortality from the effects of spruce budworm infestation. Providing a long-lived species component in these areas would also provide future shade for streams and large woody material for streams and riparian areas as called for in the Forest Plan (p. 2-2).

Increasing the amount of LWM would improve opportunities for fish spawning and feeding cover; this is especially true for trout species in the creeks and the Middle Branch Ontonagon WSR. It would also increase fish habitat complexity by providing structure for hiding cover and would augment nutrient cycling as the woody material decays and also retains drifting leaves and other organic matter. Both Middle Branch Ontonagon WSR segments within the project area have Fish as an outstandingly remarkable value, and the addition of LWM would benefit those resources. Large woody material restoration would create habitat for the resident brook, brown and rainbow trout as well as walleye, smallmouth bass and muskellunge within the Scenic Segment and for the large brook and brown trout within the Recreational Segment.

2.3.10 Wildlife Resource Proposed Actions and Outcomes

Table 19. Wildlife Resource Proposed Actions

| Activities | Acres (MA 3.1a) | Acres (MA 8.1) |
|--|-----------------|----------------|
| Maintain wildlife openings to provide a component of early successional habitat for several wildlife species. | 266 | 20 |
| Underplanting of long-lived conifer to provide hiding cover, winter thermal cover and forage for small mammals. | 177 | 0 |
| Wild rice seeding in Erickson Lake to offer cover and foraging habitat for a variety of aquatic-dependent species. Seeding would not occur on the portion of the shoreline being for walk-in canoe/boat launch access. | 2 | 0 |
| In Compartment 51, stands 18 and 49 (within WSR), timber harvest is designed to improve wildlife habitat by accelerating development of larger trees and to increase biological diversity and structural complexity. All larger diameter trees (> 14 dbh) would be retained. Snags would be created through girdling, and downed woody debris through felling, on 50 to 100 linear feet per acre of at least 8” in diameter, if present. A total of 4 to 10 variable sized gaps per stand would be created to improve vertical structural complexity. | 0 | 30 |
| In clearcut stands, create one large brush pile on average per five acres of clearcut, resulting in the creation of brush piles on about 542 acres. Brush piles serve as dens for black bear, while also providing denning and escape cover for numerous smaller wildlife species. The number of piles placed and site-specific location of the brush piles within the 2,711 acres of clearcut harvest, would be dependent upon available on funding and the implementation tool used (such as stewardship contracting opportunities). Specific stands, amount and location would be determined by biologists. | 542 | 0 |

Table 20. Expected Outcomes – Acres of Wildlife Habitat Enhanced

| Measurement Indicator II: Acres of wildlife habitat enhanced to meet Forest Plan objectives. | |
|---|---|
| Alternative 1 | 0 acres of habitat enhanced. |
| Alternative 2 | About 1,037 acres of habitat would be enhanced as follows: <ul style="list-style-type: none"> • 286 acres of wildlife opening maintenance; • 177 acres of long-lived conifer establishment through underplanting; |

| Measurement Indicator 11: Acres of wildlife habitat enhanced to meet Forest Plan objectives. | |
|---|--|
| Alternative 2 | <ul style="list-style-type: none"> • 2 acres of wild rice seeding in Erickson Lake; • 30 acres of snag and coarse woody debris creation; and • Up to 542 brush piles constructed from logging slash within the 2,711 acres (1 brush pile per 5 acres on average) are eligible for brush pile placement. |

Measurement Indicator 11: Acres of wildlife habitat enhanced to meet Forest Plan objectives.

Alternative 1: This alternative represents a lost opportunity to enhance wildlife habitat and therefore would not meet the purpose and need for this project. The lack of wildlife opening maintenance would result in a reduction in the amount of habitat for early successional and grassland species as the growth of shrubs and trees continually encroach into these openings. However, at the forest-wide MA 3.1a scale, the percentage of openings on the landscape would remain above the desired condition, at 3.1%.

Alternative 1 would not promote habitat conditions that contain species and structural complexity due to the lack of long-lived conifers. Without underplanting efforts, stand conditions would naturally succeed to overmature conditions under Alternative 1. However, these stands would remain dominated by northern hardwood or red pine. In red pine plantations, many of the stands would continue to have marginal wildlife habitat due to low tree species diversity.

As there are no known wild rice beds in the project area, not seeding wild rice in Erickson Lake would result in a lost potential to enhance habitat for several aquatic dependent species. There would be no progression toward the desired condition for wild rice habitat as outlined in the Forest Plan (p. 2-3).

Alternative 2: Implementing this alternative would enhance wildlife habitat on about 1,037 acres (see Table 20 and Map 6 in Appendix 3). Of this total, approximately 286 acres of wildlife opening habitat would be maintained to set back re-growth of vegetation and provide enhanced habitat for species relying on non-forested conditions. This proposal also consists of a variety of opening sizes, ranging from 2 to 26 acres. Maintenance of the larger openings would address the purpose and need for providing this type of habitat, which is generally lacking on the Ottawa (Forest Plan, p. 2-33). The edges of wildlife openings would provide an interface between the forest and field, which provides additional benefit for other species. These openings often provide green vegetation earlier in the spring, offering forage for a variety of species.

Not all areas that are stated to be openings in our database of record within the project area would be maintained since some have grown in (and therefore are no longer openings) and others are not feasible to maintain (such as difficult access). Therefore, the percentage of openings carried forward within MA 3.1a, in consideration of those retained through the proposed action, would be decreased from the current 3.1% to 2.5% at the MA scale. Maintenance of these existing openings would meet the purpose and need to enhance wildlife habitat, while retaining the percentage within the desired condition range at the MA 3.1a scale.

The construction of brush piles would occur in some aspen clearcuts to provide temporary shelter and denning opportunities for wildlife directly following the harvest (see Table 20). Brush piles help mitigate the effect on wildlife from the sudden change from mature forested habitat to the creation of a temporary opening. Many wildlife species may use brush piles depending on the adjacent habitat types, including bear, rabbits, numerous small mammals, birds and reptiles. This action would meet the Forest Plan objective to develop habitat characteristics suitable for snowshoe hare and prey that benefit certain predators (pp. 2-9 and 2-30).

Planting any long-lived conifer species (i.e., white pine, hemlock) in the understory of red pine, jack pine and other stands, such as northern hardwood would provide tree species diversity in these areas to enhance wildlife habitat in terms of hiding cover, winter thermal cover, foraging, and denning habitat. An increase of the white pine component on the landscape would meet the purpose and need for this project by progressing conditions towards the desired conditions outlined in the Forest Plan (pp. 2-2, 2-8, 2-26 and 2-32).

Establishing wild rice on Erickson Lake would benefit several aquatic species through providing additional cover and new forage for fish and aquatic invertebrates. The outcome of Alternative 2 would be expansion of the quantity of wild rice on the landscape as outlined in Forest Plan direction (p. 2-3). Therefore, this alternative would meet the purpose and need by improved aquatic habitat as well as providing a means for future rice gathering for consumptive use.

2.3.11 Minerals Resource Proposed Actions and Outcomes

Table 21. Mineral Resource Proposed Actions

| Activities | # Sites |
|--|---------------------------------|
| Reclamation measures consistent with planned future uses, including re-shaping and stabilization of steep slopes within gravel/sand pits to prevent erosion and potential safety concerns. | Amber Lake and North Flume Pits |

Table 22. Expected Outcomes – Gravel Pit Reclamation

| Measurement Indicator 12: Acres of pit reclamation to restore areas for other resource needs. | |
|--|---|
| Alternative 1 | 0 acres of pit reclamation would occur. |
| Alternative 2 | Up to 19 acres would be addressed to provide for other resource needs (18 acres in Amber Lake pit and 1 acre in the North Flume pit). |

Measurement Indicator 12: Acres of pit reclamation to restore areas for other resource needs.

Alternative 1: No reclamation measures would take place in Amber Lake or North Flume pits. Under Alternative 1, the slopes would not be addressed, which would lead to further deterioration especially on the sheer slope located in the Amber Lake pit. Without reclamation,

the slopes would continue to erode leading to further destabilization of the forested area at the top of the pits' slopes resulting in safety and resource concerns.

Alternative 2: The outcome of implementing Alternative 2 would include restoring up to 19 acres (18 acres in Amber Lake pit and 1 acre in North Flume Pit) through reclamation measures (see Tables 21 and 22; and Map 6 in Appendix 3). After pit faces are reshaped to a 3:1 ratio, vegetation would re-establish on the site, providing for other uses, such as wildlife habitat or dispersed recreation. Final acreage available for other resource needs would be determined during implementation based on additional survey for the presence of mineral materials.

2.3.12 Cultural Resources Proposed Actions and Outcomes

Table 23. Cultural Resources Proposed Actions

| Activities | Location |
|---|-------------------|
| Restore characteristics of cultural resource site through: <ul style="list-style-type: none"> • Removal of vegetation to protect the integrity of cultural resource site. • Work with the Ontonagon Historical Society to reestablish visibility of the site through repair and maintenance of the split rail fence around the perimeter of the site; removal of understory vegetation to address overgrown conditions; placement of additional signage and the replacement of grave markers. | Interior Cemetery |

Table 24. Expected Outcomes – Enhanced Interpretation Opportunities

| Measurement Indicator 13: Acres managed to enhance opportunities for interpretation. | |
|---|--|
| Alternative 1 | 0 acres would be enhanced. |
| Alternative 2 | Up to 0.1 acres would be addressed to preserve and interpret cultural history of the area. |

Measurement Indicator 13: Acres managed to enhance opportunities for interpretation.

Alternative 1: No activities associated with the Interior cemetery would occur, and therefore Alternative 1 represents a lost opportunity to meet the purpose and need of this project. Trees within the cemetery would not be removed; as these trees mature and fall over, there would be a greater risk of damage to grave markers. The outcome of this alternative would be to maintain the minimal visibility of this site as the activities to improve conditions would not occur. Continued vegetation encroachment into the site, and risk to the integrity of the cultural resources, offers lesser quality interpretation opportunities.

Alternative 2: The outcome of Alternative 2 would progress this cemetery's conditions towards desired conditions by providing a non-damaging use of the Interior cemetery for promoting education and local heritage tourism opportunities in accordance with the Forest Plan (p. 2-5). Activities to reduce the risk of damage to cultural resources and improve visibility of the area

through implementing the proposed actions would enhance opportunities for interpretation for Forest visitors (See Tables 23 and 24). The application of design criteria would ensure avoidance of all known sites to protect this historic site during ground disturbing activities. Any site found during implementation would be subject to the same avoidance measures.

2.3.13 Economic Outcomes

Table 25. Expected Outcomes - Economic Costs and Benefits

| <i>Measurement Indicator 14a: The dollar amount (costs) calculated for planning and implementing the proposed actions</i> | |
|--|--|
| Alternative 1 | \$692,000 |
| Alternative 2 | \$8.0 million |
| <i>Measurement Indicator 14b: The revenue (benefit) generated through timber volume harvested</i> | |
| Alternative 1 | \$0.00 |
| Alternative 2 | \$8.3 million |
| <i>Measurement Indicator 14c: The economic efficiency of the alternatives (cost to benefit ratio)</i> | |
| Alternative 1 | 0; least beneficial alternative |
| Alternative 2 | 1.04; a positive cost to benefit ratio |

Measurement Indicators 14a, 14b and 14c: The cost, revenue and economic efficiency of proposed alternatives.

Alternative 1: As there would be no implementation under Alternative 1, the only costs incurred have been those associated with the expenditure of funds of field surveys and planning costs to date. This alternative would not yield any revenues, or accrue any costs related to implementation within the project area. There would be no timber sale generated receipts to fund habitat improvement projects. Similarly, transportation system refinements accomplished through timber sales or with receipts from timber sales would not occur thus leaving road-related resource damage concerns unresolved.

This alternative represents a lost economic opportunity to increase the growth and quality of timber. As such, the future quantity and quality of timber value would be reduced. Over time, there is a risk that timber value may decrease as stands continue to age and become prone to insect and disease problems if not treated. This alternative would not support the purpose and need for supporting the local economy as no supply of forest products would be provided under this alternative. Costs incurred to date for the planning of this project ranks Alternative 1 as last in economic efficiency when compared with the action alternative.

Alternative 2: This alternative is the most economically efficient as it would provide benefits to the local economy, thus meeting the purpose and need of this project (see Section 1.3). Timber sale contracts under this proposal would help to secure employment for local loggers and logging dependent industries, and supply saw log and pulpwood supplies to area mills. As displayed in Table 25, the benefits of this project (\$8.3 million) outweigh the costs of implementation (\$8.0

million), resulting in a benefit to cost ratio of 1.04. This calculation already discounts the costs of project planning incurred to date.

Alternative 2 would support jobs in other local businesses and industries in the communities that provide products and services to those engaged in harvesting or processing timber. Timber sale-generated receipts would provide potential funds available for use in intangible public benefits, such as improved water quality and fish and wildlife habitat improvement projects.

3.0 Environmental Impacts of the Alternatives

This chapter describes the unintended environmental consequences (Forest Service Handbook 1909.15 section 12.4) - also referred to as effects or impacts - on the resources within the project area. The analysis is specific to the measurement indicators identified (see Section 2.3), and within the bounds of analysis identified (see Tables 27 and 28). This chapter also forms the scientific and analytic basis for the comparison of the proposed alternatives outlined in Section 2.3.

3.1 Analysis Framework

To facilitate the interdisciplinary analysis of this project, the ID Team and Responsible Official developed a framework for their analysis. This analysis framework document establishes analysis assumptions, identifies measurement indicators and analysis boundaries, and defines the depth and detail of analysis necessary to aid the Responsible Official in making his findings (project file document 231). The ID Team developed the analysis framework based on comments received in scoping, their professional knowledge of potential environmental impacts, and other legal requirements.

3.1.1 Forest Plan Analysis

The Interior Project is tiered to the analysis performed, and the information disclosed, for the Forest Plan; which includes its FEIS, Record of Decision and supporting documents located in the administrative planning record. Management direction for MAs 3.1a and 8.1 and for the Ottawa as a whole has previously been decided in the Forest Plan. Therefore, broad-scale issues of management direction are outside the scope of this analysis and will not be addressed. The Record of Decision states (p. 36), “By tiering to the FEIS, the Ottawa will make use of this Forest-wide analysis to streamline environmental analyses for project-level decisions. Revisiting landscape or Forest-wide scale issues and effects will not be necessary, because those effects have already been considered and disclosed in the FEIS.”

As many of the larger-scale effects have been addressed in the analyses for the Forest Plan as disclosed above; it allows us to narrow our EA focus to the site-specific effects of implementing the Interior project. The purpose and need for this project was developed in consideration of the Forest Plan’s analysis documentation. Therefore, the proposed actions have been developed to comply with the direction of the Forest Plan and the Interior Project’s proposed actions would maintain or progress conditions towards the desired conditions of

MAs 3.1a and 8.1. In addition, project design criteria have been developed to reduce or eliminate environmental effects and resolve concerns.

The Forest Plan's FEIS analyses predicted the effects of resource management for the estimated two-decade life of the Forest Plan, which began in June 2006 (Forest Plan, Appendix E, page E-1). The Record of Decision states (p. 36), "The FEIS for the 2006 Forest Plan considers and evaluates the total management program that likely would be necessary to implement the objectives of the 2006 Forest Plan as well as the potential effects of establishing the desired conditions envisioned for this Forest Plan. Therefore, in essence, the FEIS is a cumulative effects document, because it analyzed the total of activities that may be expected in the first decade (and longer term) and disclosed the Forest-wide effects of those activities considered in total."

The excerpt above points out a key statement regarding the effects of establishing the desired conditions at the forest's landscape scale. Given that the Alternative 2 was designed to maintain/progress conditions towards these desired conditions (specifically for MAs 3.1a and 8.1 in the project area), the Interior analysis does not reiterate all known effects of implementation, particularly where, based on experience from similar past projects, and Forest Plan analysis, we know these effects are anticipated to be minimal. These analyses have already been undertaken, and that information is available in the associated documentation for the Forest Plan. Instead, this EA focuses on the outcomes of the implementing Alternative 2, and the disclosure of effects for each alternative.

3.1.2 Resource Analyses and Assumptions

The analysis framework includes the following assumptions, which are applicable to all resources. Additional information is outlined in the project file's Analysis Framework.

- The analysis is based upon several laws, regulations and policies for which a determination for project compliance is required for the Responsible Official's decision-making process (see Section 1.1). All contract clauses, best management practices, operating restrictions, and design criteria (see Appendix 1) would be implemented.
- This analysis is tiered to the Forest Plan; and its Final Environmental Impact Statement and Record of Decision. All Forest Plan standards and guidelines would be followed. No site-specific amendments are proposed. Many of the larger-scale effects of implementing the Forest Plan have been addressed there-in, which allows the Interior project's analysis to be site-specific. The documentation supporting these analyses in the Forest Plan's administrative record and associated Monitoring and Evaluation Reports are also incorporated by reference.
- The analysis incorporates by reference, other applicable Ottawa National Forest projects, and their project files, as follows: (i) the Decision for the 2007 Comprehensive River

Management Plan; (ii) the programmatic Non-Native Invasive Plant Control Project; and (iii) the site-specific projects discussed in Section 3.3.

- Analysis is based on the ID Team’s review of existing conditions through field surveys; aerial photographs; topographic maps; Ottawa National Forest cover type mapping; ecological landtype phase mapping; Forest geographic information system data; other Forest databases as applicable; pertinent agency manual and handbook direction; professional expertise; and relevant available scientific literature (see project file references).
- The analysis is based on the best available information and is described with sufficient level of detail needed for the Responsible Official to make a determination about the significance of the effects of the proposed alternatives. All calculations used in the analysis are estimated and subject to change based upon these implementation needs. Exact location and amount of any activities can vary upon implementation due to the implementation of design criteria.

3.1.3 Analysis Boundaries for Direct and Indirect Effects

Table 26 outlines the analysis boundaries, and rationale for using these boundaries, in terms of the direct and indirect effects per resource. Cumulative effects are discussed in Section 3.3.

Direct and Indirect Effects - A direct effect occurs at the same time and place where an action is implemented, while an indirect effect occurs at a later time or a distance from the site of implementation. Both direct and indirect effects are changes that could occur to the existing condition if an alternative was implemented. The bounds outlined in the following table are defined in space, or the extent that the effect would occur (such as the project area); and time, or the duration that an effect is expected to last (such as the implementation timeframe for a proposed activity). Those with similar bounds of analysis have been grouped in the table; however, these resources are discussed separately in this section.

Implementation of the vegetation management activities would be expected to begin in 2015 and continuing through 2023, which assumes that timber sales would occur every year within this timeframe. For this analysis, implementation is based upon the estimated timber sale schedule (e.g., year of timber sale offer). The actual, timber contract implementation timeframe is subject to change due to several factors, such as the effects of weather and supply-demand markets. A three year contract timeframe has been added to the timeline for completion of each timber sale; and therefore, for the purposes of this analysis, completion of the last timber sale is expected to occur by the year 2026.

The effects of implementing proposed actions can be reduced, minimized or eliminated through the implementation of design criteria (see Appendix 1 for a project-specific list). These design criteria are a set of parameters, or instructions, for how the project is to be designed to ensure that actions are implemented in a manner that protects natural resources. Design criteria are

developed in an interdisciplinary fashion, using professional judgment, which includes knowledge of the existing conditions; an understanding of the anticipated effects of the proposed actions; the Forest Plan’s direction, especially those standards and guidelines designed to guide management practices for maintaining/progressing conditions towards those desired conditions outlined in the Forest Plan and CRMP; monitoring and evaluation data and findings; best available science and relevant literature; and the established parameters of best management practices as well as operating needs and restrictions.

Table 26. Bounds of Analysis for Direct and Indirect Effects by Resource Area¹⁵

| Resource | Extent of Effects (where the effect would occur) |
|---|---|
| Air Quality | The project area as well as surrounding communities (Paulding and Bruce Crossing), which includes up to a 4 mile radius. The air quality impacts analysis takes into consideration the closest sensitive receptors where air quality could be impacted from smoke generated through the use of prescribed fire. |
| Aquatic and RFSS Fish | The streams and lakes within, as well as upstream and downstream, of the project area boundary, because the proposed activities have the greatest potential to directly influence water quality within these spatial bounds. |
| RFSS Plants | The treatment stand scale (e.g., area addressed through the vegetation proposal) was used for all listed plant species because this is where the direct and indirect effects would occur to plant habitat. |
| RFSS Wildlife, Cultural Resources; Non-native Invasive Plants and Visuals | The project area boundary is used since the effects of project implementation are not expected to effect these resources outside the project area. However, bounds of analysis can vary dependent upon wildlife species as outlined in the Biological Evaluation (see project file document 240). |
| Soils | Effects to the soil resource are reasonably confined to the soil directly beneath where the disturbance factors are taking place. Therefore, the bounds of analysis is the portions of the Ecological LandType Phases (ELTPs) that fall within the project boundary. |
| Resource | Duration of Effects (when the effect would occur) |
| Air Quality | 2015 to 2031. Effects to air quality are anticipated to occur concurrently with fuels management actions that involve prescribed fire. The timeframe for the use of prescribed fire has not been solidified; however, the implementation timeframe represents when there would be a cause and effect relationship between the use of prescribed fire and effects to air quality. Five years has been added to the implementation timeframe for those areas where prescribed fire would be used post-harvest to address logging slash buildup. |

¹⁵ Additional information describing the rationale for spatial and temporal bounds selected is located in the project file’s analysis framework documentation.

| Resource | Extent of Effects (where the effect would occur) |
|---|--|
| Aquatic Resource and RFSS Fish | 2015 to 2028. Effects to water quality would occur during the time of project implementation as this is when the direct cause and effect relationship between the proposed actions and the aquatic resources would likely be seen. Two years has been added to the implementation timeframe for sediment-producing actions, such as culvert replacement, where effects to water quality would dissipate within 2 years after implementation. |
| RFSS Plants; RFSS Wildlife; Cultural Resources; Non-native Invasive Plants; and Soils | 2015 to 2026. This timeframe coincides with the anticipated implementation and completion of this project. During this period of time, there would be a direct cause and effect relationship between the proposed actions and effects, or risk, to resources. |
| Visuals | 2015 to 2031. This timeframe coincides with the anticipated implementation and completion of this project (2015 to 2026). The direct/indirect effects of vegetation management are anticipated to occur in the five years following project implementation. |

3.1.4 Comparison of Effects

The resource effects summaries in the following table is based on the measurement indicator developed by the ID Team to measure the effects of implementing the proposed alternatives. These indicators have been assigned to resource areas that would be affected by implementation of actions. Measurement indicators provide a way for the specialist to measure a change from existing conditions (Alternative 1) to the future conditions under the Alternative 2 to show either achievement of a purpose and need, compliance with law or policy, or respond to other internal or external concerns.

