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Forest
Service

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Porkey Heights

Environmental Assessment

**Marienville Ranger District
Allegheny National Forest**

**Warrants 5104, 5105, 5267
Kingsley Township, Forest County, Pennsylvania**

**Warrants 3188, 3192, 3194, 4790, 4791, 4823, 5101, 5104, 5267,
and 5282
Howe Township, Forest County, Pennsylvania**

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Step Two–Develop Project Proposal. The Forest Service or a project proponent develops detailed, site-specific proposal. You may be proponent who develops proposal or you can share input and ideas.

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Step Four–Develop Reasonable Range of Alternatives. If scoping determines need for EA or EIS, the Forest Service develops alternatives. You can suggest alternatives to the proposed action during scoping.

Step Five–Information for Formal Public Comment Period. Forest Service performs analysis of environmental effects and solicits formal public comments. You provide timely comments on the analysis during the comment period.

Step Six–Environmental Analysis & Decision. Forest Service responds to the comments received in step 5 and makes decision to implement one of the alternatives. You review the decision; you can appeal if you disagree and have “standing.”

Step Seven–Appeal. Forest Service allows public 45 days following legal notice of decision to appeal. You may file formal notice of appeal.

Step Eight–Implementation. Forest Service implements the project.

Step Nine–Monitor and Evaluate. Forest Service monitors and evaluates project results.



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Summary

The Marienville Ranger District of the Allegheny National Forest (ANF) is proposing the following management activities for the Porkey Heights Project (Alternative 1: Proposed Action)

- Creation of 541 acres of early structural habitat using even-age management reforestation treatments.
- Reforestation activities listed in Table 1 (page 7) maintain and improve forest health through the promotion of stand growth, vigor and tree species diversity.
- Upgrading four non-system roads (1.8 miles) and adding them to the Forest Service road system; reconstructing (0.3 miles) of one Forest Service System road; decommissioning of portions of three Forest Service System roads (1.7 miles) and non-system roads (1.2 miles); application of limestone surfacing to 2.1 miles of Forest Service System roads; maintaining 19 miles of Forest Service System roads; expansion of five existing stone pits (4.25 acres); rehabilitation of four stone pits (12.9 acres) and reclamation (decommission) of 2 existing stone pits (7 acres).
- Wildlife habitat enhancement on approximately 159 acres; installing 36 wildlife structures, and building 29 brush piles within the project area.
- Treatment of 5 to 10 acres of non-native invasive plant species along road corridors and within project area stands through a combination of manual, mechanical and chemical use.
- Construction or enhancement (capped with limestone surfacing) of 15 pull-off areas to serve as parking areas for hunting or dispersed camping.
- Harvest of 10 million board feet of timber from approximately 1,840 acres of National Forest System lands within the Marienville Ranger District.

The project and analysis area contains 5,319 acres of National Forest System lands located in management area 2.2 (1,219 acres) and management area 3.0 (4,100 acres). The proposed action would implement the 2007 ANF Land and Resource Management Plan, except oil and gas development standards and guidelines. As per Chief Abigail Kimball's 2007 ANF Land and Resource Management Plan appeal decision, issued on February 15, 2008, private oil and gas development standards and guidelines would follow the site-specific authority provided in the 1986 ANF Land and Resource Management Plan. This project does not contain any oil and gas development proposals. The analysis in this environmental assessment is tiered to the ANF Land and Resource Management Plan Final Environmental Impact Statement and Record of Decision.

An interdisciplinary team of resource specialists chose the initial treatment areas from an analysis of existing conditions within the project area. The team identified the need to manage individual stands within the project area in order to attain the desired condition listed in the ANF Land and Resource Management Plan. Management needs within the project area include establishing areas of young forest, improving stand conditions for optimum tree growth, improving forest structure, providing high quality hardwood timber, performing maintenance on Forest Service System roads, treating non-native invasive plant species and improving wildlife habitat.

A no action alternative (Alternative 2) was also considered in detail by the interdisciplinary team. The proposed activities for the alternatives are summarized in Table 2 (page 13). The alternatives are described in section II and the effects for each alternative are included in section III, environmental consequences. The action alternative will meet the purpose and need and is consistent with ANF Land and Resource Management Plan.

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Introduction

The Forest Service, U.S. Department of Agriculture has prepared this analysis and document in compliance with the National Environmental Policy Act of 1969 (NEPA), the Appeals Reform Act of 1993 (ARA) and other relevant federal laws and regulations as part of the environmental analysis process for the Porkey Heights project. This environmental assessment (EA) discloses the proposed action, connected actions, issues, design features, mitigations (if any), alternatives to the proposed action and analysis of the environmental effects that would result if the proposed action or another alternative (including no action) were implemented.

Additional documentation regarding environmental effects may be found in the project file (or planning record) located at the Marienville Ranger District office in Marienville, Pennsylvania.

Tiering to the Final Environmental Impact Statement for the Allegheny National Forest Land and Resource Management Plan

The analysis for this project is tiered to the Final Environmental Impact Statement (FEIS) (USDA-FS 2007a) and Record of Decision (ROD) (USDA-FS 2007b) for the Allegheny National Forest (ANF) Land and Resource Management Plan (LRMP) (USDA-FS 2007c). Tiering is described in Forest Service Handbook (FSH) (1909.15) as a process of summarizing and incorporating by reference from other environmental documents of broader scope to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision (FSH 1909.15, Chapter 42.1). The environmental impact statement (EIS) for a land and resource management plan is an example of a “broad” EIS prepared for a program or policy statement. The Porkey Heights EA is a project-level analysis. The scope of the Porkey Heights EA will be confined to addressing issues and possible environmental consequences of this project. It will not attempt to address decisions made at higher levels. It will, however, implement direction provided at those higher levels and rely on the effects analysis included for activities proposed in this project unless stated by exemption.

The ANF LRMP (or Forest Plan) is a programmatic document that implements the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA). The ANF LRMP implements NFMA by providing “for diversity of plant and animal communities based on the suitability and capability of the (ANF) in order to meet overall multiple-use objectives and within the multiple-use objectives of a land management plan” (16 USC 1604(g)(3)(B)). The ANF LRMP provides guidance for managing resources and uses on the ANF, except for private oil and gas development (OGD) standards and guidelines. As per Chief Abigail Kimball’s 2007 ANF LRMP appeal decision, issued on February 15, 2008, OGD standards and guidelines would follow the site-specific authority provided in