Table 27. Summary of the Resource Effects from Implementing the Proposed Alternatives by Measurement Indicator

| <i>Measurement Indicator 15: Extent to which air quality impacts from prescribed fire use could affect the communities of Paulding and Bruce Crossing.</i> | | |
|---|---------------|---|
| Air Quality | Alternative 1 | No effect to the air quality around the communities of Paulding and Bruce Crossing because no prescribed fire would occur. |
| | Alternative 2 | Potential smoke impacts from proposed burning in the project area could occur and temporarily affect communities up to four miles downwind. Smoke management techniques would be implemented to offset these effects. |

| | | |
|---|---------------|---|
| <i>Measurement Indicator 16: The degree to which water quality is enhanced from project implementation.</i> | | |
| Aquatic Resources | Alternative 1 | No change to existing water quality. |
| | Alternative 2 | Minor, positive and negative localized effects on water quality are anticipated. |
| <i>Measurement Indicator 17: The degree to which cultural sites are protected from project implementation.</i> | | |
| Cultural Resources | Alternative 1 | No impact to cultural resources would occur because no activities would take place. |
| | Alternative 2 | No impact to cultural resources from project implementation would occur due to the implementation of design criteria that would ensure known and newly located sites are avoided. |
| <i>Measurement Indicator 18: The number of acres of ground disturbance at risk for NNIP establishment</i> | | |
| Non-native Invasive Plants | Alternative 1 | 0 acres of ground disturbance. However, there is a risk of NNIP establishment from ongoing activities and natural processes would continue to spread NNIP. |
| | Alternative 2 | 16,260 acres. The ground disturbance and increased light from vegetation management would favor NNIP establishment. Design criteria would be used to limit the potential for increased NNIP spread from project activities. |
| <i>Measurement Indicator 19: Potential for loss of Regional Forester's Sensitive Species (RFSS) viability.</i> | | |
| Plant, Aquatic and Wildlife RFSS | Alternative 1 | There would be no loss of RFSS viability. The presence of ongoing activities such as road maintenance and recreational uses, and continuation of existing conditions (e.g., no habitat enhancement) would result in a determination of "may impact individuals but is not likely to cause a trend to federal listing or loss of viability" (MII) for five aquatic species and 10 wildlife species and five aquatic species. |
| | Alternative 2 | There would be no loss of RFSS viability. Implementation of the proposed activities would lead to a MII determination for 24 plant species, five aquatic species and 14 wildlife species. Design criteria would reduce impacts and help protect RFSS habitat. |
| <i>Measurement Indicator 20: The percentage of area at a slight, moderate or high risk rating for detrimental impact due to proposed harvest and hazardous fuels reduction activities.</i> | | |
| <i>Measurement Indicator 21: Acres of land permanently or temporarily removed from the productive land base.</i> | | |
| Soils | Alternative 1 | There would be no change to the existing soil resource conditions. Instances of historical compaction would continue to be naturally mitigated. |

| | | |
|---|---------------|--|
| <i>Measurement Indicator 20: The percentage of area at a slight, moderate or high risk rating for detrimental impact due to proposed harvest and hazardous fuels reduction activities.</i> | | |
| <i>Measurement Indicator 21: Acres of land permanently or temporarily removed from the productive land base.</i> | | |
| Soils | Alternative 2 | Table 28 displays the findings for the area at risk for detrimental impacts under Alternative 2. Overall, 72.4% (13,616 acres) has a slight risk of erosion and 43.8% (8,238 acres) has a low risk for compaction and rutting. Resource concerns would be addressed through implementation of design criteria, best management practices and operating restrictions. About 44 acres of land would be removed from the productive land base. |
| <i>Measurement Indicator 22: The degree of impact to the visual quality objectives from project implementation.</i> | | |
| Visual Resource | Alternative 1 | The visual resource would be minimally impacted over time as natural ecological changes in the landscape take place to change the current visual appearance. There is a risk to scenic values if hazardous fuels conditions are not addressed (e.g., wildland fire events may occur). |
| | Alternative 2 | The visual resource would be minimally impacted over time as natural ecological changes in the landscape take place to change the current visual appearance. There is a risk to scenic values if hazardous fuels conditions are not addressed (e.g., wildland fire events may occur). The visual resource in proposed management activity areas would be minimally impacted when design criteria for each VQO for each management area is applied. Over time, the resulting conditions in proposed stands would add to the scenic quality, particularly in riparian areas where the planting of long-lived tree species would occur. |

3.2 Direct and Indirect Effects

This section outlines the unintended consequences, or effects, of implementing the proposed alternatives. The ID Team performed analyses for the following resources to disclose potential beneficial and adverse impacts from these alternatives, and meet legal requirements, such as for the Endangered Species Act. A detailed analysis is not included for these resources because either they were not raised as potential issues during public scoping or the impacts are expected to be discountable, inconsequential, or non-existent. The anticipated effects are based upon professional judgment and knowledge of the extent of effects that can be expected from past experience for the planning and implementation of similar projects, in similar areas when design criteria are applied.

In summary, the resource analyses have concluded that implementation of the proposed actions considered in this section would result in a range of effects from no effect to minor, negative and/or positive effects. Most effects are anticipated to be short-term, and primarily addressed through the implementation of design criteria.

3.2.1 Air Quality

Measurement Indicator 15: *Extent to which air quality impacts from prescribed fire use could affect the communities of Paulding and Bruce Crossing.*

Alternative 1: Air quality within the Ottawa is generally good (FEIS, p. 3-27). No changes to air quality would occur as no actions would be implemented. However, as Alternative 1 does not treat hazardous fuels conditions, it poses a risk to air quality from a wildland fire. In this event, the accumulation of hazardous fuels would consume more fuel and produce more smoke impacts to local communities than a prescribed fire, which is regulated to limit these types of impacts.

Alternative 2: Reduction of hazardous fuels, such as the management of post-harvest slash, could be addressed through prescribed fire if conditions are deemed favorable for use of this tool. The stands identified for hazardous fuels reduction are of different sizes, various fuel types, and scattered throughout the project area. The smoke impact modeling assumed an area of 175 acres of prescribed fire, with heavy slash fuels, to be the largest single impact that could be expected. This acreage represents the maximum amount of prescribed fire that could be performed in one day and in one location. The modeling results showed that at any given point within the project area, an area of four miles downwind would encompass the “critical smoke impact area” or the area that could be impacted by temporary smoke effects if a prescribed fire was undertaken. Further downwind, communities may see some smoke, but it would not be at a level that would cause adverse impacts to air quality.

Depending on the site-specific location, the communities of Bruce Crossing and Paulding could be temporarily affected by smoke produced in the project area. These potential impacts could easily be mitigated through the implementation of smoke management techniques in prescribed burn plans. Example smoke management techniques could include: burning when the winds take the smoke away from these communities, using firing techniques that cause the smoke to lift, splitting areas into smaller burning blocks on different days, and/or implementing smoke monitoring on a burn day. These measures would ensure that the temporary impacts to air quality would not exceed the air quality thresholds outlined in the Environmental Protection Agency’s National Ambient Air Quality Standards.

3.2.2 Aquatic Resource

Measurement Indicator 16: *The degree to which water quality is enhanced from project implementation.*

The State of Michigan sets water quality parameters for all surface waters within the state, including wetlands. Water quality within the project area has been rated good to excellent, with the exception of fish consumption advisories for Bond Falls Flowage due to mercury.

Alternative 1: No new ground disturbing activities would occur under this alternative. There would be no change to the existing state of the aquatic resource, and therefore, no change to the existing water quality would occur.

Alternative 2: The action alternative is expected to have no, minimal or negligible effects to water quality. This determination is based on professional judgment and knowledge of the range of effects found in projects with comparable landscape conditions where similar actions and design criteria have been proposed or implemented (see project file, documents 525 and 526). Effects on aquatic resources generally occurs through sedimentation and resulting impacts to water quality, which is directly associated with soil and slope characteristics. At the project level, the soil and slope conditions of a site is used to determine the most appropriate protective measures to minimize effects.

Impacts to aquatic resources from proposed timber management activities are avoided or mitigated through the application of design criteria (see Appendix 1). Minor, localized effects on water quality are anticipated to occur from temporary and system road construction, OHV trail construction, and use of prescribed fire. However, these short-term effects would be offset by a reduction in sedimentation as outlined in the outcomes of the proposed action (see Section 2.3).

Wild and Scenic River corridor: There would be no direct and adverse effect to free-flowing conditions of the Middle Branch Ontonagon River from specific activities proposed since activities allow for natural river flow and natural processes to be maintained. Habitat restoration and enhancement projects would protect water quality river value. Section 7 documentation for the Wild and Scenic River Act Evaluation Procedure states that placement of large woody material in the Middle Branch Ontonagon would result in a small and short term increase in turbidity. However, water quality standards would still be met and this activity would not cause a decline in water quality (see project file document 527).

There would be a positive effect on water quality within the project area under Alternative 2. Water quality would remain within state parameters.

3.2.3 Cultural Resources

Application of law, policy and direction provide the protection of cultural resources. Management activities are subject to regulations outlined in Section 106 of the National Historic Preservation Act of 1966, as amended and promulgated by 36 CFR 800, to address effects to cultural resources. The project's consistency with these laws, as well as the Forest Plan, is taken into consideration for this project's FONSI (see Section 4).

Measurement Indicator 17: *The degree to which cultural sites are protected from project implementation.*

Direct/Indirect Effects

Alternative 1: No direct or indirect effects are anticipated for cultural resource sites in the project area since the proposed vegetation management and other actions would not be implemented.

Alternative 2: Implementation of this alternative has the potential to adversely affect cultural resources due to the proposed timber harvest and associated roadwork. However, implementation of design criteria would result in avoiding known and newly located sites in treatment areas (Appendix 1). Therefore, no direct or indirect effects to cultural resources from project implementation are expected.

As no direct or indirect effects would occur under either alternative, there are no cumulative effects for this resource.

3.2.4 Non-Native Invasive Plants

Executive Order 13112 directs Federal agencies to address non-native invasive species, which includes the identification, prevention and control. Forest Service Manual 2904.08 requires that the Forest Service determine the risk of invasive species introduction¹⁶ or spread¹⁷ as part of project planning and analysis process. Consistency of this project with policies, as well as the Forest Plan, is taken into consideration for this project's FONSI (see Section 4).

Measurement Indicator 18: *The number of acres of ground disturbance at risk for NNIP introduction or spread.*

Direct/Indirect Effects: Surveys have resulted in the discovery of several non-native invasive plant (NNIP) infestations within the project area (see project file document 241). The Forest Service emphasized treatment of multiple sites of honeysuckle, Japanese barberry and Japanese hedge-parsley in 2013, as authorized by the 2005 Ottawa National Forest's NNIP Control Project (see project file references). The project area is particularly at risk of garlic mustard, given the proximity to nearby infestations on the Forest and in Wisconsin. Exotic earthworms are permanently changing soil profiles, consuming the organic horizon (decomposing leaf litter) as they move through the Northwoods (Hale et al. 2006). Plant surveys in the project area found earthworms well established throughout most or all of the project area.

Alternative 1: There is a low risk for NNIP introduction or spread under Alternative 1 since no ground disturbing activities would occur. The lack of ground disturbance should favor native plants. Weeds would be expected to spread from vegetative propagation and seed dispersal and by wind, birds, wildlife, people, and motor vehicles. No roads would be constructed, reconstructed, or decommissioned, so changes in roadside weeds would be limited to the spread or introduction of NNIPs from existing activities, including vehicle use. Without addressing hazardous fuels, there is a risk of NNIP spread if a wildland fire event occurs due to the ground disturbance and resulting conditions that fire can create.

¹⁶ Introduction mean the arrival and growth of a new non-native invasive species within an area.

¹⁷ Spread means an existing infestation getting large or moving to nearby areas.

Alternative 2: The risks of introducing and spreading NNIP are reduced through design criteria and standard contract provisions, including the cleaning of equipment before arriving on the National Forest and when moving from infested to uninfested areas. Generally, normal forested understory plants are expected to return within five to ten years (Metzger and Schultz 1984 and Kern et al. 2006). The Forest Service will continue surveying and monitoring for infestations of the more invasive plants and treat the high priority sites, as we have been accomplishing for several years (2008 M&E Report, pp. 20-22 and 2009 M&E Report, pp. 26-27).

There is an increased risk for NNIP introduction and spread on 16,260 acres under Alternative 2 due to ground disturbing activities occurring as part of timber harvest and additional road and trail construction. This number includes timber harvest (except winter harvest), plus the acreage associated with additional road and trail construction. Most of the proposed new road (9 miles) and trail construction (1 mile) is within timber harvest stands, so only 1.2 miles or 4 acres (not already accounted for) have been added to the measurement indicator. The proposed design criteria and ongoing control work for NNIPs would reduce the risk of NNIP introduction and spread from the activities associated with this alternative.

Our experience, including 14 years of mapping NNIP infestations, has been that vegetation management projects such as this one do not contribute to the introduction or spread of high priority NNIP. In general, our highest priority NNIPs appear to be spread by wildlife and introduced by recreational visitors. Vegetation management may increase NNIP presence due to soil disturbance, increased amount of sunlight within stands, and introductions from equipment. In general, the treated areas would experience an increase in “weedy” plants that favor disturbed conditions and sunlight, especially along skid trails, logging roads, and landings (Watkins et al. 2003). These weedy plants may include our high priority invasive species, such as honeysuckle, Japanese barberry, Japanese hedge-parsley, and garlic mustard.

The proposed road and trail construction would present the greatest risk of introducing and spreading invasive plants. A design criterion requiring that equipment be cleaned should minimize the risk of NNIPs being introduced. However, the shoulders of newly constructed roads would likely support weeds in areas where they are currently absent. Vehicle travel on new roads and trails would favor exotic and weed plants, perhaps including NNIPs (Rooney 2005, Von der Lippe and Kowarik 2007).

Road reconstruction could likewise introduce some new weeds, and the ground disturbance could cause a temporary increase in weeds along the road shoulders. These effects would be expected to be minor, as the roadsides already support frequent, scattered weeds, as do similar roads throughout the Ottawa and State. Road decommissioning may result in a short-term increase in weeds from the ground disturbance, but should result in a long-term reduction in weeds by ending vehicle use (for those subject to use) and allowing the road to become reforested.

Opening roads to OHVs and passenger vehicles would contribute to the risk of NNIP introduction and spread within the project area. This is especially true in areas where no road or trail exists now (e.g., one mile of new OHV trail construction, one mile of new road construction to be open to all vehicles and 0.3 miles of snowmobile trail construction).

The largest change would be allowing OHVs on Forest Road 5320 (currently open to just passenger vehicles). As OHVs often are used off-roads, they are more likely to pick up plant seeds and parts, so allowing them onto this road would slightly increase the risk of NNIP introduction on the shoulders of Forest Road 5320. Overall, many more roads and trails would be closed to vehicles, decreasing the risk of NNIP introduction and spread within the project area.

Reclamation of gravel pits would improve the habitat conditions, reduce disturbed soil, and favor native plants instead of exotic plants. Upland openings often have more exotic plants than upland forests, so the proposed 286 acres of opening maintenance would favor exotic plants, perhaps including NNIPs like exotic honeysuckle. Surveys for this project have helped map several new sites, so the number and size of NNIP infestations in openings would likely decline in the coming years.

3.2.5 Regional Forester's Sensitive Species

The Forest Service is responsible for protecting all Regional Forester's Sensitive Species (RFSS). This section provides a summary of the Biological Evaluation's findings for RFSS. "Sensitive" species include "those plant and animal species identified by a Regional Forester for which population viability is a concern" (Forest Service Manual [FSM] 2670.5). Biological evaluations (BEs) must arrive at one of four possible determinations: **1**) "no impacts" (NI; where no effect is expected); **2**) "beneficial effects" (BEN; where effects are expected to be beneficial); **3**) "may impact individuals but is not likely to cause a trend to federal listing or loss of viability" (MII; where effects are expected to be insignificant [e.g., unmeasurable], or discountable [e.g., extremely unlikely]; or **4**) "likely to result in a trend to federal listing or loss of viability", (LRT; where effects are expected to be detrimental and substantial). The findings of the BE are taken into consideration for this project's FONSI (see Section 4). The following is a summary of the findings; the entirety of the BE is in the project file (see document 240).

Measurement Indicator 19: Potential for loss of RFSS viability.

Direct/Indirect Effects for RFSS Plants

Alternative 1: The No Action alternative is determined to have no impact on any sensitive plant species or habitat. Proposed project areas were extensively surveyed in 2012 and 2013, and most areas contain no sensitive plant populations. The project area contains a variety of habitats suitable habitat for rare plants, and taking no action would not impair the suitability of these habitats. Ongoing activities within the project area, including recreation, vehicle use, and road maintenance, would be expected to have no impact on any sensitive plant species.

Alternative 2: The BE discusses effects to 66 species of RFSS plants known or likely to occur on the Ottawa. The greatest risk to RFSS plants from implementation of Alternative 2 are vegetation management, road construction and road reconstruction. All these populations would be excluded from any nearby proposed actions through application of design criteria (see Appendix 1). However, there is a risk of impact to RFSS plants if habitat is available for any undiscovered plant populations. For the following species, a risk of impact is associated for the

routes proposed for hazardous fuels reduction, prescribed fire, designated public access, road construction and reconstruction.

Implementation of Alternative 2 would result in a MII determination for the following plant species: *Botrychium ascendens* (Trianglelobe moonwort), *Botrychium michiganense* (Western Moonwort), *Botrychium minganense* (Mingan's Moonwort), *Botrychium mormo* (Goblin Fern), *Botrychium oneidense* (Blunt-lobed Grapefern), *Botrychium rugulosum* (Ternate Grapefern), *Botrychium simplex* (Little Grapefern), *Cardamine* (*Dentaria*) *maxima* (Large Toothwort), *Disporum hookeri* (Fairy Bells/Drops Of Gold), *Huperzia selago* (Fir Clubmoss), *Juglans cinerea* (Butternut), *Panax quinquefolius* (American Ginseng), *Phegopteris hexagonoptera* (Broad Beech Fern), *Thelypteris noveboracensis* (New York Fern), *Vaccinium cespitosum* (Dwarf Bilberry), and *Usnea longissima* (Methuselah's Beard Lichen).

Direct/Indirect Effects for RFSS Fish and Aquatic Invertebrates

Alternative 1: The No Action alternative is determined to have negative indirect impacts to aquatic RFSS resulting from habitat degradation from sediment carried into streams from erosion at user-created fords, improperly placed or undersized culverts, and roads situated near streams. This continued sedimentation can cover suitable habitat, fill in pools, widen streams and decrease the overall habitat complexity within the streams. The amount of in-stream LWM would remain low, as would the habitat it creates. The long-lived tree species component in these areas would decline, reducing shade and recruitment of in-stream LWM. Small openings, which are habitat for adult forcipate emerald dragonflies, would continue to be lost as these sites become reforested. However, riparian areas would continue maturing, and over time (i.e. 50-100 years), they would have larger trees, more structural diversity, and some disturbance-created openings, and begin contributing LWM to the area's streams.

The BE determined that Alternative 1 would result in a MII for the following RFSS species: *Clinostomus elonatus* (reside dace – fish species); *Lasmigona compressa* (creek heelsplitter – mollusk species); *Somatochlora forcipata* (forcipate emerald dragonfly); *Ophiogomphus howei* (pygmy snaketail dragonfly); and *Gomphus quadricolor* (rapids clubtail dragonfly).

Alternative 2: Aquatic habitat would move toward the desired condition, and the amount of habitat available for aquatic species would increase. The greatest risks to RFSS are road stream crossing structure replacement or removal, LWM additions, and streambank restoration. Project design criteria and best management practices would reduce these short-term negative impacts. However, these projects are expected to produce long-term beneficial impacts by reducing sedimentation, restoring habitat, and providing aquatic organism passage. Riparian long-lived tree planting and release would also benefit aquatic RFSS by eventually providing large trees that would shade streams and be available for future LWM recruitment.

Project design criteria would reduce or eliminate the risk of sediment reaching waterbodies from timber harvest and hazardous fuels projects. Design criteria would ensure that coldwater resources are protected by providing a 400-foot no aspen regeneration buffer around certain streams to reduce the risk of the influx of beaver, therefore preventing the subsequent damming and warming of these streams.

The BE determined that Alternative 2 would result in a MII determination for the same five RFSS listed under Alternative 1.

Direct/Indirect Effects for RFSS Wildlife

Alternative 1: No adverse effects or loss of RFSS viability would occur to any RFSS terrestrial wildlife under the No Action Alternative. The project area contains a variety of suitable habitat for many of the RFSS terrestrial wildlife species, and some species have been documented to occur in the project area. While no activities would occur under these alternative, ongoing disturbances and threats pose some impacts to certain species, such as road maintenance, disturbances from recreational and human uses and environmental threats may pose some threats and due to indirect positive and negative impacts as existing habitats naturally succeeds and change suitability.

The BE determined that Alternative 1 would result in a MII determination for the following RFSS species: *Canis lupus* (gray wolf); *Perimyotis subflavus* (tri-colored bat); *Myotis lucifugus* (little brown myotis); *Falcapennis canadensis* (spruce grouse); *Gavia immer* (common loon); *Haliaeetus leucocephalus* (bald eagle); *Oporornis agilis* (Connecticut warbler); *Picoides arcticus* (black-backed woodpecker); and *Clemmys insculpta* (wood turtle). In addition, beneficial impacts, or a BEN determination, would result for the *Buteo lineatus* (red-shouldered hawk); *Hemidactylium scutatum* (four-toed salamander); and *Pieris virginianensis* (West Virginia white butterfly) because of the indirect, beneficial impact of an improvement of existing conditions through natural succession and/or the maintenance of quality of suitable habitat.

Alternative 2: The proposed actions would have both positive and negative indirect effects as habitat conditions change after harvest activity. The greatest impacts would occur from disturbances to wildlife present during implementation of the proposed timber harvests and other actions. Effects from such disturbances would vary depending on the mobility and sensitivity of the species. Indirect effects would also occur to some species suitable habitat, as harvests change the distribution and age classes of habitat. Some wildlife would relocate temporarily or permanently to more suited areas. Overall, effects would not likely affect the population viability of any RFSS wildlife species.

Actions proposed would change the distribution of habitat types and age classes across the project area. This is not expected to have any adverse impact on the availability of wildlife habitat because design criteria implementation, (including buffers, seasonal restrictions, timing of harvest, and other actions), as well as habitat enhancement proposals; the mobility of terrestrial wildlife; and the availability of habitat outside of specific treatment areas, as well as outside the bounds of the project area.

The BE's findings for Alternative 2 are the same for all those receiving a MII determination under Alternative 1, as well as a MII determination for the following additional species: red-shouldered hawk, four-toed salamander, West Virginia white butterfly, and *Phyciodes batesii* (tawny crescent butterfly).

3.2.6 Soils

Effects to soils are taken into consideration in this project’s FONSI (see Section 4). Specifically, soils are addressed in terms of whether this project avoids impairment of site productivity and provides for conservation of soil and water resources as required by the National Forest Management Act. This Act also requires that this project comply with Forest Plan direction.

Measurement Indicator 20: *The percentage of area at a slight, moderate or high risk rating for detrimental impact due to proposed harvest and hazardous fuels reduction activities.*

Measurement Indicator 21: *Acres of land permanently or temporarily removed from the productive land base.*

Direct/Indirect Effects

Alternative 1: There would be no risk of detrimental impacts to the soil resource under Alternative 1 because no ground disturbing activities would occur. With no system or temporary road construction, there would be no loss of land from the productive forest. However, any existing damage to the soil resource would persist due to the lack of road improvements, and unclassified roads located on poorly-suited soils. This is especially true where motorized access is currently designated, posing risks for erosion, rutting, sedimentation and effects to soil productivity.

Alternative 2: The vegetation management, hazardous fuels reduction (including use of prescribed fire), road construction, snowmobile and OHV trail construction are anticipated to impact to the soil resource. All other activities proposed are anticipated to have a beneficial effect (reduced risk to soil resource) or no effect to the soil resource (either no impacts anticipated, or minimal impacts would be eliminated through the application of design criteria).

Vegetation Management/Hazardous Fuels Reduction - The following summarizes the potential soil disturbance resulting from management activities. These ratings noted are based on the most limiting condition of the soil, and do not factor in the requirements and guidelines put in place to protect the soil resource. The numbers displayed are based on the maximum anticipated acreage; actual acres of harvest would likely be less once design criteria are applied. As displayed in Table 28, the majority of the project area is comprised of either moderately or well suited soil, with a slight risk for erosion and displacement. For those areas of poorly suited soil, or where a risk rating is severe or very severe, the application of design criteria would further reduce risk.

Table 28. Area at Risk for Soil Disturbance Due to Vegetation Management¹⁸

| Soil Risk Rating | Percent of Area at Risk of Compaction and Rutting | Acres at Risk |
|-------------------|---|---------------|
| Poorly suited | 13.7% | 2,567 |
| Moderately suited | 41.7% | 7,845 |

¹⁸ The percentage of area at risk does not include application of proposed design criteria, which can reduce this percentage.

| Soil Risk Rating | Percent of Area at Risk of Compaction and Rutting | Acres at Risk |
|-------------------------|--|----------------------|
| Well suited | 43.8% | 8,238 |
| Not rated | 0.8% | 146 |
| Soil Risk Rating | Percent of Area at Risk of Erosion and Displacement | Acres at Risk |
| Very severe | 0.3% | 49 |
| Severe | 6.5% | 1,227 |
| Moderate | 20.8% | 3,904 |
| Slight | 72.4% | 13,616 |

Harvesting trees and removing the merchantable bole and bark, which includes hazardous fuels reduction areas, would remove some nutrients from the treatment areas. However, less than a third of the nutrients are immobilized in the merchantable stem wood and bark. The remainder returns to the soil reserve in foliage, branches, fruits, and roots (Pritchett and Fisher, 1987). Design criteria stipulating the amount of fine woody debris to leave after harvest would help maintain the nutrients on site (Appendix 1). Design criteria have been specifically developed to minimize the removal of woody material from treatment stands in more nutrient poor sites. Soil productivity may also be impacted if sufficient erosion, compaction, rutting, or displacement should occur; however the potential for these effects is low as outlined in Table 28.

Prescribed Fire – The use of fire as a tool has the potential to impact soil productivity. There is no specific acreage planned for prescribed fire (see Section 2.3). The use of fire provides a management option for addressing hazardous fuels (burning of logging slash) and can assist in efforts to regenerate paper birch and oak forest types. These objectives can also be accomplished through mechanical means, or vegetation management as described above. For the purposes of this analysis, it is assumed that prescribed fire could be used within the 987 acres of hazardous fuels reduction or within areas where regeneration of paper birch and oak species is proposed. The 987 acre figure is based on the need to retain logging slash on 2,063 acres of the total 3,050 acres identified for hazardous fuels reduction in MA 3.1a per design criterion 55 (see Appendix 1). No fire use is proposed within MA 8.1. The use of prescribed fire in MA 3.1a would not be used on every acre dependent upon site-specific conditions.

Fire can affect the soil in a variety of ways. General relationships of fire on soil properties are well understood however, the specific area effects are highly variable and depend on the degree of intensity and the duration of the fire, temperature, soil moisture, soil texture, etc. Generally, the severity of fire effects is proportional to the intensity and duration of soil heating. A burn plan would be prepared, which would specify methods and conditions so that a light burn is the result. By limiting the duration and intensity of the burn, soil productivity would be protected in the areas where prescribed fire is used.

Road and Trail Construction – Alternative 2 has a potential to negatively impact the soil resource through both system and temporary road and trail construction activities. Areas of new system road construction or trail construction would no longer contribute to productive forest growth; as such areas would become part of the permanent transportation system. The nine miles of system road construction and the 0.3 miles of snowmobile trail construction would result in the

permanent removal of about 27 acres of land from productive forest for system road and trail construction. Additionally, about one mile of trail construction would occur mostly on existing unclassified or decommissioned roads to provide local connector routes for OHV traffic. Designation of this trail network would increase the risk of soil erosion and sedimentation due to increased motorized use on three acres.

New temporary roads would remove the resource from the productive forest base for the short-term. After their useful life, these temporary roads would be restored to become part of the productive land base once again. Areas along temporary roads may see more vigorous tree regeneration because of reduced competition for resources (Grigal D. F., 2000, p. 171). Temporary roads may be located on poorly suited soils, resulting in an increased risk of soil erosion, rutting, sedimentation, and effects to soil productivity, which would be minimized through construction of winter standard roads on frozen ground (Grigal D.F., 2000, p. 171). When no longer being used for the proposed project, any temporary roads created would be decommissioned using project design criteria and applicable timber sale contract provisions and returned to productive forest land. The five miles of temporary road construction would remove about 14 acres of land from productive forest on a short term basis.

Direct and indirect effects to the soil resource as a result of road and trail construction would be minimal. As stated previously, new system road and trail construction would remove land from the productive forest landbase. System roads and trails within or adjacent to an activity area are considered dedicated land uses and are not considered detrimental soil conditions (Forest Service Manual 2509.18, 2-2550-2012-1). The number of acres of land removed (permanently or temporarily) would occur on approximately 44 acres of the project area. These risks would be minimized through the application of design criteria and contract specifications. Implementation of Alternative 2 would not impair the long-term productivity of the soils within the project area when design criteria are applied.

3.2.7 Visual Quality Objectives

Effects to the project's visual quality objectives are taken into consideration in this project's FONSI (see Section 4). Specifically, visuals are addressed in terms of whether this project provides the desired effects on aesthetic values, and that the project complies with the Forest Plan, as required by the National Forest Management Act.

The visual goals vary depending on the amount of visual variety in a landscape (variety class) and the level of use (sensitivity level) along travel routes, use areas, and water bodies. In the Interior project area, the visual quality objectives (VQOs) for vegetative management fall into four general categories: Retention, Partial Retention, Modification, and Maximum Modification (refer to Forest Plan and Appendix F, Glossary). The VQOs of the Wild and Scenic River corridor are Retention for the Recreational segment and Partial Retention for the Scenic segment as outlined in the Forest Plan (p. 3-81.5). A map depicting the VQO boundaries is in the project file (see document 409).

Measurement Indicator 22: *The degree of impact to the visual quality objectives from project implementation.*

Direct/Indirect Effects

Alternative 1: There would be no direct or indirect effects under Alternative 1 because no activities would be implemented. Thus, there would be no immediate impact to the overall visual appearance of the project. No enhancement to visual variety would occur; natural changes in the environment would affect these values over time. No changes to the Scenic outstandingly remarkable value for the Recreational WSR corridor would occur. However, natural ecological changes in the landscape that occur over time would change the current visual appearance. In addition, there is a risk of degradation to the visual resource if the hazardous fuels reduction project is not implemented and wildland fire event occurs as a result.

Alternative 2: The vegetative management actions in Alternative 2 would impact the visual resource in MA 3.1a; including enhancing and maintaining a variety of forest types as outlined in Section 2.3. There would be temporary impacts to the visual resource during harvest and a period of about five years following management activities. However, the application of design criteria would greatly reduce impacts to the area's visual quality and help to maintain the conditions supporting retention and partial retention VQOs.

Proposed vegetative management projects would help maintain healthy forest resulting in accelerated growth by enabling trees to attain larger diameter during a shorter period of time. Large diameter trees in a forested environment generally are more visually pleasing than dense stands of small diameter wood. Treatments resulting in the harvest of single trees (i.e., selection harvest, intermediate or pre-commercial thinning, or structural improvement) would have and less noticeable effects with visual effects that last one to five years.

Areas receiving clearcut harvest, or other treatments where groups of trees are taken (such as salvage or shelterwood harvest) would be more of a noticeable treatment to the Forest visitor, with effects beginning to diminish five years post-harvest. The same is true for the proposed wildlife openings, however on a much smaller scale. In the short-term, these areas would provide a more varied, diverse, and visually interesting landscape. Areas treated with shelterwood harvest would have slightly less negative effects than clearcut harvest. After shelterwood harvest is complete, the area is expected to become reforested for about five years before the follow-up harvest (removal cut) is performed. With time, the clearcut areas would become reforested and seamless part of the landscape.

Indirect effects of any type of harvest would be evidence of soil disturbance created by log landings and skid trails, and presence of dead vegetation (i.e., slash and brown leaves scattered on the ground) would be more prominent in clearcut areas. For example, areas receiving hazardous fuels reduction activities would have a short-term impact on visuals due to the amount of slash in understories of some stands immediately after treatment. The visual impact would be reduced if this material is removed or addressed through mechanical means (e.g., crushed, chipped). If this material is left on site and burned, the impact to visual quality objectives should lessen with new vegetation growth in six months to two years depending on site conditions. As outlined in Section 2.3, typical vegetation management practices in these stands may address hazardous fuels reduction needs without additional efforts needed. The visual quality objectives

would be impacted in the short-term, but enhanced or maintained, when design criteria are applied about 5 years post-harvest.

The desired conditions for the WSR corridors includes providing conditions that support diverse, dynamic, and complex native vegetation types. In MA 8.1, vegetation management would enhance stand conditions by promoting a big tree character in the future, and in turn, would enhance the Scenery outstandingly remarkable value in the Recreational segment of the Middle Branch Ontonagon WSR. These specific treatments would retain more trees than the typical conditions associated with harvest for timber production. Vegetation treatment within the corridor would not be seen from the Middle Branch Ontonagon River. This is due to the application of project design criteria, which would ensure harvest activities occur at a distance that would maintain the Retention or Partial Retention VQOs. Area topography, as well as no harvest buffers called for in riparian design criteria, would assist in project design so that treatments would be consistent with VQOs. Therefore, the visual quality objectives in the WSR, and the Scenery outstandingly remarkable value would be protected, when design criteria are applied.

3.3 Cumulative Effects

A cumulative effect is defined as an impact on the affected environment resulting from the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions (40 CFR 1508.25). These are effects that overlap in time and space with the effects of the proposed action (FSH 1909.15, Chapter 15.3). Cumulative effects are evaluated to determine if individually minor effects from these actions could collectively result in significant impacts. To evaluate the cumulative effects, the ID Team first identifies the spatial and temporal bounds, or the duration and extent, of the direct and indirect effects of the proposed action. The ID Team then describes the effects of past, present, and reasonably foreseeable impacts that overlap in space and time with the proposed action (see Table 29). These effects, together with the effects of the proposed action, are the cumulative effects. In order to have a cumulative effect, the effects of combined activities must occur within the same bounds of analysis; that is, the same timeframe and same location.

The past activities in the bounds of analysis have contributed to the baseline, or existing, conditions. Though we often cannot measure the specific effects of all past actions, we can determine the result of those effects by evaluating these existing conditions. Therefore, to understand the contribution of past actions for the cumulative effects analysis for this project, some resources used the existing conditions as a representation for the impacts of past actions (as allowed by a 2005 CEQ Memo). One example is using today's transportation system as a representative for all past road development actions that have occurred.

Reasonably foreseeable future actions shown are independent from the Interior Project's Proposed Action, but they are anticipated to occur within the project area during the implementation period for the Interior Project. Authorization of these activities has, or would occur, through separate project decisions and processes. Effects of the future Forest Service activities are not likely to lead to adverse effects that could be meaningfully evaluated based

upon our experience with implementing similar projects. Most of them fall within categories of activities that do not require an EA or EIS because they are known to not typically result in individually or cumulatively significant impacts. The projects are anticipated to result in some beneficial effects (such as reduced erosion and improved watershed conditions from road maintenance activities) that would be incremental to the related beneficial activities in the proposed action.

The duration of the cumulative effects for some resources discussed in this section begin in 2014 as the conditions that exist today already account for the past and present actions that have been completed to date. In addition, the duration of effects for reasonably foreseeable future actions have been set at 5 years (years 2014 to 2019) to represent the Ottawa’s out year planning schedule, with exception of those known future projects outlined in Table 29. This timeframe has been used when no other actions are anticipated to occur in the future, based on the location and timing of projects shown on the tentative planning schedule. Using this time period also assists to account for those projects currently being planned that are listed on the Forest’s Schedule of Proposed Actions (see project file).

The anticipated effects are based upon professional judgment and knowledge about the extent of effects that can be expected based on our past experience in the planning and implementation of similar types of activities, with the application of design criteria. We can further narrow down the range of expected cumulative effects based upon activities located in areas of similar characteristics, such as those authorized actions within the Bluff Divide and Green Hornet project areas (see project file, document 231). The cumulative effects analysis presented below take into consideration the measurement indicators assigned to direct and indirect effects in Section 3.2.

Table 29. Summary of Past, Present and Reasonably Foreseeable Future Actions in the Project Area

| Past Actions | Summary |
|--|--|
| Green Hornet Vegetation Management Project | The decision for the Green Hornet project was signed in 2001. Implementation of this project was complete in 2005. It included vegetation treatment within northern hardwood stands as well as transportation system refinements to facilitate timber harvest. These actions are wholly encompassed by the project area, specifically in the area southwest of the Bond Falls Flowage. Thus, the current forest conditions, such as tree species diversity and current tree sizes and ages, are a result of these past actions, in combination with natural processes such as tree growth; insect and disease factors; and damage from weather-related events. This project was not found to have any significant impacts per the 2001 DN/FONSI (project file references). |

| Past Actions | Summary |
|--|--|
| Forest System Road 5250 Road Realignment Project | The decision for this project was signed in June 2004 to improve safe use of Forest Road 5250 by removing a sharp curve and steep grade. The 0.2 mile realignment reduced road-caused erosion and sedimentation to benefit the river values for the Middle Branch Ontonagon WSR. The previous road corridor was partially retained to provide parking and foot path access to the Interior Cemetery. This project was not found to have any significant impacts per the 2004 DN/FONSI (USDA Forest Service 2004a, project file references). |
| Bluff Divide Vegetation Management Project | Decisions for the Bluff Divide project were signed in 2005 and 2006. There is an overlap of the Bluff Divide and Interior project areas, which encompasses 540 acres of federal land and is located east of Calderwood Road. Implementation of the Bluff Divide project is complete within the area of the overlap; however, outside of the project area, there are six timber sales currently planned for implementation. Within the project area, vegetation management completed includes red pine plantation thinning and northern hardwood selection. Two of these red pine plantation stands would also receive an additional intermediate thinning through the Interior Project. This project was not found to have any significant impacts per the 2005 and 2006 DNs/FONSIs (project file references). |
| 2011 Road Maintenance Project | Culverts were replaced on Interior and Matheson Creeks where intersecting Forest Road 5250 in July 2011. This decision replaced existing culverts with structures designed to allow for fish passage. New structures were designed to accommodate a 100-year flood flow and reduce the risk of debris becoming caught. The roadways were also reconstructed for approximately 500 feet in each direction from new crossing structures to reduce sedimentation. This project was not found to have any significant impacts per the 2011 Decision Memo (project file references). |
| Private Ownership | The majorities of these private lands is in northern hardwood forest types and have received past thinning activities. Most of the private ownership is in parcels of 80 acres or less and is held by primarily families or individuals. Generally, these smaller parcels are utilized as secondary residences and for recreational use. Most of these lands have received harvest activity (e.g., within the past 20 years); activities similar to what are done on Forest Service ownership. |
| Present Actions | Summary |
| Treat non-native invasive plant species | Treatment of weed species would be addressed as deemed necessary through implementation of the programmatic decision for the 2005 Non-native Invasive Plant Control Project (project file references). |

| Present Actions | Summary |
|---|--|
| Annual road maintenance | Maintenance of higher standard roads is addressed through the use of category exclusion for the repair and maintenance of roads, trails and landline boundaries (36 CFR 220.6[d][4]). |
| Private Ownership | No activity on private land is known at this time. |
| Reasonably Foreseeable Actions | Summary |
| Road maintenance for timber hauling | These activities could be addressed through the use of a categorical exclusion for the repair and maintenance of roads, trails and landline boundaries (36 CFR 220.6[d][4]). |
| Hunter walk-in trail maintenance | |
| Treat non-native invasive plant species | Continued treatments as outlined in the programmatic decision for the 2005 Non-native Invasive Plant Control Project. |
| Riparian Restoration Project | This project is still in the planning stages. However, the scoping letter for this project proposes underplanting of long-lived species; girdling/felling trees that are overtopping immature long-lived tree species; and brush removal in areas where shrub density inhibits the growth of desired tree species within cold water and cold transitional streams. The Middle Branch Ontonagon River segments are eligible for these activities; the actual acreage addressed would be determined at a later date (see project references). |
| Private Ownership | While there is less certainty in management direction with private lands, the reasonably foreseeable future actions on private lands are anticipated to be similar in nature and scope to actions that have and would foreseeably be implemented within the project area. It is likely that there will be minor changes in general representation among forest type groups, regardless of the presence or absence of disturbance activities, in addition to small losses of forested acres to development. However these changes are expected to be small, given its context to the larger project area. |

3.3.1 Air Quality

Bounds of Analysis: The extent of cumulative effects is the project area, plus up to a 4 mile radius surrounding the project area, to incorporate the communities of Paulding and Bruce Crossing, Michigan. These communities are considered the closest sensitive receptors where air quality impacts would occur from smoke generated through the use of prescribed fire in the project area. The duration of the cumulative effects analysis is 2014 to 2019, or 5 years for the current outyear planning cycle.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: Within the bounds of analysis, implementation of Alternative 1 would not result in cumulative effects. There are no, known past or present or reasonably foreseeable future actions affecting air quality.

Therefore, no overlap of effects would occur from the smoke emissions resulting from the treatment of hazardous fuels under this alternative.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: As stated, there are no, known past or present or reasonably foreseeable future actions affecting air quality. There are no other known prescribed burns planned in the project area on NFS land within the four mile critical smoke impact area in the future. Burning on private land, such as brush pile burning, could possibly occur on the same day as proposed prescribed fire activities in the future. However, due to the temporary nature of smoke impacts from burning, there would be no overlap of effects expected. Burning of this type would be of low intensity and extent, and therefore not result in negative cumulative effects when combined with the temporary effect anticipated from prescribed fire use under Alternative 2.

3.3.2 Aquatic and Riparian Resource

Bounds of Analysis: The extent of cumulative effects is the subwatershed scale (6th level), as well as well as upstream/downstream as applicable (including private ownerships) because watersheds of this size are more sensitive to land-use practices that affect aquatic habitat. The cumulative effects from site-specific transportation system refinements are discussed at the project area scale as cumulative effects are not expected to go beyond this scale. The duration of the cumulative effects analysis is 15 years to the present to capture impacts to the aquatic resources from modern activities. The existing condition of streams and rivers is viewed as a culmination of historical impacts from the early 1900s logging era as the impacts are still evident. Reasonably foreseeable future actions will be addressed about 15 years into the future, which correlates with the implementation of the forest-wide Riparian Restoration Project, as well as the ongoing implementation of adjacent projects (i.e., Bluff Divide, Papa Bear and Three Corners VMPs, project file references).

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: Past effects from culvert replacement projects positively affected water quality and habitat quality in some reaches of Interior Creek, Matheson Creek, and the Middle Branch Ontonagon River. However, there would be no cumulative effects with these past actions as Alternative 1 does not include improvements to the aquatics, fisheries and riparian resources. In light of continued sedimentation due to project-specific road crossings and streambank erosion, as well as poorly designed/placed stream crossing structures, occurring on adjacent lands, the cumulative effects with the no action alternative would be negative. Furthermore, Alternative 1 would lead to a loss in positive cumulative effects as there would be no overlap in effects between the Interior Project and the future Riparian Restoration Project. Water quality is expected to remain within State of Michigan parameters.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: Positive cumulative effects would occur under Alternative 2 due to the combined effects of reduced erosion and sedimentation risk from past transportation system refinements and the Interior proposal. Specifically, the Bluff Divide project contributed about 2.2 miles of decommissioning (some of which is currently being implemented) and the Green Hornet project reconstructed 4.5 miles of road. Additionally, the culvert replacement efforts that occurred through the Forest

System Road 5250 Road Realignment and 2011 Road Maintenance Projects also benefited water quality through improved road drainage design and reduced risk of future soil erosion and sedimentation for a portion of the reaches for Interior Creek, Matheson Creek as well as the Middle Branch Ontonagon River. Reasonably foreseeable future actions includes road maintenance, which would further reduce sedimentation through correcting conditions that are leading to soil erosion. When combined with the anticipated effects of Alternative 2's transportation system refinements, there would be a positive cumulative effect within the project area in terms of reduced risks to aquatic and riparian resources under Alternative 2.

Additional cumulative effects are anticipated in terms of the acres of riparian habitat restored as the Forest System Road 5250 Road Realignment Project contributed 8 acres of white pine release and at least 3 acres of long-lived conifer underplanting adjacent to the Scenic segment of the Middle Branch Ontonagon River. These past actions provide a minor positive effect when combined with the anticipated 296 acres of underplanting to enhance riparian habitat structural diversity. Of the anticipated future actions, there would be a positive cumulative effect expected with riparian restoration project as it focuses on enhancing riparian habitat, similar to the actions proposed under Alternative 2. However, this project is still in the planning stages, and therefore approximated acreages of riparian habitat enhancement are unknown at this time.

Open Area Analysis - The project area is adjacent to large areas of private land, with areas of created and maintained openings. Therefore, an open area analysis was conducted to assure no threshold is exceeded with the proposed clearcut harvest in combination with the amount of openings on private land (project file document 524). Research has shown that when the open area of a watershed exceeds 60%, peak flows are increased and channel degradation may occur (Verry, et. al. 1983, Verry 1986, Verry 1992 and Verry 2004). Results from the analysis indicate that current amount of open area (which takes into account past and on-going harvest within the bounds of the analysis) and proposed additional open area in the project area are far below the threshold value of 60%. Therefore, the creation of openings from aspen management activities would not result in altered water flow as these openings are considered temporary in nature. In addition, no changes in water runoff timing or magnitude are anticipated at the subwatershed scale as a result of clearcutting under Alternative 2. No additional effects on flows are anticipated from the reasonably foreseeable actions outlined in Table 29 as these activities would not increase the amount of open area.

Overall, there would be small impacts, both positive and negative, through the subwatersheds. However, in looking at trends, the area would continue to recover from the late 1800s/early 1900s logging era. Water quality is expected to remain within State of Michigan parameters.

3.3.3 Cultural Resources

The extent of cumulative effects is the project boundary as ground disturbing activities are not expected. The duration of cumulative effects is 2005 to 2018. As no direct or indirect effects are anticipated under either proposed alternative due to the implementation of design criteria as outlined in Appendix 1, no cumulative effects would occur under Alternatives 1 or 2.

3.3.4 Non-native Invasive Plants

Bounds of Analysis: The extent of cumulative effects is the project area because this scale is large enough to include a large variety of habitats, and therefore is an adequate scale to describe the past, present and future effects. The duration of cumulative effects is 2005 to 2019 to include past ground disturbing actions occurring within the project area, through the current outyear planning cycle.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: There would be a lack of potential NNIP spread under Alternative 1 since no proposed actions would be implemented. The high priority NNIP found in the project area would be gradually treated as authorized by the programmatic decision for the Ottawa's Non-Native Invasive Plant (NNIP) Control Project (US Forest Service 2005a). Therefore, Alternative 1 would result in positive cumulative effects, although not significant, since there would be less risk in general for future establishment of NNIP populations.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: Past activities have contributed to the introduction and spread of NNIP in the project area, but the results are captured by the existing condition of the environment. Ongoing actions contributing to the spread of NNIP include road maintenance, residential plantings of NNIP, OHV use, boating, and hiking. Natural vectors include wildlife, wind, and water.

The foreseeable future control of the Japanese barberry, Japanese hedge-parsley, and exotic honeysuckle infestations would help prevent future impacts within the project area from those species. Ongoing road maintenance helps keep road beds free of vegetation. However, graders spread plant seeds along the road edges. Future actions to maintain hunter walk-in trails could increase the risk of NNIP establishment since trails often have more exotic plants than regular forest. Given the existing condition and reasonably foreseeable actions, when combined with the effects of implementing the proposed actions, there would be both positive and negative effects. However, no significant effects are anticipated under Alternative 2.

3.3.5 Regional Forester's Sensitive Species

Plant RFSS

Bounds of Analysis: The extent of cumulative effects is the Ottawa National Forest since habitat for most of the sensitive plant species occurs across the Forest, and the plants are so sparse and widely scattered. Impacts to populations anywhere on the Forest could decrease species viability across the Forest, so this larger scale is needed for analysis. The duration of effects is 2014 to 2023. Many past actions likely contributed to the current scarcity of RFSS plants, but this is captured by the existing condition, and therefore the year 2014 was used. The year 2023 provides enough time to consider the on-going and foreseeable trends in rare plant populations.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: Present and ongoing actions that may be harming rare plants include the spread of non-native invasive

species, deer herbivory, soil change from earthworms, and loss of habitat. Deer herbivory is causing a loss in biodiversity and forest regeneration in much of the Northwoods (Rooney and Waller 2008). Some of the sensitive plants on the Ottawa (ginseng and orchids in particular) are likely at risk due to deer. Introduction and spread of invasive species would continue. Ongoing treatment of infestations should prevent impacts to RFSS plants. Loss of habitat is occurring at a slow rate within the Ottawa boundary on private land. Sufficient NFS land occurs within the cumulative effects area to preserve suitable habitat for RFSS plants.

Under the No Action, there would be no additional disturbance factors for RFSS plants specific to the Proposed Action and therefore, no cumulative effects are expected. See the Biological Evaluation for discussion for more information (project file document 240).

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: The factors outlined under Alternative 1 would remain applicable. The cumulative effect of these factors with the proposed actions would have positive and negative effects on RFSS plants. Negative cumulative effects may occur due to the additive effect of road and trail work. However, these effects would be minimized through the implementation of design criteria. No loss of population viability would occur due to cumulative effects under Alternative 2. See the Biological Evaluation for discussion for more information (project file document 240).

Aquatic RFSS

Bounds of Analysis: The extent and duration of cumulative effects is the same as listed for the Aquatic and Riparian Resources as outlined in Section 3.3.2 for the same rationale.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: Cumulative effects to aquatic RFSS would be negative, since this alternative would do nothing to address sedimentation of streams, poorly placed stream crossing structures, and lack of structural habitat. There would be no effects under this alternative to combine with the effects of past, present and reasonably foreseeable actions within the bounds of analysis. No loss of population viability would occur due to cumulative effects under Alternative 1.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: Past, current and planned activities within the cumulative spatial bounds area include timber sales and other approved management activities, which have similar vegetation management, road work (construction, re-construction, decommissioning), and watershed restoration activities and similar design criteria for the protection of aquatic resources. Road and recreational use on the Ottawa would be expected to continue, as would timber harvest and recreational use of private lands adjoining the project area.

Limited amounts of sediment would continue to enter aquatic features from already existing sources (e.g., road/stream crossings), under both alternatives. However, the number of crossings, as well as overall road miles would decrease. As a result, there would be a long-term decrease in sediment entering streams. The closure of the fords and associated streambank restoration would reduce erosion, thereby reducing the cumulative effects of potential sediment-producing

activities within the project area. Also, culverts within the project area that are impeding passage of aquatic organisms would be replaced with structures that ensure passage.

There was a past cumulative decrease in large wood in streams and increase in stream temperatures, due to logging riparian forests and clearing streams of existing wood to facilitate log drives (USDA Forest Service 2006f, project file references). This has been slowly changing as riparian forests have re-grown and are beginning to increase shade and to replace wood in streams. This project would accelerate that trend by releasing trees in riparian areas and dropping trees into Bluff, Paulding, and Deadman Creeks and the Middle Branch Ontonagon River. Because the proposed actions in this project would decrease impacts related to roads and sediment rather than adding to them, the effects of this project added to those of past, current, and foreseeably future activities within the analysis area would beneficially affect these species and their habitats. The Riparian Restoration Project would occur concurrently with implementation of the Interior Project and would include riparian planting of long-lived tree species in areas of ongoing spruce and fir mortality, resulting in additional positive cumulative effects for RFSS. No loss of population viability would occur due to cumulative effects under Alternative 2.

Wildlife RFSS

Bounds of Analysis: The extent of cumulative effects is the project area boundary since this scale is large enough to encompass the home range of most wildlife species. For some species (including gray wolf, bald eagle, and red-shouldered hawk, and all three bat species), the cumulative effects analysis was analyzed at a larger scale because these species have a larger home range or other circumstances (see project file, document 240). The duration of cumulative effects is 1998 to 2029.

This time period is used because harvest intervals between logging activities is generally about 15 years depending on the forest type and the condition of the stand. For future effects, 15 years was selected, based on the expected implementation timeframe of the Riparian Restoration Project, which would change the vegetation composition of tree species (moving towards a long-lived conifer component) in riparian habitats.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: Effects to wildlife RFSS includes a variety of ongoing threats and/or disturbances that have been occurring and would likely continue from human uses and disturbances (hunting, fishing, transportation, and recreation), human land-use changes, and environmental factors like diseases and the natural succession of habitat in areas not proposed for treatment. Ongoing and future activities include road maintenance, removal of hazard trees and maintenance of hunter-walking trails. These effects would have some minor negative effects on wildlife, but there would be no cumulative impacts with the Interior Project under Alternative 1. No loss of viability for wildlife RFSS would occur.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: Cumulative effects to wildlife RFSS include a variety of past and ongoing threats and/or disturbances that have been occurring and would likely continue from human uses and disturbances (hunting,

fishing, transportation, and recreation), human land-use changes, and environmental factors like diseases and the natural succession of habitat in areas not proposed for treatment. All of these effects vary in magnitude based on the wildlife species' life history traits and their sensitivity to such disturbances (see project file, Biological Evaluation, document 240). Timber harvesting effects from the past, present, in addition to the Alternative 2, may disturb or displace wildlife, leading to a slightly increased cumulative effect; although overall, the effects are minor. Timber sales currently being implemented from the Bluff Divide project (within the Interior project boundary) may pose slight positive and negative effects to those species within the project area. This is also true for timber sales in the Beaton, Bluff Divide, Papa Bear and Three Corners VMPs for those wildlife species with larger home ranges, such as the gray wolf, bald eagle, red-shouldered hawk, and the two bat species.

All reasonably foreseeable future effects for wildlife species are expected to be the same as those previously described in the past and present effects as general (in addition to project specific) road maintenance; removal of hazard trees and maintenance of hunter-walking trails would still occur. When combined, the effects of past, present and reasonably foreseeable actions with the proposed actions would result in slightly positive and negative, but not significant, cumulative effects. No loss of viability for wildlife RFSS would occur.

3.3.6 Soils

Bounds of Analysis: The extent of cumulative effects is the boundaries of the Ecological Landtype Phases that occur within the project area (see project file, document 307). Cumulative impacts to the soil are confined to the soil directly beneath where the disturbance factors (i.e. machinery operations) take place, and not to an extent where the effect would transcend these ELTP boundaries. The duration of effects is the same as outlined for the Aquatic and Riparian Resources (see Section 3.3.2).

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: Impacts to the soil from previous harvest activity, if present, would remain on the landscape. Existing ruts and sources of erosion would persist. Historical compaction, if any, would remain on the landscape and would continue to be mitigated through natural processes. As no further ground disturbance would occur under Alternative 1 however, there would be no cumulative impacts to the soil resource.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: Negative cumulative effects could be expected in areas of harvest entry that were recently harvested under the Green Hornet and Bluff Divide Vegetation Management Projects. These areas may not have had adequate time to recover from any compaction that could have occurred during those harvest entries. The period of time for natural recovery from compaction varies with soil physical characteristics, chemical characteristics, climate, and the severity of compaction. Recovery may be faster where soils are subjected to freezing-thawing or wetting-drying cycles (National Council for Air and Stream Improvement, Inc., 2004, p. 62). Studies from colder climates (e.g., Lake States) illustrate more rapid rates of recovery, particularly for surface soils (National Council for Air and Stream Improvement, Inc., 2004, p. 42). Investigations for estimated time

for recovery of soil bulk density in surface horizons have ranged from approximately 1 to 18 years (National Council for Air and Stream Improvement, Inc., 2004, pp. 40 and 42).

Table 30. Operability Risk Ratings for Sale Re-entry Areas within the Bluff Divide and Green Hornet Projects

| Operability Risk | Acres | % of Re-Entry Area | % of Proposed Treatments at the Project-wide Scale |
|-------------------|-------|--------------------|--|
| Poorly Suited | 54 | 3% | 0.3% |
| Moderately Suited | 1150 | 68% | 5.8% |
| Well Suited | 476 | 28% | 2.4% |
| Not Rated | 16 | 1% | 0.1% |
| Total | 1696 | 100% | 8.6% |

Stands that may be scheduled for re-entry are located on soils that are dominantly moderately suited or well suited for operability (see Table 30), and thus have a lower potential for having past negative impacts. Areas that are poorly suited or not rated would likely not be included in harvest operations due to slope and operability restrictions. The soil qualities indicative of such operability risk ratings shown coupled with the operational design criteria and contract specifications, natural recovery rates, and prudent sale administration oversight should allow for sustained soil quality with minimal long term cumulative effects.

No other harvest activities are expected to occur within the bounds of analysis. However, as outlined in Table 29, road maintenance and hunter walk-in trail maintenance projects are likely to occur in the reasonably foreseeable future. These activities are expected to reduce sedimentation through correcting on-going soil erosion problems.

Given the effects in the past, present and reasonably foreseeable future, in addition to the impacts associated with implementing Alternative 2, and application of design criteria, there would be minor, negative effects to the soil resource.

3.3.7 Visuals

Bounds of Analysis: The extent of cumulative effects is not anticipated to effect visual quality objectives outside of the project area. The duration of effects is 2005 to 2018 to take into account the past actions that have been completed in the project area, including those stands harvested within the Interior project area through the Bluff Divide and Green Hornet VMPs. The duration of the cumulative effects analysis is 5 years into the future to capture the timeframe for the current outyear planning cycle.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 1: Residual effects to scenery from vegetation management in the portions of the project area overlapping the Bluff Divide and Green Hornet timber sales are diminishing. The only future change to scenery on federal land is expected from the natural succession of the project area's forest types. Visual impacts on non-federal lands from recent vegetation management would also continue to

diminish with new growth of vegetation. Without further management under Alternative 1, there would be a slight negative cumulative effect as the visual variety would be lost in previous timber sale areas without implementation of the Interior Project. There are no cumulative effects to the visual resource expected in the remainder of the project area.

Past, Present and Reasonably Foreseeable Future Effects for Alternative 2: There is no evidence that past harvesting activity or other management actions have left lingering, unacceptable negative effects. There are no on-going actions that would affect the visual quality resource on National Forest System land. As much of the private timber land is managed with the goal of sustainable harvest, and often takes the visual quality resource into consideration, it is unlikely that private harvesting would negatively affect the landscape at the project level that is being considered, or in the future.

There are no reasonably foreseeable actions on federal lands that would cause negative effects to visual quality. Harvest on private lands is primarily northern hardwood selection harvest as noted in the Vegetation Management section. The visual resource would be temporarily and minimally affected by these types of treatments. If Alternative 2 is selected, the proposed management would result in movement towards forest composition and age-class distribution objectives. The project area would continue to maintain a mosaic of forest types, including temporary openings and stands featuring aspen, paper birch, balsam fir, hemlock, and northern hardwoods. Given the existing conditions from past timber harvest, in addition to the proposed actions, the cumulative effect would be a minor, but positive, as the landscape would continue to possess a strong visual forested character. With implementation of design criteria, the visual resource would be minimally impacted.

4.0 Finding of No Significant Impact

This section documents the reasons why the Responsible Official has determined that Alternative 2 would not result in a significant effect on the human environment.

I, Norman E. Nass, have determined that an environmental impact statement should not be prepared. After considering the environmental effects described in this EA, as well as the information in the project file, I have determined that the Proposed Action would not have a significant effect on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). I base my findings on the following factors, organized by subsection of the Council on Environmental Quality's (CEQ's) definition of significance as follows.

4.1 Context

In the case of site-specific actions, significance depends on the effects in the project's locale rather than the world as a whole. Both short and long-term effects are relevant (FSH 1909.15, 65.1, Part 02). This project is a site-specific action that by itself does not have international, national, region-wide, or state-wide importance. Discussion of the significance criteria that follows applies to the intended action and is within the context of local importance in the area associated with the Interior project area.

In the short-term, there would be normal activity associated with timber harvesting and other resource projects. Sections 1.3 and 2.3 describe the current conditions and locations of the various resources. The additional resource effects sections in Chapter 3 reveal that most of the environmental effects are confined to the project area. The long-term effect of this project would move or maintain resource conditions toward the desired conditions as described by the Forest Plan for MAs 3.1a and 8.1. The analyses are consistent with the management direction and Standards and Guidelines outlined in the Forest Plan. Therefore, it is my determination that the effects of implementing Alternative 2 would not be significant locally, regionally, or nationally.

4.2 Intensity

Intensity refers to the severity of impact. This section is organized around the ten significance criteria described in the National Environmental Policy Act (NEPA) regulations (40 CFR 1508.27).

1. Consideration of both beneficial and adverse impacts. I am considering both beneficial and adverse impacts associated with Alternative 2. Overall, the impacts of implementation would have both beneficial and adverse impacts to resources within the project area; however, the analyses have found that no significant impacts would occur (see Section 3.2).

Benefits include, but are not limited to, silvicultural practices to restore and/or maintain healthy, diverse and resilient forests to work towards meeting direction outlined in the Forest Plan. These practices would subsequently maintain a range of forest habits in the project area, reduce hazardous fuels conditions, improve recreational opportunities, and provide wood products for the local economy. Additional benefits include a transportation system that would provide enhanced administrative access for facilitation of timber harvest, as well as improving public access where roads and trails would be designated on routes that can sustain use. These improvements would also benefit soil and watershed resources by reducing sedimentation into streams and wetlands. Other habitat enhancements for fisheries, riparian and wildlife would occur through management activities within and outside of the WSR corridors. Additionally, classification of old growth would improve and/or maintain this type of habitat within the desired conditions outlined in the Forest Plan. These enhancements, along with designated access would provide opportunities for outdoor recreation within the project area consistent with Forest Plan expectations.

The potential for adverse impacts include effects upon habitat for sensitive plant and animal species; however, this project would not likely contribute to a trend towards Federal listing or cause a loss of viability for any RFSS (see project file document 240, Biological Evaluation). There are other adverse impacts I am taking into consideration, which include the impacts from non-native invasive species; effects to the soil resource from timber harvest; and management effects upon visual quality objectives. These impacts are similar to other projects previous to this one and are not unique to this project (see project file document 231, Analysis Framework). Some impacts would be minimized and/or avoided using the design criteria in Appendix 1. Previous projects, with similar activities using these or similar design criteria, have been found to be effective in avoiding or minimizing adverse effects.

In consideration of the effects disclosed in this EA as well as the project file, I have evaluated both the beneficial and negative impacts disclosed. I have determined that these impacts are not significant. Impacts of this project would be within the range of effects identified in the Forest Plan's FEIS (Volume I, pp. 3-1 to 3-228) and the analyses performed for the CRMP.

2. Consideration of the effects on public health and safety. Alternative 2 would not significantly affect public health and safety. Harvesting timber is a common activity in the Western Upper Peninsula of Michigan and local residents and seasonal visitors are accustomed to seeing harvest activities. Maintaining a transportation system that facilitates multiple-use management of Forest resources is part of the purpose and need of this project. During timber harvest, roads used by logging equipment are signed and posted to alert the public. Additionally, forest roads will be closed to OHV traffic during timber hauling operations when necessary to address dual-use safety concerns.

Prescribed fire may be used to treat hazardous fuels conditions and provide a tool for promoting conditions that can support paper birch and oak forest types. Although prescribed fire can be an efficient method for these types of projects, weather conditions and other factors may ultimately dictate whether the use of mechanical means would occur to meet objectives. Planning efforts for the use of prescribed fire includes a burn plan that would outline several measures to ensure public safety.

Based on past operations of a similar nature, there have been no instances where public safety has been affected. Therefore, I have determined that implementation of Alternative 2 would have no adverse effects on public health and safety.

3. Consideration of the unique characteristics of the geographic area (e.g. such as historic features, park lands, prime farmlands, wild and scenic rivers or wetlands). There are no park lands, or prime farmlands in the project area. However, the project area does include historic features/cultural sites; all sites would be avoided and protected through implementation of the proposed design criteria (see Appendix 1). This project proposes several activities within the segments of the congressionally-designated Recreational and Scenic segments for the Middle Branch Ontonagon Wild and Scenic River. All ground-disturbing activities, including harvest, refinement of the transportation system to facilitate harvest, as well as road closures and decommissioning, would be implemented using the proposed design criteria developed to protect resources. Silvicultural practices implemented to provide wildlife habitat benefits in both the Recreational and Scenic segments of the WSR are consistent with the CRMP. In addition, the resulting conditions provided by these actions would enhance the species addressed by the Wildlife outstandingly remarkable value in both segments (CRMP, pp. 2-9 to 2-12, 4-3; and Forest Plan, pp. 3-74 to 3-75, and 3-77 to 3-78). See Table 31 for more information.

4. The degree to which the effects on the quality of the human environment are not likely to be highly controversial. All actions proposed are similar in type and intensity to activities that have previously occurred in the past (see project file document 231, Analysis Framework). A range of comments were received in response to the project's proposals, including comments supporting and opposing the Proposed Action (see project file document 188, Comment Matrix). The differences in comments reflect a range of opinions, and do not of and by themselves constitute controversy.

I interpret controversy criteria in a FONSI to be the degree to which there is scientific controversy relative to the results of the effects analysis, not whether one favors or opposes a specific alternative. References received as part of the public commenting process have been evaluated by the ID Team; no points of scientific controversy were identified (see project file documents 128 and 129). Based upon previous implementation of similar projects, the effects of the proposed actions on the quality of the human environment are not considered as highly controversial. Timber harvesting, refinements of the transportation system, wildlife habitat enhancements and improvements to aquatic and riparian habitat are typical of the management actions that occur across the Ottawa and on many non-National Forest properties. While there are many different views about some of these specific management actions, the activities proposed are consistent with Forest Plan direction and best available science. Therefore, I have determined that the effects of the Proposed Action are not likely to be highly controversial.

5. Consideration of the degree to which effects on the human environment are highly uncertain or involve unique or unknown risks. The human environment is the natural and physical environment, and the relationship of people with that environment (40 CFR 1508.14). This Proposed Action is similar to many past actions in this analysis area and across the Ottawa, and its effects upon the human environment are reasonably expected to be similar (see project file document 231, Analysis Framework). The project file demonstrates a thorough review of the best available and relevant scientific information, consideration of opposing views, and, where appropriate, the acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk. We have considerable experience with the types of activities being implemented. Actions proposed are similar to the types of activities that have been used for many years on the Ottawa. Based upon my knowledge of past actions and professional and technical knowledge and experience, I am confident that we understand the effects of these activities on the human environment. There are no unique or unusual characteristics about the area or Alternative 2 that would lead to an unknown risk to the human environment.

6. The degree to which this action may establish a precedent for future actions with significant effects or represents a decision in principle about future considerations. As previously stated, the Proposed Action includes activities that are similar to many past actions in this analysis area and across the Ottawa. Therefore, the effects are expected to be similar. The effects analysis is site-specific to the Interior project area and is consistent with the Forest Plan and CRMP. Therefore, no precedent-setting actions are proposed.

7. Consideration of the action in relation to other actions within individually insignificant, but cumulatively significant effects. The cumulative effects of past management, combined with the current proposal, and reasonably foreseeable future actions for each resource are displayed in Section 3.3. These analyses were reviewed in consideration of the Council on Environmental Quality (CEQ) guidance on cumulative effects analysis (see project file, references). Cumulative effects analysis for the project area, by resource, was conducted as outlined in this EA as well as associated specialist resource analyses (see project file documents 242, 289, 291, 377, 409, 526 and 539). In addition the analysis reviewed private land management activities and considered them in the cumulative effects analysis. Site-specific projects implementing our Forest Plan have not been found to result in cumulatively significant impacts. Therefore, effects of the Proposed Action, when considered in conjunction with other

past, ongoing and reasonably foreseeable activities are not expected to lead to significant cumulative effects due to timeframes for implementation, protective measures developed in the selected design criteria, and application of forest-wide Standards and Guidelines.

8. The degree to which the action may affect listed or eligible historic places. This project would meet federal, state and local laws for protection of historic places. A project specific inventory of the area has been conducted. All known or newly discovered sites would be protected through application of design criteria to ensure protection of heritage resources in accordance with Federal laws and regulations (see Table 31).

9. The degree to which the action may affect an endangered species or their habitat. The Proposed Action would not adversely affect any proposed, endangered or threatened species or its habitat (see Table 31). There is no indication that implementing the proposed vegetation treatments would move a proposed, threatened or endangered species towards federal listing or increase its present federal listing. If any federally proposed or listed animal or plant species are found at a later date or, if any new information relevant to potential effects of an activity on these species becomes available, the activity would be stopped and the Section 7 consultation process, as per the Endangered Species Act of 1973, as amended, would be initiated.

10. Whether the proposed action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. Alternative 2 is consistent with the Forest Plan. Actions proposed would not threaten a violation of federal, state, or local environmental protection laws (see Table 31). Project design criteria listed in Appendix 1 would assure compliance with these laws. Documentation associated with this project does meet National Environmental Policy Act disclosure requirements.

Numerous laws, regulations and agency directives require that this project be consistent with their provisions. I have determined that this project is consistent with all laws, regulations and policy. The following summarizes findings required by major environmental laws.

Table 31. Findings Required by Other Laws, Regulations and Policy

| Law, Regulation or Policy | Requirements/Findings |
|---|---|
| National Forest Management Act (NFMA) (16 USC 1600 ET SEQ.) | <p>Requirement: <i>Consistency with the Forest Plan (16 USC 1604[i])</i></p> <p>Findings: This project would implement the Ottawa’s Forest Plan. The alternative development process and the management goals of the Proposed Action, in relation to Forest Plan standards and guidelines and effects, are also displayed in Chapter 2. Alternative 2 would further the desired conditions of MAs 3.1a and 8.1 (see Sections 1.2 and 2.3).</p> <p>Additionally, Alternative 2 includes actions within the WSR. As disclosed, the Forest Plan was amended in July 2007 to incorporate direction contained in the CRMP. This direction was integral in developing the</p> |

| Law, Regulation or Policy | Requirements/Findings |
|---------------------------|--|
| NFMA | purpose and need for this project, and therefore, Alternative 2 is consistent with both the Forest Plan and CRMP. Based upon my review of the project file, I find the Proposed Action to be consistent with the Forest Plan. |
| NFMA | <p>Requirement: <i>Suitability for Timber Production (16 USC 1604(g)(2))</i></p> <p>Findings: All lands proposed for timber management in this project within MA 3.1a has been identified as suitable for timber production (Forest Plan’s FEIS, Volume II, Appendix A, pp. A-12 to A-13). The classification of land as suited or unsuited is also tied closely to the Ecological Classification and Inventory and Monitoring System, which provided ecological potential and capabilities for various landtype phases (Forest Plan, Appendix D).</p> <p>Lands within MA 8.1 are not considered suitable timber lands (Forest Plan FEIS, Volume II, p. A-13), so any proposed management of vegetation within the WSR is performed for reasons other than timber production. The group selection cut is proposed in the WSR to enhance long-lived conifer species to enhance the Wildlife outstandingly remarkable value. This project is consistent with direction in the Forest Plan for MA 8.1 as well as the CRMP.</p> |
| NFMA | <p>Requirement: <i>Optimality Determination and Appropriateness of Even-aged Management (16 USC 1604(g)(3)(f)(i)):</i></p> <p>Findings: When the silvicultural treatment of clearcut harvest is proposed for use on National Forest System lands, a determination must be made that it is the optimum method to meet the objectives and requirements of the relevant Forest Plan. Even-aged management where used, must be the appropriate silvicultural system to meet the objectives and requirements of the Forest Plan.</p> <p>Using even-aged management would meet the purpose and need of this project (see Section 1.3). This Proposed Action would ensure that the aspen forest type is maintained within the MA 3.1a portions of the project area through both regenerating aspen where it currently exists as well as converting other forest types to aspen (see Section 2.3.4). Clearcut harvest is the optimum method for promoting regeneration of the aspen forest type as this species requires full sunlight for vigorous growth and successful competition with shade-tolerant species.</p> <p>The optimality of clearcutting to regenerate the forest types for which it is prescribed is further supported by the discussion of clearcutting rationale in the Forest Plan (Appendix C, pp. C-8 to C-9). For the Interior Project,</p> |

| Law, Regulation or Policy | Requirements/Findings |
|---------------------------|--|
| NFMA | <p>clearcut harvest is the optimum method for achieving the purpose and need of this project for the following reasons: (a) The aspen proposed for regeneration is mature to overmature, and there is risk of losing this forest type to succession (being mature to overmature in this context refers to entire stand which is composed of trees that are at or nearing the end of their live expectancy).</p> <p>Requirement: <i>Optimality Determination and Appropriateness of Even-aged Management (16 USC 1604(g)(3)(f)(i)):</i></p> <p>Findings - If these aspen stands are not harvested with the intent to regenerate them there is a strong likelihood that they would succeed to other forest types); (b) the amount of 0- 9 year age class is below what is required for early-successional wildlife species needs; and (c) clearcut harvest is the only system that can assure that required densities of aspen suckers are obtained to meet the needs of wildlife species. For these reasons, I determined that even-aged management is an appropriate management system and the optimal regeneration method for these forest types based on the objectives and requirements of the Forest Plan.</p> |
| NFMA | <p>Requirement: <i>Vegetative Treatments - (16 USC 1604 [e] [f]): All proposals that involve vegetative treatments of tree cover for any purpose must comply with the following requirements (see items a through g)</i></p> <p style="padding-left: 40px;">a. Be best suited to the multiple-use goals stated in the Forest Plan.</p> <p>Findings: Development of this EA and associated resource analyses were completed in an integrated fashion using an ID Team of resource specialists and public input. The purpose and need for this project discusses the links to the goals and objectives for MA 3.1a and 8.1.</p> |
| NFMA | <p style="padding-left: 40px;">b. Assures that technology and knowledge exists to adequately restock lands within 5 years after the final harvest.</p> <p>Findings: The knowledge and technology currently exists to adequately restock the harvested areas and the stocking surveys for similar areas are documented in the project file (see document 387, Specialist Input). Analysis of current and historical regeneration data for similar treatments across the Ottawa supports the conclusion that adequate stocking of the proposed regeneration harvest units is assured with site preparation efforts occurring in a timely manner following regeneration harvest. This conclusion is supported by a reforestation accomplishment summary offered in the 2011 M&E Report (pp. 9 to 13, project file references).</p> |

| Law, Regulation or Policy | Requirements/Findings |
|---------------------------|---|
| NFMA | <p>c. Not to be chosen primarily because they will give the greatest dollar return.</p> <p>Findings: Economic analysis presented in Section 2.3.13 shows that Alternative 2 would be an economically efficient alternative. However, the purpose and need outlines that vegetation management is being proposed for several reasons, and not solely based on dollars returned. As this analysis is performed to provide a method to compare the economic efficiency of alternatives, the actual volume harvested is dependent upon several factors, including final volume available per acre, market conditions and operating conditions (2010 M&E Report, p. 5). It is also important to acknowledge that commercial harvest of trees in the Middle Branch Ontonagon WSR corridor is considered non-chargeable volume, that is, the timber volume generated could be sold, but it would not be counted towards the Ottawa’s allowable sale quantity (Forest Plan, Appendix E).</p> |
| NFMA | <p>d. Be chosen after considering potential effects on residual trees and adjacent stands.</p> <p>Findings: In my decision-making process, I am considering the effects on residual trees and adjacent stands as outlined in the design criteria (see Appendix 1). Design criteria do address the impacts of reducing tree density along with the need to provide for habitat needs and watershed benefits. Based on the analysis disclosed in this EA as well as the project file, Alternative 2 would provide the best balance of management practices to meet all resource values.</p> |
| NFMA | <p>e. Be selected to avoid permanent impairment of site productivity and to ensure conservation of soil and water resources.</p> <p>Findings: By adhering to Forest-wide Standards and Guidelines and site-specific design criteria, Alternative 2 would avoid impairment of site productivity and ensure conservation of soil and water resources. During analysis, the ID Team identified treatment areas that were of concern. These areas were evaluated in the field; it was determined that application of design criteria would meet the objective of avoiding impairment of site productivity. This determination is supported by the project file (see documents 377 and 526).</p> |
| NFMA | <p>f. Be selected to provide the desired effects on water quality and quantity, wildlife, regeneration of desired tree species, forage production, recreation uses, aesthetic values, and other resource yields.</p> <p>Findings: Alternative 2 would provide the desired effect on the above</p> |

| Law, Regulation or Policy | Requirements/Findings |
|---|---|
| NFMA | resources. All harvest units would be designed to maintain the ecological function of adjacent riparian types, using logging systems and layout that minimize ground disturbance, implementing buffers to all streams by category, and applying Michigan Best Management Practices to all activities. Project design criteria, as well application of Forest Plan Standards and Guidelines, would be used in concert with vegetative management to provide the desired effects on other resource values, including browse production, recreation uses, and aesthetic values. |
| NFMA | <p>g. Be practical in terms of transportation and harvesting requirements and total costs of preparation, logging and administration.</p> <p>Findings: The ID Team assessed the existing transportation system within the project area and proposed changes only when necessary to meet resource objectives. All road activities were evaluated to find a balance between the benefits and the costs of road-associated effects on resources (see project file documents 282 and 283). Alternative 2 would meet the objectives of the transportation system needs for facilitating timber harvest, while enhancing recreational access where applicable. The economic analysis conducted considered the costs of planning, sale preparation, logging, and administration. Total estimated revenues do exceed approximated costs of project implementation (see Table 26).</p> |
| NFMA | <p>Requirement: <i>Federal law and direction applicable to Regional Forester’s Sensitive Species (RFSS) include the National Forest Management Act and the Forest Service Manual 2670.</i></p> <p>Findings: I have reviewed the analysis and projected effects on all RFSS plant and animal species listed as occurring or possibly occurring on the Ottawa. There is no indication that implementing the vegetation treatments or other proposed actions would cause effects different than those disclosed in the Biological Evaluation. I concur with the findings and determinations outlined in Sections 2.3 and 3.2.5 of this EA.</p> |
| The Clean Water Act and State Water Quality Standards | <p>Findings: The integrity of project area’s water and riparian features would be maintained as a result of the application of general Forest Plan Standards and Guidelines (pages 2-2 to 2-9), Michigan’s Best Management Practices, as well as site-specific protective design criteria (see Appendix 1). The project’s riparian design criteria would provide additional site-specific measures to assure riparian areas retain their ecological function. Supporting information in the project file indicates that implementation of Alternative 2 would not produce appreciable impacts on aquatics. Therefore, the Clean Water Act and State Water Quality Standards would be met.</p> |

| Law, Regulation or Policy | Requirements/Findings |
|---|---|
| Clean Air Act of 1970, as amended | <p>Requirement: Federal land managers are responsible for ensuring that major new sources of air pollution permitted under the Prevention of Significant Deterioration program would not adversely affect the air quality related values of Class I areas (FEIS, Volume I, page 3-26).</p> <p>Findings: The Ottawa has no Class I areas. Smoke emissions from the use of prescribed fire that may occur as part of hazardous fuels reduction activities would be negligible. All prescribed fires would be conducted in accordance with an approved burn plan, which includes measures to minimize smoke emissions. The analysis shows that smoke could temporarily degrade visibility in downwind areas (approximately 4 miles). Impacts to air quality are not expected to exceed thresholds outlined in the Environmental Protection Agency’s National Ambient Air Quality Standards.</p> |
| The Endangered Species Act (16 USC 1531 ET. SEQ.) | <p>As required by the Endangered Species Act (ESA), a Biological Assessment, included in the project’s Biological Evaluation was prepared addressing the potential effects to proposed, threatened or endangered species (see project file, Biological Evaluation). Evaluations resulted in a finding of No Effect for both Canada lynx (federally threatened) and Not Likely to Adversely Effect the Kirtland’s warbler, with a Beneficial effect expected (federally endangered).</p> <p>Proposed Species: On October 2, 2013, the USDI Fish and Wildlife Service proposed to list the northern long-eared bat (<i>Myotis septentrionalis</i>) as Endangered under the Endangered Species Act due to the primary threat of White-Nose Syndrome (WNS) (USDI Fish and Wildlife Service 2013). More information about this proposed listing is available at the Federal Register website (http://www.federalregister.gov October 2, 2013 edition, pp. 61045-61080). Due to this proposed listing; the determination terminology has changed. Under the RFSS status, the BE determination was “May Impact Individuals, but not likely to cause a trend toward federal listing” (see project file document 240, Biological Evaluation). The determination has been changed to “Not likely to jeopardize continued existence or adversely modify proposed critical habitat”). Since none of the proposed actions in this project would jeopardize this bat species or its habitat, conferencing with US Fish and Wildlife Service will not be initiated at this time. If the USDI Fish and Wildlife Service lists this bat species as Endangered (decision expected during the fall 2014), the Ottawa would initiate informal consultation according to the ESA Section 7 Handbook (USDI FWS 1998). If at any time WNS is detected in the Upper Peninsula of Michigan, the Forest would determine the appropriate response to reduce the spread and threat to this and other bat species of concern (see project file document 240)</p> |

| Law, Regulation or Policy | Requirements/Findings |
|---|---|
| National Historic Preservation Act | <p>All sites would be avoided and protected following Forest Plan direction and implementation of the proposed design criteria that are included as part of this project to protect heritage resources (see Appendix 1).</p> <p>A project-specific inventory of all activity areas has been conducted, and has been placed in the archaeological files. If any unknown sites are found within an area of potential effect during project implementation, the project would be redesigned to avoid the site, or measures would be designed to mitigate the effects of the project on the site and submitted to the Michigan State Historical Preservation Office as required by law for their review and consultation. Based upon the analysis performed, no direct, indirect, or cumulative effects to heritage resources from implementation of the proposed alternative are anticipated; therefore Alternative 2 is consistent with the National Historic Preservation Act.</p> |
| Wild and Scenic Rivers Act | <p>The project area encompasses portions of the Scenic I and Recreational II segments of the Middle Branch Ontonagon WSR. As stated previously, all actions under Alternative 2 are consistent with the Forest Plan and CRMP, and therefore no negative impacts to the free-flowing condition, water quality and outstandingly remarkable values of the WSR system in the project area are expected.</p> <p>Alternative 2 is expected to progress existing conditions towards desired conditions based upon each segments' river values (free-flowing character, water quality and established outstandingly remarkable values). The activities would also protect the waters (i.e., wetlands, tributaries to the WSR segments and other features) in the analysis area to improve conditions over time by reducing the amount of sediment delivered to streams. Pursuant to the Wild and Scenic Rivers Act, a Section 7 evaluation of the tree felling action, long-lived conifer planting, and streambank restoration associated with ford closure was performed (project file document 527). This evaluation found that there would be a direct effect from changes to within-channel conditions, alteration to riparian/floodplain conditions, on-site changes altering hydrologic/biological processes, and effects to management goals. However, these effects are not anticipated to be adverse. None of the projects in the WSR corridor are expected to affect water quality standards established by the State of Michigan.</p> |
| Environmental Justice - Executive Order 12898 | <p>Executive Order 12898 requires consideration of whether projects would disproportionately impact minority or low-income populations. Public involvement occurred for this project, and the results did not identify any adversely impacted local minority or low-income populations. I have considered the effects of this project on low income and minority</p> |

| Law, Regulation or Policy | Requirements/Findings |
|---|---|
| Environmental Justice - Executive Order 12898 | populations and concluded that this project is consistent with the intent of this Executive Order. The local community was notified of this project through the public participation process (see project file documents 16, 17, 18, 20, 23, and 52). |

4.3 Conclusion

The effects analysis in this Environmental Assessment considered both the context and intensity of the action in determining its significance as outlined in 40 CFR 1508.27.

Based upon the analysis, I have determined that Alternative 2 would not significantly affect the human environment. Consequently, an Environmental Impact Statement is not required. My review of the analysis prepared by the ID Team indicates that this project is consistent with Forest Plan management direction, compliant with other applicable laws, and responds to public concerns. After thorough consideration, I have determined that this project would not constitute a major federal action, individually or cumulatively, and Alternative 2 would not significantly affect the quality of the human environment. The site-specific actions of the proposed alternative, in both the short and long-term, would not be significant.

5.0 Agencies and Persons Consulted

Interdisciplinary Team

Norman E. Nass, Watersmeet District Ranger/Responsible Official

Amy Amman, Soil Scientist

Michael Bennett, Sale Administrator

Mike Bigelow, Forest Engineer

Charlotte Bofinger, Forest Timber Sale Contracting Officer/Presale Forester

Lisa Brehm, GIS Support

Mary Brown, Landscape Architect

Sandy Burns, GIS Support

Caleb Butcher, Geologist

LeAnn Colburn, Environmental Coordinator

Mark Fedora, Hydrologist

Lisa Gowe, Fire Operations Specialist

Tory Hahka, Writer/Editor and Project File Management

Christine Handler, Forest Planner

Lauren Romstad, Wildlife Biologist

Holly Jennings, Fisheries Biologist

Dean Karlovich, Fire Management Officer

Russ Leino, Forest Service Representative

Ted Frank, Silviculturist
Marlanea French-Pombier, ID Team Leader/Environmental Coordinator
Scott Linn, Acting Fire Management Officer
Roger Powell, Pre-Sale Forester
Melissa Simpson, ORA - Recreation
Ian Shackleford, Botanist
Cari VerPlanck, Archaeologist
Trent Wickman, Air Resource Manager
Mary Zelinski, Civil Engineering Technician

Tribal Governments

Lac Vieux Desert Band of Lake Superior Chippewa Indians
Keweenaw Bay Indian Community
Great Lakes Indian Fish and Wildlife Commission
Bad River Chippewa Tribe
Bay Mills Indian Community
Lac Courte Oreilles Band of Lake Superior Chippewa
Lac du Flambeau Band of Lake Superior Chippewa
Red Cliff Chippewa Tribe
Sokoagon Chippewa Community
St. Croix Chippewa Tribe

State Agencies

Michigan Department of Natural Resources

Local Government Agencies

County Board of Commissioners and Road Commissioners for Gogebic and Ontonagon Counties

Michigan Township Supervisors for Bergland, Bohemia, Duncan, Haight, Interior, Marenisco, Stannard, Wakefield and Watersmeet townships.

Interested Individuals

The Proposed Action was shaped through public input that occurred during the collaboration and scoping phases of this project. Twenty-four parties attended the April 2012 public meeting, 10 parties attended the May 2012 public meeting, and 25 parties submitted input regarding the Proposed Action after these meetings were held. Input and inquiries were also received from 45 parties for the 2012 Scoping Letter, and 26 parties for the 2013 Scoping Letter.

Appendix 1. Design Criteria and Monitoring

Design Criteria

Design criteria are specific instructions to reduce or eliminate potentially adverse effects from proposed management action. These criteria are in addition to Forest Plan Standards and Guidelines, Water Quality Management Practices on Forest Land issued by the State of Michigan's Department of Environmental Quality and other applicable laws, regulations, and Forest Plan Direction. Some design criteria also provide detail for how proposed actions are to be implemented. Each design criterion describes why it is required or what its implementation will accomplish. How or when each design criterion will be implemented is also described.

Vegetation Management

1. Site prep shall maintain some small clumps of young (sapling-sized) balsam fir; hemlock or other conifer species when practicable. Patches would consist of dense 2 to 10 foot tall balsam fir, spruce, and other species, covering about 5 to 6 percent (2200-2600 sq. ft.) of each acre, distributed within 1 to 3 patches per acre in aspen regeneration units. The objective is to preserve and enhance hiding cover within the clearcut for hares and other species.
2. Within cutting units with an objective to regenerate aspen (including aspen inclusions within non-clearcut units), retain all existing white pine, hemlock, cedar, oak, and elm. These species can be cut to facilitate timber harvest operations where necessary. Other species, such as healthy black cherry, and other hardwood species may be retained. Trees to be retained are 5.0 inches or larger and on average have a residual basal area that does not exceed 10 ft²/acre. The objective for retaining these species is to add species and structural diversity to the stand while not limiting successful aspen regeneration and future productivity (Forest Plan 2-2, Goal 1c, Objective 2a).
3. Within all non-clearcut harvest units, favor hemlock, white pine, cedar, elm and oak by retaining and crown releasing these species as directed by stand silviculture prescription. These species may be cut to facilitate harvest operations where necessary, or to improve growing space and vigor among same species that may occur within inclusions. The objective for retaining these species is to improve and/or maintain structural and compositional diversity (Forest Plan 2-2, Goal 1c, Objective 2a).
4. Within the red pine, jack pine, and spruce cutting units, the following operating requirements should be put into the timber sale contract: Within the sale area, decked pine and other conifer material cut between May 1st and August 15th must be removed from the sale area 30 days of cutting. Winter-harvested material shall be removed by the end of the winter operating season. The purpose of this requirement is to minimize the potential breeding sites for bark beetles (Gilmore and Palik, 2006, pp. 34-36).

Fire/Hazardous Fuels Reduction

5. Treatment of hazardous fuels, including removal of dead and dying vegetation, associated ladder fuels and residual slash remaining from all pine plantation treatment (specifically slash that is greater than 3” in diameter) would be treated by chipping, prescribed burning or other mechanical fuels reduction methods. Any stands, after treatment, that fall into Fire Behavior Fuel Model 8 (slow-burning ground fires with low flame lengths with occasional heavy fuel concentration) would be further treated to the extent that total fuel loading is low (< 3-inch dead and live, at 5.0 tons/acre).

Transportation

6. Selection of a road closure device and closure procedures would follow the road access management guidelines for local roads on the Ottawa. Berms or gates may be used for road closures.
7. Wherever practical, a closure device should be placed at the entrance of a network of roads rather than closing each individual segment.
8. Where possible, log landings would be located a minimum of 100 feet from collector roads, unless specified otherwise to meet visual quality objectives.
9. Temporary roads used during a timber sale would be blocked following harvest completion in such a manner as to inhibit all forms of motorized use. Where applicable, temporary roads may remain open to maintain short term access to portions of a sale area for post-sale treatments (such as site preparation or stocking survey needs). Temporary roads designated as “remain open” would have constructed cross ditches and water bars, as designated and all bridges and culverts shall remain in place and ditches shall not be eliminated. All drainage structures shall be left in functional condition. Roads designated as “remain open” will be closed and decommissioned when post sale activities are completed.

Recreation

10. Ensure that closed roads and trails that had been previously open to roads within the Wild and Scenic River corridor, are signed with their new designation.
11. Permanently re-route Trail 2 (co-located on Forest Road 5255) to avoid dual-use concerns for this project and into the future. The snowmobile trail reroute in compartment 50 along Forest Road 5255 should be completed prior to winter logging in the surrounding stands to ensure no user conflicts between snowmobile traffic and logging traffic.
12. Temporary reroutes of snowmobile trails may be required when winter season timber harvest activities would conflict with snowmobile use. The normal operating season for winter season timber sales typically runs from December 1st to March 15th. Where winter season timber harvest activities will involve use of a road that is designated as a groomed snowmobile trail, timber and recreation staff will coordinate with the local snowmobile club

to identify a temporary reroute of the snowmobile trail. Identification of any required temporary reroute must be completed prior to July 15 so that the snowmobile club can include the temporary route as part of their annual funding request to the Michigan DNR. Snowmobile routes may cross timber sale haul routes provided that warning signs and appropriate traffic control devices (stop signs on snowmobile trail at road intersections) are in place when timber sales operations are ongoing.

13. Where practical, closure devices should have a setback to allow for dispersed camping sites or parking areas. The closure device (berm or gate) should be placed so as to allow room for dispersed camping sites and/or parking off of collector roads. Additional site hardening may occur if needed at these sites.
14. Ensure that adequate barriers are in place to deter full-sized vehicles from launching boats and canoes at designated carry-down access sites to help prevent erosion and the spread of NNIPs.
15. Erickson Lake shall remain natural and undeveloped with no site improvements, unless necessary to prevent stream or bank erosion, such as gravel hardening.
16. Large woody material placement shall not be placed within 150 feet upstream or downstream of a designated access site to improve user safety.
17. Large woody material placement shall be placed into Bluff Creek and the Middle Branch Ontonagon River without interfering with the navigability to the river.

Riparian/Wetland

18. Site-specific riparian area protection would be applied to all stands with timber management. Riparian design criteria described in Tables 34 and 35 would be utilized for all activities within riparian corridors and riparian areas; these areas are typically identified during sale/contract preparation activities. These measures are to ensure that vegetation manipulation within the riparian corridors and riparian areas maintains or enhances riparian function.
19. All streams within the sale area possessing a defined bed and bank would be designated as a protected stream course in the timber sale contract.
20. Where the risk of erosion exists on low-use, OML 1 and 2 roads, or on decommissioned roads, within the project area, including roads not used by timber sales, seeding may also be done as a part of a post-sale activity, typically performed (but not limited to) Forest Service employees. Seed would be a Forest Service approved local, native plant mix, whenever feasible and available. If unavailable, a non-invasive seed mix approved by the Forest botanist would be used.
21. Wetlands would be crossed for timber management only after all reasonable alternative routes have been considered, and by implementing the following: (1) cross at the narrowest

point of the wetland and as close to right angles as feasible; (2) maintain cross drainage at all times, during, and after the project is completed; (3) place easily removable materials such as mats, small pipe bundles, corduroy (log stringers), or other similar cross drainage structures to minimize damage due to fill removal (Blinn, et al, 1998, pp. 21-29); and (4) where there are no road improvements to permit dry season operation, specify “winter only” use with specific sales administration guidelines regarding when use is and is not appropriate.

22. Small wetlands or drainways identified during sale preparation activities may either be excluded from the sale area by paint (larger areas) or no trees would be marked in these areas to protect sensitive soils. Method to use would be at the discretion of sale preparation personnel. This measure is to protect soil quality/productivity and water quality.
23. Trees felled for habitat improvement along lake shorelines would be live, green trees; but would not include live cull or cavity trees. Trees would be a minimum of 12” diameter breast height (dbh). Trees would be cut far enough from the shoreline to obscure evidence of cut stumps from the lake. If trees are hauled in for placement, this activity would be conducted during frozen ground conditions where soil resource protection is necessary.
24. Selection of a road closure device and closure procedures would follow the road access management guidelines for local roads on the Ottawa. Road closure can be conducted using berms or gates or the use of a tree spade for transplanting trees and shrubs from nearby or adjacent sites into the road surface area. Road decommissioning activities can include blocking the entrance with berms, rocks, stumps, logs and/or transplanted trees, and stabilization through slash placement. Slash may be heavily placed on decommissioned road surfaces for the first 100 feet after the closure device to discourage unauthorized motorized use. Slash may be derived through the cutting of small un-merchantable (generally 4” or less in diameter) nearby trees and shrubs. Roads that are currently overgrown with vegetation and are impassable would not need the entrance blocked.
25. As necessary to attain stabilization of roadbed and fill slopes of temporary roads the remaining roadbed would be returned to the original landscape contour and all crossing structures would be removed. Drainage structures across streams and wetlands and all fills associated with drainages and wetlands would be removed to permit normal maximum water flows which would include some floodplain area and normal wetland function.

Wildlife

Associated with All Timber Harvests

26. No harvest zone of 300' radius around active red-shouldered hawk nests: timing is year round. Active is defined as the red-shouldered hawk pair present in current year or immediately previous year.
27. Approximately 30-acre nest protection area where no disturbance-causing activities would be allowed between March 16 to Sept. 01 for red-shouldered hawks. Disturbance-causing activities include layout/tree marking, road work, logging, hauling, opening maintenance,

tree planting and TSI efforts. Nests would be verified by a wildlife biologist or wildlife technician. If a known nesting area has been inactive for two years, or more, prior to treatment, then a wildlife biologist and district ranger may remove or modify some or all of the buffers. Modifications or additional protection measures could be made on a case-by-case basis by the wildlife biologist and district ranger, including evaluation of existing road/trail use within the area.

28. Approximately 30-acre nest protection area where no disturbance-causing activities would be allowed between March 16 to August 1 for goshawks. Disturbance-causing activities include layout/tree marking, road work, logging, hauling, opening maintenance, tree planting and TSI efforts. Nests would be verified by a wildlife biologist or wildlife technician. If a known nesting area is inactive for the current nesting season, then a wildlife biologist and district ranger may remove or modify some or all of the buffers. Modifications or additional protection measures could be made on a case-by-basis by the wildlife biologist and district ranger, including evaluation of existing road/trail use within the area.
29. Protection measures for newly discovered Threatened, Endangered, and Sensitive (TES) species (either by Purchaser or the Forest Service) would be promptly reported to the other party and the additional special measures for protection would be reviewed on a case-by-case basis and collaboratively developed by project's botanist and/or biologist and the Responsible Official; incorporating conservation strategies contained in approved recovery plans, conservation approaches, as well as the 2006 Forest Plan, and professional judgment.
30. To the extent practicable, retain existing large woody material, existing natural brush piles and tip-ups (Forest Plan, pp. 2-2, 2-3 and 2-31). The LWM can be moved to allow for safe operations in the harvest area (i.e., off roads, skid trails and landings). Tops and limbs used to stabilize soil, typically on roads or skid trails, should be left in place following harvest operations.
31. In wildlife openings proposed for maintenance, consider removing a portion of suitable timber through the neighboring forested stands commercial logging operation in order to maintain open components. Priorities include but not limited to: Compartment (C) 203- Stand (S) 6, C203-S4, C203-S23, C203-S28, C174-S12, C02-S7, C49-S19, C48-S39, C50-S17, and C19-S08. Neighboring forested stands may include: C203-S7, C203-S9, C174-S41, C2-S4, C2-S8, C49-S7, C49-S16, C49-S10, C50-S36, C50-S11, C19-S4, and C19-S3. Actual amount and species of sawtimber removed will be discussed with a Biologist in order to retain certain wildlife tree or shrub species.

Associated with Upland Hardwood Management

32. Existing cull trees or snags located in hardwood stands would be retained unless removal is necessary by the timber sale purchaser or stewardship contractor to provide for the safety of all people working in the woods during and after the contract award. Felled snags and cull trees shall be left on the site to provide an increase in the coarse woody debris component.

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33. Retain 2 to 3 wildlife trees/acre from harvest in northern hardwoods and (Forest Plan, pp. 2-2, 2-3 and 2-31) select trees in the largest age class, if present, which may be a live cavity tree and/or provide wildlife foods (e.g. oak, yellow birch, and black cherry).
 34. In Compartment 51, Stands 18 and 49 (within the WSR corridor), timber harvest is designed to improve wildlife habitat by accelerating development of larger trees and to increase biological diversity and structural complexity.

Associated with Aspen Management

35. Temporary openings resulting from clearcut harvest would be separated by a minimum of 10 acres so that harvest areas do not exceed 40 acres. Design non-harvest areas to occur where retained long-lived species are concentrated, if practicable.
36. Retain existing snags in clearcuts, where removal is not necessary for safe operations. The timber sale purchaser or stewardship contractor may fell snags and cull trees when necessary to provide for the safety of all people working in the woods during and after the contract award. Snags felled should not be removed for biomass or other reasons, generally. This would include all dead or unstable live trees sufficiently tall to reach landings and roads the purchaser would be using, including temporary roads & new construction; and should be marked prior to felling by Forest Service.

Associated with Old-Growth Adjacent to Even-aged Management

37. In the following even-aged managed stands adjacent to classified old growth (C 20-S8, C33-S10, C48-S14, C56-S50, C48-S72, C48-S32, C49-S57, C55-S49, C79-S42, C50-S33, C54-S43) create a feathered edge approximately 100 feet wide that follows the boundary of the old growth stand. Within this transitional zone, retain clumps of long lived conifer, oak, yellow birch and cherry species when practicable. Within the rest of these stands retain clumps of long-lived species to maintain this component near old growth (Forest Plan, p. 2-23), only when feasible and still meets objectives for aspen regeneration.

Associated with Timber Harvest Activities in MA 3.1a

38. When aspen occurs as an inclusion within other forest types in MA 3.1a, seek opportunities to regenerate the aspen in areas of approximately 3-5 acres. The objective is to promote small patches of 0-9 year old aspen that would provide early-successional habitat for prey and other wildlife species. Locations would be determined to provide the best opportunity for successful aspen regeneration and is consistent with other resource values in the EA. The location of these inclusions shall be identified during timber sale preparation activities so that they can be efficiently relocated following harvest. This would help to assure that these inclusions relocated following harvest for any required reforestation activities, (recording GPS coordinates can be used to fulfill this design criterion).

Associated with Red Pine Treatment in MA 8.1

39. In red pine plantations receiving group selection harvest in the WSR corridor:

- i. For each group opening created, use slash from trees harvested in openings to create one or two brush piles (dimensions must be no larger than 6’ high and 10’ wide at base) to improve wildlife denning and cover habitat within pine plantations. Brush piles must be placed outside of the group opening and in areas that do not pose a threat from ladder-fuels. Locations would be determined for each stand based on site conditions. After brush pile creation, some slash must also remain inside the group opening to protect soils; this slash must be lopped and scattered across the group opening to lie within 3’ of ground in order for proper regeneration to occur on bare mineral soil. This would also serve to protect soils of droughty or sandy ELTPs (see design criterion 56).
- ii. Do not remove crown material (< 4”top) or larger material that is not merchantable as sawtimber or pulpwood, from stands within MA 8.1.

Rare Plants

40. To preserve rock plant habitat, maintain existing shade on and around large boulders and rock outcrops, eight feet (approximately) in diameter and larger, implement a 75 foot no-cut zone during sale layout or marking. For areas of exposed (forest floor) rock larger than approximately 20 feet in diameter, implement a 75-foot (one tree length) no-cut zone from the perimeter during sale layout or marking (Forest Plan Guideline, page 2-33). Apply criteria to locations in compartment 48, stand 67 and compartment 33, stand 5; and any new locations as they are found.

41. Provide protective measures during the event of a ground disturbing activity. No-activity buffers around documented special plant populations in the project area as shown in Table 32.

Table 32. Proposed Buffers for Special Plant Populations

| Taxon | Common Name | Location | Buffer information |
|-----------------------------|--------------------|-----------------|--|
| <i>Botrychium rugulosum</i> | Ternate grapefern | C49 Stand 24 | 200-foot buffer. 2.9 acres. |
| <i>Botrychium simplex</i> | Least moonwort | C203 Stand 10 | 200-foot buffer around two nearby know sites. 3.8 acres. |
| <i>Dryopteris expansa</i> | Spreading woodfern | C48 Stand 76 | 200-foot buffer around two nearby points. 3.7 acres. |

The purposes of the buffers outlined in Table 32 are to prevent damage to populations, prevent changes to the light and moisture regimes, and allow some nearby unchanged conditions for populations to possibly spread.

Minerals

42. For reclamation of the pits, the existing faces would be sloped at 3:1 or as flat as possible, in an attempt to return the area to its natural topography.

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43. After the area has been sloped, it would be covered with the stockpiled topsoil and then seeded with a seed mix prescribed by a Forest Botanist.

Cultural Resources

44. All archaeological and historic sites within the area of potential effect would be identified on the ground before project implementation. The flagged areas would be marked pre-sale. Sites located near the project but outside a payment unit need to be identified so that they are not used as landings, parking, etc.
45. All flagged archaeological and historic sites would include a buffer area as determined by the Forest Archaeologist. The standard buffer is 30 meters (approximately 100 feet).
46. Any changes in the project (location, methods, etc.) must be reported to the Forest Archaeologist so that the affects to cultural resources can be reviewed.

Non-Native Invasive Plants

47. All off-road timber harvest equipment shall be cleaned prior to entry to the project area unless equipment was last used in an area known to be free of all priority invasive plants (Forest Plan, p. 2-13; R9 NNIS BMP 4.4 and all applicable Contract Provisions).
48. For any ground-disturbing activities, take reasonable measures to make off-road equipment/vehicles free of soil, seeds, vegetative matter, and other debris that could contain or hold non-native invasive plant seeds, prior to entry into the project area (R9 NNIS BMP 7.5).
49. To help prevent the spread of known invasive plant sites, treat 53 infestations of high-priority species (Japanese barberry, exotic honeysuckle, and Japanese hedge parsley) known to occur within or nearby areas proposed for timber harvest. Where sites occur within stand planned for harvest, treat the infestation before the harvest begins (R9 NNIS BMP 4.2). As of January 2014, eleven sites still need to be treated.

Soils

Design features are applicable to ground disturbing activities such as commercial timber harvest and non-commercial vegetation treatments.

50. Where applicable to a timber sale contract, the following design features are in addition to timber sale contract provisions for protection of soil and water quality. Procedures include “Sustainable Soil and Water Quality Practices on Forest Land” issued by the Michigan Department of Natural Resources and the Michigan Department of Environmental Quality (MDNR, MDEQ, 2009).
51. Generally, sale area layout activities would exclude all mapped slopes greater than 35%.

52. Equipment operations would be prohibited on all slopes greater than 35% except in special situations where equipment operations on a very short slope would greatly facilitate timber sale operations and/or reduce impacts to soils in other areas. These skid trails would be approved by sale administration personnel or in consultation with a soil scientist on a case by case basis.
53. Equipment operations on slopes between 18% - 35% would be evaluated on a case by case basis by Forest Service personnel. If necessary, sale area layout may exclude these slopes within cutting units or areas would not be marked to avoid soil resource damage.
54. When possible, locate landings on well to moderately-well drained uplands. Landings would be placed in areas where slope would direct sediment away from water bodies.
55. Freshly disturbed soil areas, such as landings and un-surfaced road beds may be left to re-vegetate naturally, if non-native invasive plant colonization potential and erosion potential are low. If erosion potential is high, or the area is prone to colonization by non-native species, seed the area to encourage re-vegetation. Seed would be a local native seed mix, or a non-native, non-persistent seed mix appropriate to the site, and approved by a Forest botanist.
56. For timber harvest, the season of operation would follow Soil Scientist guidelines for the ELTP being operated on (see project file document 311). Typically these guidelines would be used to develop operating restrictions, rather than referring to normal operating seasons. Operation outside of these periods must be agreed to under the provisions of the contract. To address soil productivity concerns within stands located on droughty or sandy upland sites, no pile burning activities would occur and slash distribution would be maintained evenly throughout the stand, as specified in the timber sale contract. See Figure 2 for droughty and sandy upland map unit locations relative to treatment areas; in addition, a list of the droughty and sandy upland map units can be found in the soil specialist folder in the project file (document 317).
57. Stands located on droughty or sandy upland sites subject to the fuels treatment objective of the Bruce Crossing CWPP and the State Line CWPP have additional restrictions. The fuels treatment is intended to address the residual slash (within a mile and a half of any private property) after timber harvest activities and may include roller chopping or mastication. Tops to the landing would only be considered in consultation with the Forest Soil Scientist and would be used on a very limited basis, if at all. The preferred method to deal with residual slash in these stands should be mastication. See Figure 2 (page 104 of this EA) that depicts the droughty and sandy upland map unit locations relative to treatment areas.
58. Do not remove fine woody debris on shallow soils where bedrock is within approximately 20 inches of the surface. Applicable to the following compartment (C) and stands (S): C49-S01, C49-S15, C32-S25, C50-S03, C50-S05 and C50-S01.

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59. Do not remove stumps, roots, or other below-ground biomass. No removal of litter unless needed for site objectives.
 60. Avoid re-entry for harvesting biomass. Re-entry is not allowed if tree regeneration has begun, or the site has been planted.
 61. Logging debris (chips, bark, etc.) at landings would be reduced to a thickness that would not severely restrict vegetative growth on the area as determined by the sale administration personnel.
 62. Two Ecological Classification System (ECS) study plot center points are located in the project area in C54-S66; and C-203-S 29. Protection measures include prohibiting all harvest and machinery travel within a 50 foot radius of the plot center and protecting the three bearing trees.
 63. Within prescribed burn areas, scatter any slash piles to limit the intensity and duration of soil heating caused by the burning of concentrated fuels.
 64. Conduct prescribed burns so that the resulting burn is of low. Generally, the severity of fire effects is proportional to the intensity and duration of soil heating, ensuring a prescribed burn to result in a low severity would help protect soil productivity.

Visuals

Retention/Partial Retention VQO Areas in MA 8.1

65. Wild and Scenic River Corridors - Management activities within the Middle Branch Ontonagon River WSR corridor would be designed to maintain and protect the existing river scenery as viewed first from the river, and second from the river corridor (Forest Plan, p. G-2; WSR CRMP, p. 3-17).
 - a. The Retention VQO applies to the following Compartments (C) and Stands (S): C1-S1; C1-S20; C13-S3, C13-S-23, C13-S37, C13-S39, C13-S47; C16-S8, C16-S12, C16-S28, C16-S41, C16-S43, C16-S45, C16-S48, C16-S49, C16-S51, C16-S52, C16-S54; C17-S5, C17-S17, and C17-31.
 - b. The Partial Retention VQO applies to the following areas: C51-S1, C51-S14, C51-S15, C51-S17, C51-S18, C51-S20, C51-S28, C51-S42, C51-S46, C51-S47, C51-S49, C51-S50, C51-S78; C80-S7 and C80-S10.
66. County Roads and Forest Roads in the WSR Corridor
 - i. When possible, locate log landings at least 400 feet from the road. When this is not possible, access roads to the landings should be angled or curved to screen the landing from view unless safety concerns dictate otherwise.

- ii. Remove slash for 25 feet along the forested edge of Bond Falls Road and Forest Road 5250. Beyond this, for an additional 25 foot zone, lop and scatter slash to lie within 36 inches of the ground. This is to reduce the impacts of timber harvesting to the scenic integrity along a well-traveled road.
- iii. Where the treatments include aspen inclusions, visible openings would be no more than ½-acre in size.
- iv. Roadside openings would not be wider than 200'. Distance between the openings would be at least 1,000' where feasible. Transition the edges of the forest between openings by shaping and feathering in a gradual manner rather than leaving peek-a-boo strips of vegetation. The intent is to reduce the perception of a drastic change in vegetation coverage.
- v. All clearcuts greater than five acres in size, adjacent to the above roads, would be shaped and/or “feathered”. Openings would not be in geometric shapes, but would blend with the landscape. The intent is to reduce the appearance of sharp lines.

Retention/Partial Retention VQO Areas in MA 3.1a

The Retention VQO applies to the following areas: C30-S1, C30-S3; C31-S20, C31-S37, C31-S40, C31-S41, C31-S43, C31-S45; C32-S28, C32, S34; C54-S7, C54-S10, C54-12, C54-S13, C54-S52, C54-S62, C54-S63, C54-S69, C54-S70; C80-S4, C80-S39, C80-S53, C80-S54 and C80-S55.

The Partial Retention VQO applies to the following areas: C1-S4, C1-S10, C1-S11, C1-S12, C1-S13, C1-S14, C1-S15, C1-S17, C1-S31, C1-S32; C3-S13, C3-S14, C3-S19, C3-S27, C3-S35, C3-S36, C3-S39, C3-S45; C4-S3, C4-S5, C4-S6, C4-S9, C4-S12, C4-S15; C10-S15, C10-S17, C10-S19; C11-S1, C11-S2, C11-S4, C11-S5, C11-S6; C14-S1, C14-S2, C14-S3, C14-S4, C14-S6, C14-S7, C14-S17, C14-S18, C14-S21; C18-S1, C18-S2, C18-S3, C18-S8, C18-S9, C18-S20; C19-S1, C19-S7, C19-S21; C25-S1, C25-S6, C25-S12, C25-S13, C25-S14, C25-S15, C25-S24, C25-S28, C25-S29, C25-S30, C25-S33, C25-S35; C26-S13, C26-S16, C26-S17, C26-S24, C26-S25, C26-S31, C26-S33, C26-S36; C27-S2, C27-S3, C27-S4, C27-S5, C27-S8, C27-S13, C27-S16, C27-20; C32-S1, C32-S7, C32-S9, C32-S16, C32-S18, C32-S19, C32-S44, C32-S47; C33-S1, C33-S2, C33-S3, C33-S4, C33-S5, C33-S6, C33-S7, C33-S9, C33-S16, C33-S20, C33-S21, C33-S22, C33-S28, C33-S29, C33-S30, C33-S32, C33-S34, C33-S35, C33-S36, C33-S37, C33-S38; C55-S8, C55-S12, C55-S24, C55-S78; C56-S1, C56-S2, C56-S77 and C56-S78.

67. Areas Adjacent to U.S. 45 and Old U.S. 45

- i. Roadside openings would be no more than 200;. Visible openings would be no more than 5 acres in size in all aspen clearcut areas. Openings would not be in geometric shapes, but would blend with the landscape. The intent is to reduce the appearance of sharp lines. Remove slash from a 25 foot zone measured from the edge of the roadway (or roadway easement if there is one); lop and scatter slash to within 36 inches for an additional 25 foot zone.

-
- ii. Where the treatment is thinning harvest, remove slash from a 25 foot zone measured from the edge of the roadway easement; lop and scatter slash to within 36 inches for an additional 25 foot zone if stand is narrow in depth.

68. All applicable stands visible from Level 3 and Level 4 Forest Roads in MA 3.1a

- i. Where the treatment is clearcut, visible openings should be no more than 5 acres in size. Remove slash from a 25-foot zone measured from the forested edge of the roadway; lop slash to within 36 inches of the ground and scatter for an additional 25-foot zone.
- ii. Where treatment is not clearcut harvest, remove slash from a 25-foot zone measured from the forested edge of the roadway; lop slash to within 36 inches of the ground and scatter for an additional 25-foot zone.

69. Snowmobile Trails 3, 150 and 107

- i. In general, for areas in the foreground of trails, trees would be harvested in such a manner that larger diameter trees and trees that provide visual interest or variety are retained. The retained species and distribution described in the Silviculture and Wildlife design criteria should be utilized in meeting this criterion.
- ii. In areas where selection harvest is proposed adjacent to Snowmobile Trails 3, 150 and 107 slash would be lopped to within 24 inches of the ground and scattered for 25 feet measured from the forested edge of the trail where visible from the trail.

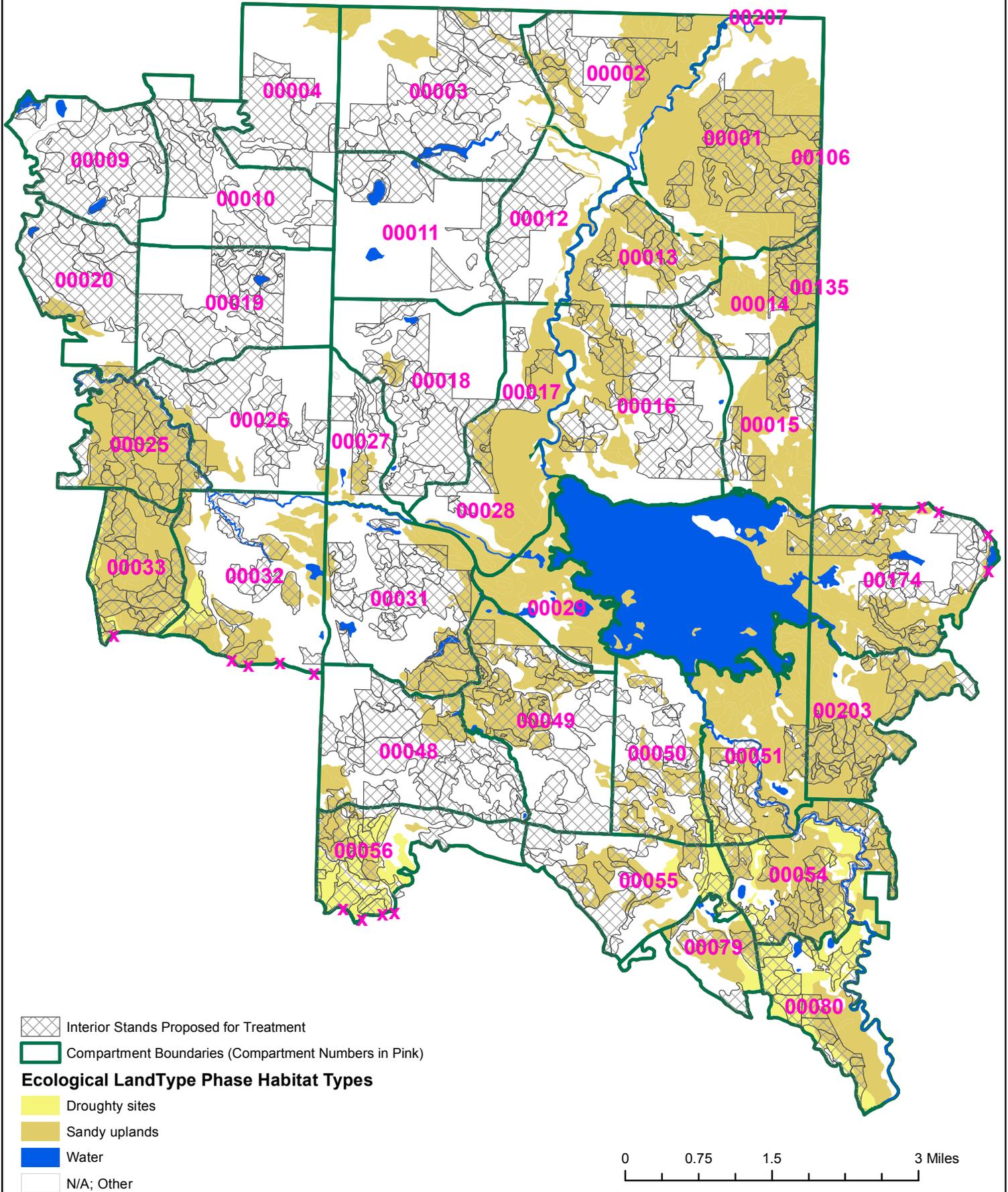
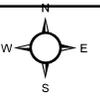
70. Modification VQO Areas - All applicable stands adjacent to the following roads: Himanka Hill, Tanlund Lake, Erickson Lake, Swanson, Calderwood, and Forest Roads 4700 and 5250.

- i. Where the treatment is clearcut harvest, openings up to 25 acres in size may be visible from the roadway. Due to the narrow depth of some stands, necessary inclusions can be placed along the edge of the road, with roadside openings of up to 400' in length between inclusions. Remove slash from a 25 foot zone measured from the forested edge of the roadway; lop and scatter slash to within 36 inches for an additional 25 foot zone.
- ii. Where treatment is not clearcut harvest, remove slash from a 25 foot zone measured from the forested edge of the roadway; lop and scatter slash to within 36 inches of the ground for an additional 25 foot zone.

Monitoring

Evaluate group openings for long-lived conifer establishment treatments in MAs 3.1a and 8.1 to release understory trees where needed 2 to 5 years post-harvest.

Figure 2. Stands Located on Droughty and Upland Soil Types



Interior RMP Riparian Design Criteria – The purpose of the design criteria outlined in Tables 33 and 34 are to protect: (1) aquatic resources from sedimentation that adversely impacts water quality; (2) aquatic species and their habitats; (3) protect soil resources within the riparian areas where the risks of soil displacement can result in aquatic sedimentation and where soils may be more vulnerable to compaction and rutting; (4) protect riparian plant communities; (5) protect wildlife species and their habitats; and (6) provide for connected corridors across the landscape.

Table 33. Design Criteria for Timber Harvest and Associated Activities

| Prescriptions for management within Riparian Areas and Riparian Corridors | Riparian Area - Wetlands; areas nearest to the edges of stream/lake/pond/wetland | Riparian Corridor - Area from edge of riparian area to outer edge of corridor. |
|---|---|--|
| <p>These Design Criteria, unless otherwise noted, are specific to timber harvest and harvest associated activities.</p> <p>The following vegetative management activities are permitted within riparian areas and corridors since they do not include harvest equipment removing trees from the riparian areas:</p> <ul style="list-style-type: none"> • Selective tree releases for wildlife habitat enhancement • Tree felling and girdling for riparian area and/or fish habitat enhancement | <p>No commercial timber harvest or harvest associated equipment operation within riparian area.</p> <p>Avoid crossing streams where possible. When crossing is unavoidable, designated stream crossings would be coordinated with MI-DNR for permanently flowing (perennial) streams. For seasonally flowing (intermittent) streams, designated crossings would utilize mitigation measures such as pipe bundles, or any other appropriate method. Remove bundles or crossing structures upon completion, when crossing is no longer necessary.</p> <p>Avoid crossing wetlands where possible. When crossing is unavoidable, designated crossings would utilize mitigation measures such as corduroy (log stringers) or crossing under frozen conditions, or any other appropriate method. Remove corduroy or</p> | <p>Maintain 75% crown canopy closure within all perennial stream and forest seasonal pond riparian corridors (excluding the riparian area) – except where noted.</p> <p>Maintain 50% crown canopy closure within all intermittent stream, lake and pond, and wetland (sedge-meadow floodplain, forest linear, bogs, swamps, and other poorly drained units) riparian corridors (excluding the riparian area) – except where noted.</p> <p>Discourage removal of limbs and other logging debris from riparian corridors where possible.</p> <p>Retain existing cull trees and snags in riparian corridors where possible. Avoid new road/landing construction within riparian corridors where possible.</p> <p>Designated skid trails would direct activities outside</p> |

| Prescriptions for management within Riparian Areas and Riparian Corridors | Riparian Area - Wetlands; areas nearest to the edges of stream/lake/pond/wetland | Riparian Corridor - Area from edge of riparian area to outer edge of corridor. |
|---|--|---|
| <ul style="list-style-type: none"> Wildlife opening maintenance <i>although a ½ tree length no-cutting buffer would be maintained adjacent to aquatic feature edge and chainsaws and/or brush-saws may be utilized</i> | <p>crossing structures upon completion, when crossing is no longer necessary.</p> <p>Seasonal ponds would not be used as disposal areas for slash.</p> <p>No equipment would be permitted within seasonal ponds.</p> <p>Do not harvest trees within ½ tree length from the edge of seasonal ponds.</p> | <p>of riparian corridors as quickly as possible, would minimize the number of skid trails within riparian corridors, and would avoid steep slopes (D and greater) within the riparian corridors where possible.</p> <p>Landings located near seasonal ponds would be designed, and managed such that they do not contribute sediment to the ponds.</p> <p>No landings would be permitted within 150 feet of seasonal ponds.</p> <p>Retain existing super-canopy trees within lake and pond riparian corridors where possible.</p> |

Table 34. Prescriptions for Management within the Riparian Area and Riparian Corridor based on ELTP and/or Aquatic Feature¹⁹

| ELTP/ Aquatic Feature | Compartments/Stands Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|------------------------------|---|--|--|
| Large permanently | Comps/Stands | Riparian area includes 1 tree lengths | Riparian corridor includes 3 tree |

¹⁹ The list of potentially affected compartments/stands is not all inclusive. Direction for riparian areas and corridors will be applied to all stands with proposed management activities and will be applied to aquatic features as they occur on the landscape (i.e. streams evident on the landscape that don’t exist on maps or wetlands that appear to lie adjacent to a stand but ground truthing during implementation indicates the riparian corridor does not enter the stand, etc.) A tree length is considered approximately 75 feet.

| ELTP/ Aquatic Feature | Compartments/Stand Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|--|--|--|---|
| <p>flowing rivers – Middle Branch Ontonagon</p> <p>Large permanently flowing rivers have wider riparian areas and riparian corridors than other aquatic features in the project area to better facilitate their use as wildlife corridors.</p> | <p>01/01, 01/20, 01/26, 01/39, 01/44; 02/01, 02/08, 02/12, 02/21; 03/43; 13/04, 13/06, 13/14, 13/23, 13/39, 13/35, 13/37, 13/41, 13/47; 16/04, 16/43, 16/40, 16/12, 16/52, 16/41, 16/45, 16/08; 17/17, 17/31, 17/03, 17/32, 17/01, 17/07; 18/16; 28/02, 28/03; 80/10</p> | <p>from the edge of the floodplain ELTP or from bankfull stage when floodplain ELTPs aren't present.</p> <p>When the river is nested within a wide wetland that is greater than 3 tree lengths from bankfull stage wide, go to the edge of the wetland plus ½ tree lengths.</p> <p>When adjacent slopes are D, E, F or LTA 20 go to the top of the slope plus 1 tree length</p> | <p>lengths from the edge of the floodplain ELTP OR 3 tree lengths from bankfull stage when floodplain ELTPs aren't present.</p> <p>When the river is nested within a wide wetland that is greater than 3 tree lengths from bankfull stage in width, go to the edge of the wetland and add 1 tree lengths.</p> <p>When adjacent slopes are D, E, F or LTA 20 go to the top of the slope plus 2 tree lengths OR 3 tree lengths from bankfull stage, whichever is greater.</p> |
| <p>Special Management for coldwater trout habitat with aspen clear-cut management nearby - to discourage beaver activity (400 feet buffer design criteria)</p> <p>Middle Branch Ontonagon, Deadman Creek, Bluff Creek, Sucker Creek</p> | <p>The following stands are found within 400 coldwater trout habitat:</p> <p>Comps/Stands 16/48, 16/54, 20/30 , 25/35, 26/34, 26/36, 31/45, 203/21</p> | <p>Along the perennial fish bearing portion of the streams listed, the riparian area for clearcut management for aspen regeneration: Includes a 400 feet buffer from the river's bankfull stage, or water inundated area (i.e. beaver ponds), or ELTP wetland floodplain, whichever is greatest.</p> <p>Note: All harvest prescriptions that do not include management for aspen would follow standard riparian design criteria.</p> | <p>Riparian corridor includes only the riparian area since it is a large, no-harvest area. Clear cut aspen management may occur immediately adjacent to the 400 foot riparian area.</p> <p>Note: All harvest prescriptions that do not include management for aspen would follow standard riparian design criteria.</p> |

| ELTP/ Aquatic Feature | Compartments/Stand Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|---|---|---|---|
| Special Management for riparian corridor habitat in pine plantations – to - improve stand health, structure, composition and large tree character | Comps/Stand 13/03; 14/13; 16/06; 17/05; 27/03, 27/08, 27/20; 31/25, 31/37, 31/43, 31/54; 48/13; 49/16, 49/18; 50/11, 50/32, 50/33; 51/33; 54/01, 54/20, 54/42; 55/02; 56/07, 56/14, 56/28, 56/34, 56/49, 56/56, 56/58; 80/07; 174/05 | No harvest within the riparian area, defined as floodplain to the top of slope. | From the break in the top of slope to 2 tree lengths away from the break, maintain 70% crown closure and favor large and long lived species (red pine, white pine, hemlock). Keep machinery a minimum of 30 feet away from the break in slope. |
| Small permanently flowing streams (A slopes) ELTP 35a | None | Riparian area includes 1 tree length from the bankfull stage. OR when stream is nested within a floodplain, riparian area includes the ELTP defined floodplain plus 1 tree length. | 2 tree lengths back from the bankfull stage OR when stream is nested within a floodplain/wetland, go 2 tree lengths from the edge of the wetland, whichever is greater. |
| Small permanently flowing Streams (B and C slopes), Roselawn Creek, Paulding Creek, Interior Creek, McGinty Creek, unnamed creek, Trout Creek | Comps/Stand 25/01, 25/07, 25/24; 31/01, 31/20, 31/43; 32/01; 48/39, 48/42; 50/31, 50/50; 54/01, 54/46; 55/20; 56/17, 56/44; 174/41, 174/48 | Riparian area includes 1 tree length from bankfull stage. OR when stream is nested within swamp, bog, or floodplain, riparian area includes the ELTP defined swamp, bog, or floodplain plus 1 tree length. | When permanently flowing (perennial) stream is nested within swamp, bog, or floodplain ELTP, go to the top of the adjacent slope plus 1 tree length OR 2 tree lengths back from the edge of the swamp, bog, or floodplain, whichever is greater. Otherwise, area to the top of the adjacent slope plus 1 tree length. |
| Small permanently | Comps/Stand | Riparian area includes area to the top | Area to the top of the adjacent slope |

| ELTP/ Aquatic Feature | Compartments/Stands Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|--|---|--|--|
| flowing streams (D slopes) | 31/63, 31/25; 48/66; 51/28, 51/31, 50/32; 174/19; 203/02, 203/07, 203/09, 203/10, 203/17 | of the adjacent slope plus 1 tree length. | plus 2 tree lengths. |
| Seasonally (intermittent) flowing streams (A slopes) ELTP 35a | Comps/Stands 04/03, 11/02, 48/36, 48/49 | Riparian area includes ½ tree length from stream’s bankfull stage. | 2 tree lengths back from the bankfull stage |
| Seasonally (intermittent) flowing streams (B and C slopes) Aho Creek, Pine Creek, Unnamed creeks, Payne Creek, Redlight Creek, Matheson Creek | Comps/Stands 02/03, 02/12; 03/06, 03/12, 03/22, 03/24, 03/35, 03/14; 04/03; 09/09, 09/11; 11/02, 11/04, 11/05, 11/06, 11/18; 12/03; 13/11; 14/12; 16/01, 16/03, 16/19, 16/31, 16/40; 19/16, 19/17; 20/09; 26/06, 26/07; 48/05, 48/08, 48/16, 48/17, 48/18, 48/27, 48/29, 48/30, 48/36, 48/41, 48/49, 48/67, 48/71, 48/74, 48/76; 49/07, 49/19, 49/20, 49/23; 56/04, 56/08; 79/02 | Riparian area includes ½ tree length from stream’s bankfull stage. | Area to top of adjacent slope plus 1 tree length. |
| Seasonally (intermittent) flowing streams | Comps/Stands 04/02, 04/03, 04/05, | Riparian area includes Area to the top of the adjacent slope plus ½ tree | Area to top of adjacent slope plus 1 tree length. |

| ELTP/ Aquatic Feature | Compartments/Stand Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|---|---|--|---|
| (D slopes and greater) Aho Creek, Unnamed creeks | 04/06; 09/09, 09/11; 11/02; 12/03; 13/04, 13/06, 13/11; 14/13; 16/01, 16/03, 16/06 | lengths. | |
| Lakes and ponds A, B, and C slopes) Bum Lake, Hobo Lake, Hijacker Lake, Interior Lake, Sumac Lake, Beaver Pond (trib. to Bluff Creek), Behlow Lake, unnamed lake/pond, Tanlund Lake, Erickson Lake, Pickle Pond, Amber Lake, Camp Lake | Comps/Stand 03/19, 03/21; 09/30; 11/06; 19/02, 19/06, 19/21; 26/11; 27/07 30/01, 30/21; 51/07 54/07, 54/42, 54/43, 54/52, 54/58; 55/20 56/07, 56/17; 80/05, 80/07, 80/39; 174/05, 174/14, 174/45 | Riparian area includes 1 tree length from edge of lake/pond. OR If the lake is nested within a swamp, bog, or floodplain, then the riparian area would be 1 tree length from the edge of the ELTP defined swamp, bog, or floodplain. | Riparian corridor includes 2 tree lengths from the edge of the lake/pond. OR if the lake/pond is nested within a swamp, bog, or floodplain, riparian corridor would be 2 tree lengths from the edge of the ELTP defined swamp, bog, or floodplain. OR area to the top of the slope plus 1 tree length, whichever is greater. |
| Lakes and ponds D slopes and greater | Comps/Stand 11/02; 20/08 and where found | Riparian area includes area to the top of the adjacent slope plus ½ tree lengths. | Area to top of adjacent slope plus 1 tree length. |
| Forest Seasonal Ponds (1/2 acre in size or larger) | Where found | Riparian area includes the seasonal pond and the tree rooting zone. | The whole seasonal pond plus 1 tree length. |
| Wetlands (includes sedge-meadow floodplain, swamps, bogs, ash drainways and | Comps/Stand 03/02, 03/05, 03/06, 03/12, 03/24; 04/03; 09/02, 09/09, 09/30, | Riparian area includes the wetland ELTP plus 1 tree length. When adjacent slopes are D, E, F or | 2 tree lengths from the edge of the ELTP defined wetland. OR Entire ELTP plus area to top of |

| ELTP/ Aquatic Feature | Compartments/Stands Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|---|---|--|--|
| <p>other poorly or very poorly drained mineral soils)</p> <p>(ELTPs 40, 41, 42, 50, 51, 54, 61, 78, 79, 80, 82, 83, 99, 190d, 190e, 191, 231, 222, 233, 225a, 3303)</p> | <p>09/11; 10/01, 10/09, 10/17, 10/18, 10/21, 10/26; 11/02, 11/04, 11/08, 11/12; 12/10; 14/09; 15/04, 15/13; 16/03, 16/19, 16/22, 16/23, 16/36, 16/40, 16/48, 16/49, 16/51; 17/01, 17/03, 17/07, 17/12, 17/32; 18/02, 18/06, 18/08, 18/09, 18/14, 18/19, 18/20, 18/31, 18/38; 19/09, 19/17; 20/01, 20/02, 20/09; 26/05, 26/06, 26/07, 26/13, 26/33; 27/04, 27/16, 27/13; 30/01, 30/03, 30/24, 30/37, 30/38; 31/08, 31/09, 31/12, 31/20, 31/21, 31/47, 31/70; 32/16, 32/18, 32/44; 48/17, 48/28, 48/32, 48/54, 48/56; 49/09, 49/13, 49/24, 49/38, 49/54, 49/57, 49/78; 50/03, 50/11, 50/12,</p> | <p>LTA 20 go to the top of the slope plus 1 tree length</p> | <p>adjacent slope plus 1 tree length, whichever is greater.</p> <p>When adjacent slopes are D, E, F or LTA 20 go to the top of the slope plus 2 tree lengths.</p> |

| ELTP/ Aquatic Feature | Compartments/Stands Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|---|--|--|--|
| | 50/30; 51/08; 54/01, 54/07, 54/10, 54/20, 54/24, 54/42, 54/43, 54/52, 54/58, 54/63, 54/70, 54/78; 55/09, 55/13, 55/14, 55/20, 55/49; 56/04, 56/07, 56/28; 79/20, 79/42; 80/05, 80/06, 80/07, 80/13, 80/23, 80/38, 80/39, 80/45, 80/55; 174/05, 174/19, 174/34, 174/45, 174/62; 203/07 | | |
| Wetland – Forested Linear Wetland (ELTPs 36, 75, 122a, 218, 229) | Comps/Stands 09/11; 10/20, 10/21; 13/41; 14/12, 14/14; 15/02, 15/03; 16/03, 16/19, 16/23; 17/12; 18/14, 18/31; 20/09, 20/10; 26/05, 26/06, 26/07, 26/13; 27/20; 28/03; 30/06, 30/12, 30/14, 30/21, 30/22, 30/24; 31/11, 31/12; 32/16; 40/03; 49/04, 49/05, 49/07, 49/09, 49/11, 49/20, 49/23, | Riparian area includes the wetland ELTP plus ½ tree length. | Edge of forested linear wetland plus 1 tree length. |

| ELTP/ Aquatic Feature | Compartments/Stands Potentially Affected | Riparian Area - Wetlands; areas nearest to the edges of stream / lake / pond / wetland. Riparian area was previously known on the Forest as the “nearbank zone” | Riparian Corridor - Management direction from edge of riparian area to outer edge of corridor. The corridor was previously known on the Forest as the “riparian influence area” or “outer zone” |
|----------------------------------|---|--|--|
| | 49/24, 49/25, 49/40, 49/51, 49/54, 49/78; 50/24, 50/27, 50/30; 51/08; 55/05; 174/05, 174/15; 203/10 | | |

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Appendix 3. Maps

Interior VMP Proposed Action

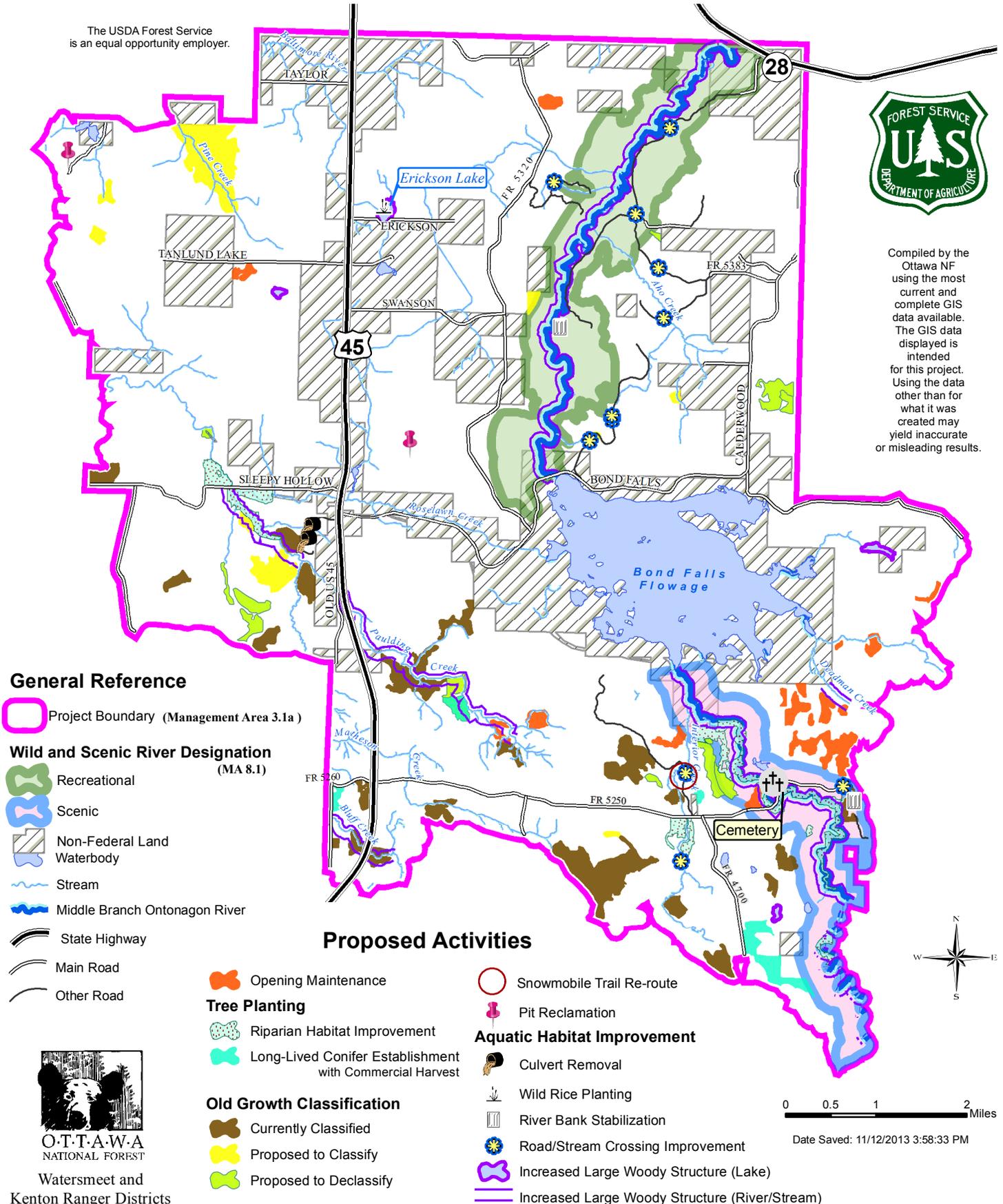
MAP #6

Proposed Activities Associated Projects

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using the most
current and
complete GIS
data available.
The GIS data
displayed is
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for this project.
Using the data
other than for
what it was
created may
yield inaccurate
or misleading results.



O.T.T.A.W.A.
NATIONAL FOREST

Watersmeet and
Kenton Ranger Districts

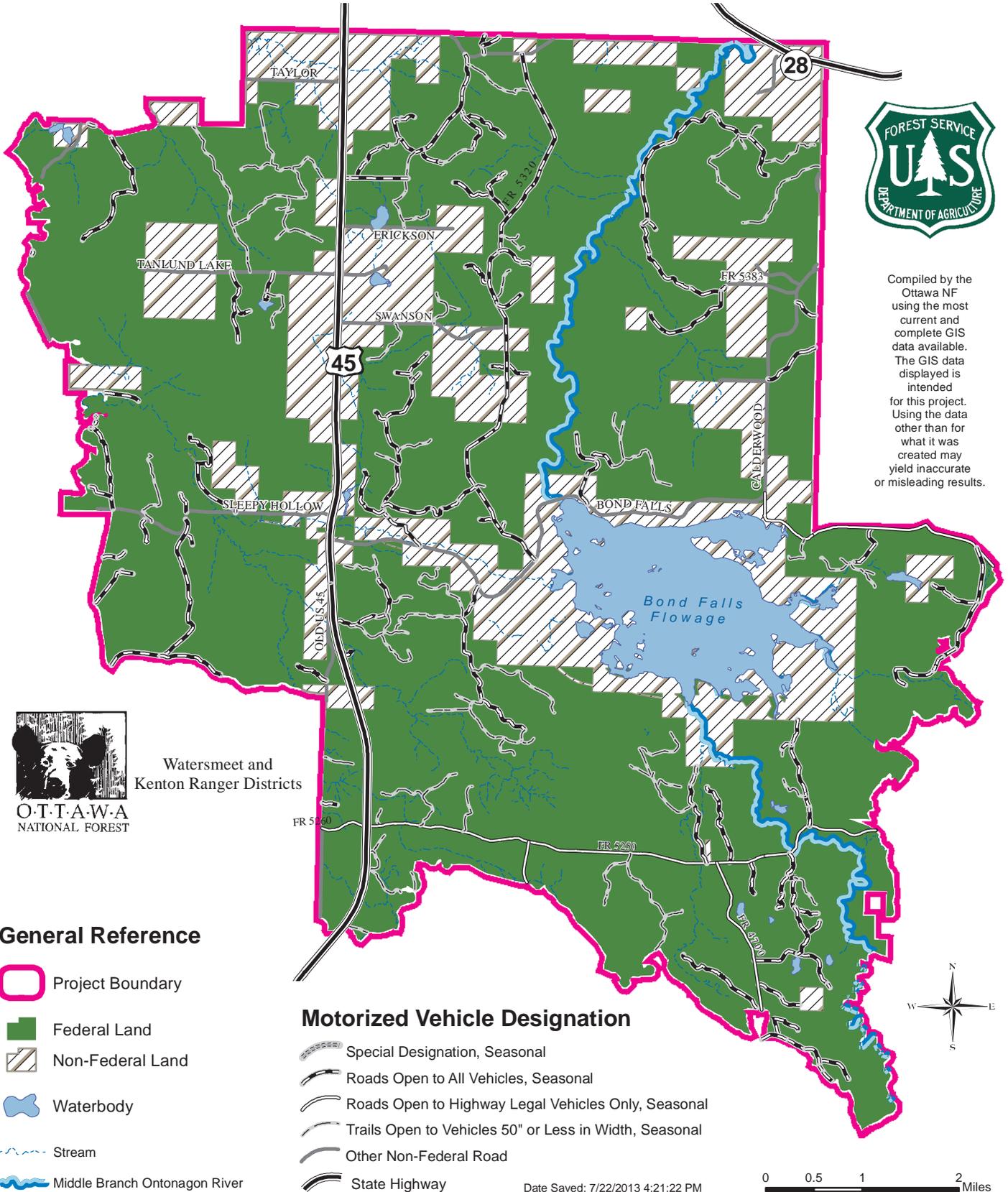
Interior VMP Proposed Action

MAP #5

Proposed Motor Vehicle Use Map



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Watersmeet and
Kenton Ranger Districts

General Reference

- Project Boundary
- Federal Land
- Non-Federal Land
- Waterbody
- Stream
- Middle Branch Ontonagon River

Motorized Vehicle Designation

- Special Designation, Seasonal
- Roads Open to All Vehicles, Seasonal
- Roads Open to Highway Legal Vehicles Only, Seasonal
- Trails Open to Vehicles 50" or Less in Width, Seasonal
- Other Non-Federal Road
- State Highway

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0 0.5 1 2 Miles

Interior VMP Proposed Action

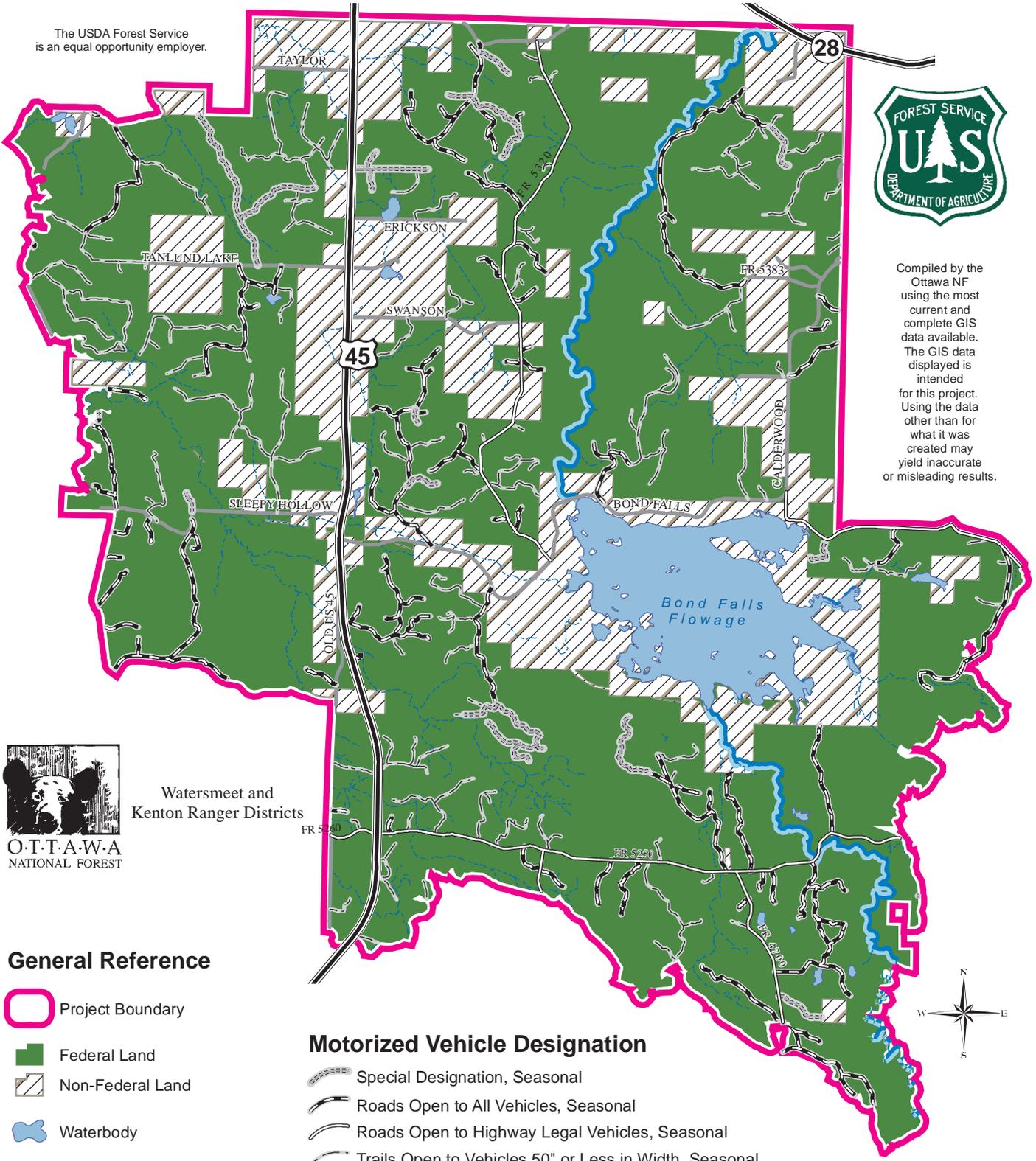
MAP #4

Current Motor Vehicle Use Map

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or misleading results.



Watersmeet and
Kenton Ranger Districts

General Reference

- Project Boundary
- Federal Land
- Non-Federal Land
- Waterbody
- Stream
- Middle Branch Ontonagon River

Motorized Vehicle Designation

- Special Designation, Seasonal
- Roads Open to All Vehicles, Seasonal
- Roads Open to Highway Legal Vehicles, Seasonal
- Trails Open to Vehicles 50" or Less in Width, Seasonal
- Other Non-Federal Road
- State Highway



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Interior VMP Proposed Action

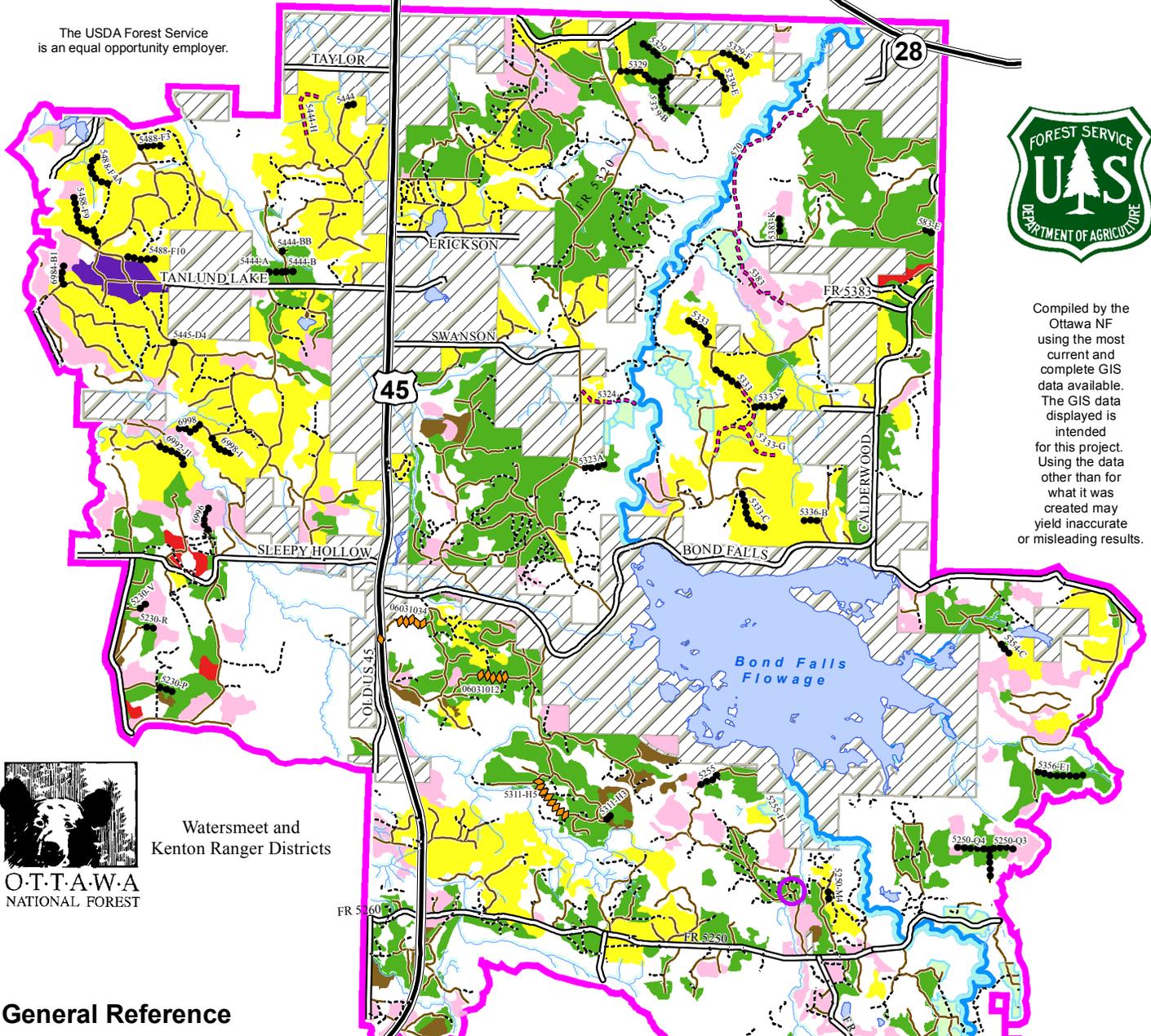
MAP #3

Proposed Activities Vegetation Management, and Roads

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Watersmeet and
Kenton Ranger Districts

O-T-T-A-W-A
NATIONAL FOREST

General Reference

- Project Boundary
- Non-Federal Land
- Waterbody
- Stream
- Middle Branch Ontonagon River
- State Highway
- Main Road
- Other Road

Proposed Activities

Vegetation Management

- Selection
- Salvage
- Clearcut
- Overstory Removal
- Shelterwood
- Thinning
- Group Selection/Thinning

Road Projects

- Construction
- Reconstruction
- Decommission
- Trail Construction
- Snowmobile Trail Re-route



0 0.5 1 2 Miles

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Interior VMP Proposed Action

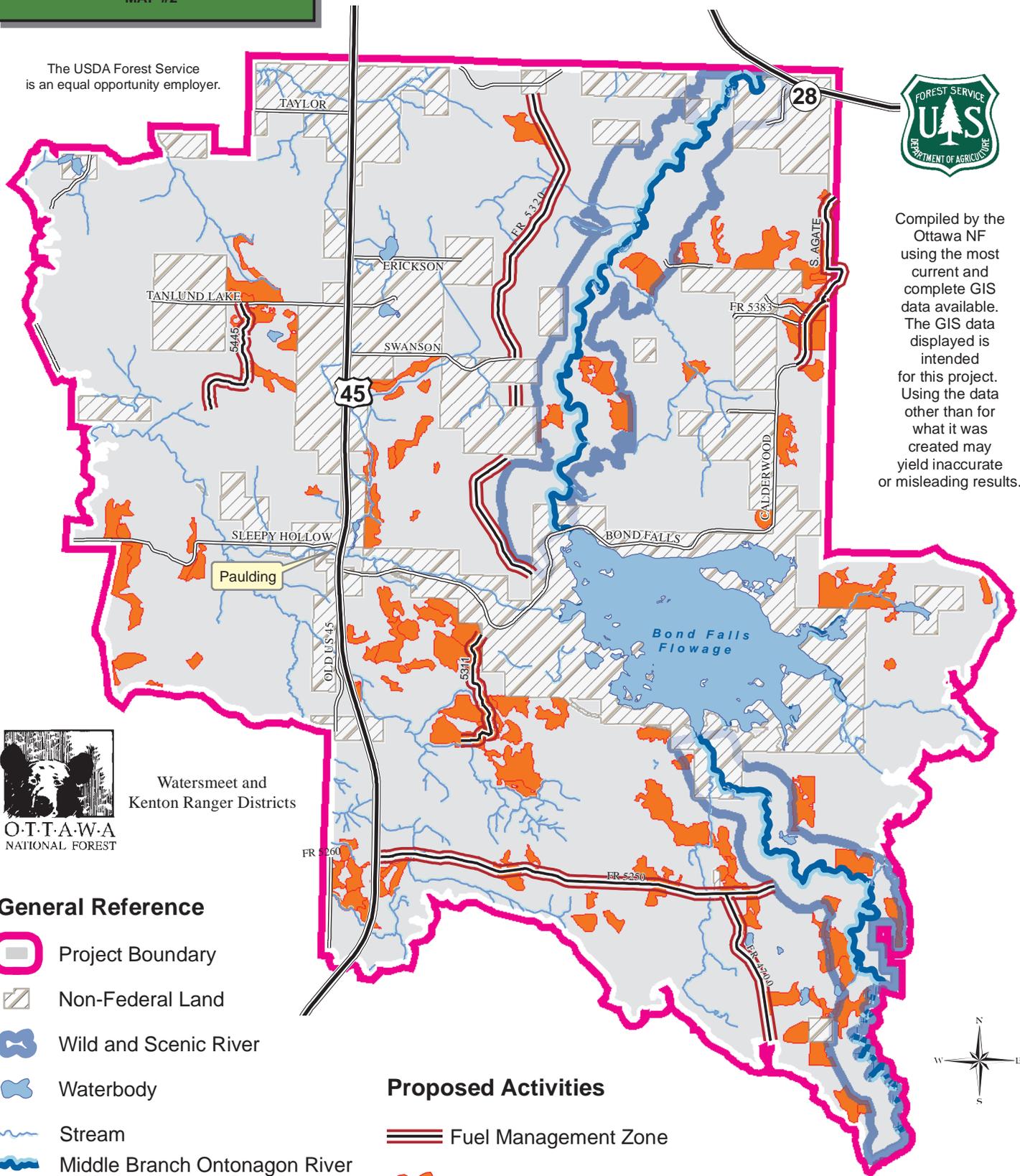
MAP #2

Proposed Activities Fuels Projects

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Watersmeet and
Kenton Ranger Districts

General Reference

- Project Boundary
- Non-Federal Land
- Wild and Scenic River
- Waterbody
- Stream
- Middle Branch Ontonagon River
- Main Road
- State Highway

Proposed Activities

- Fuel Management Zone
- Fuel Reduction

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Interior VMP Proposed Action

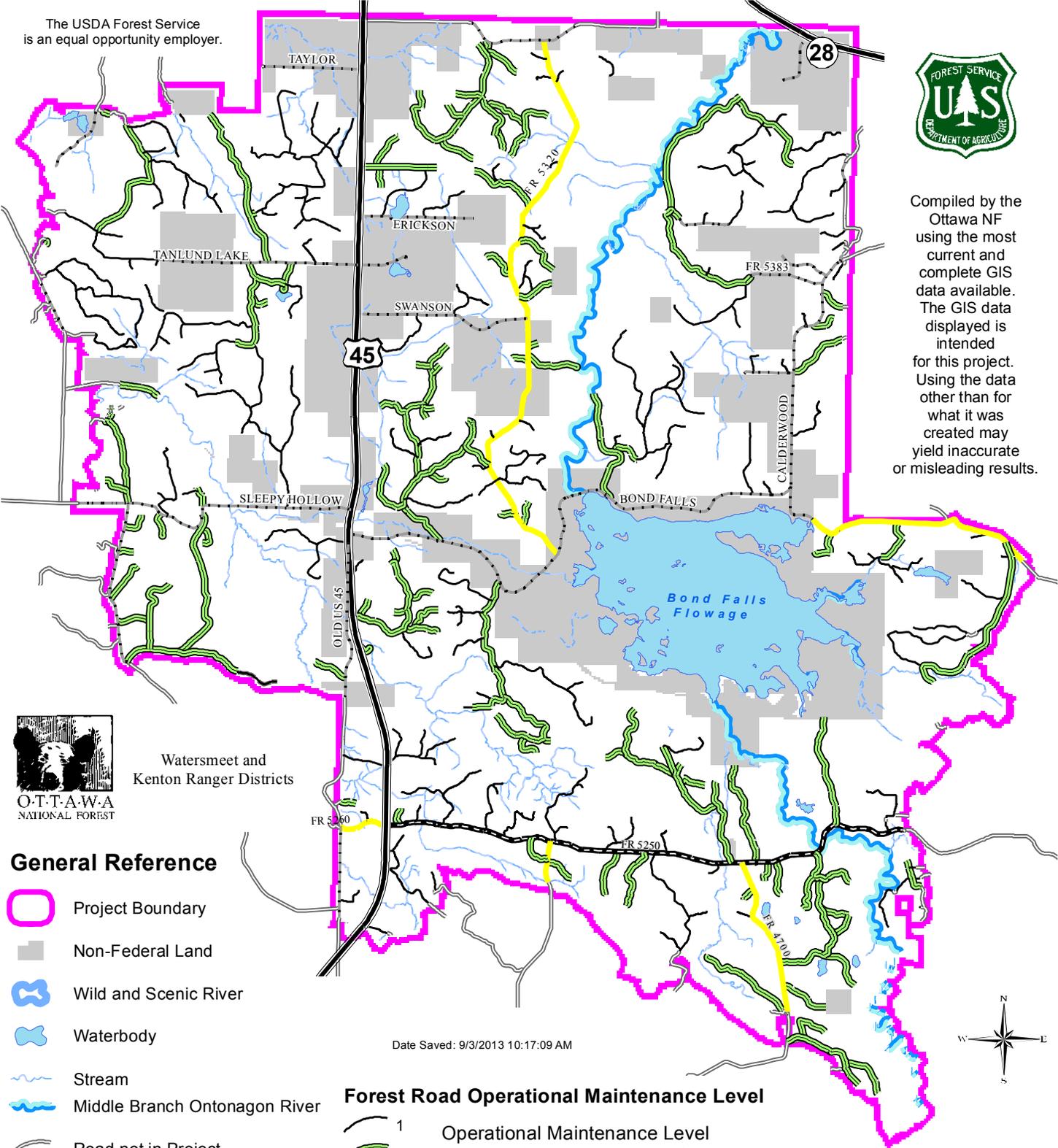
MAP #1

Existing Transportation Maintenance Levels

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Watersmeet and Kenton Ranger Districts

General Reference

- Project Boundary
- Non-Federal Land
- Wild and Scenic River
- Waterbody
- Stream
- Middle Branch Ontonagon River
- Road not in Project
- Other Non-Federal Road
- State Highway

Forest Road Operational Maintenance Level

- 1
 - 2
 - 3
 - 4
- Operational Maintenance Level numbers to be described in the Transportation System section of the scoping letter.

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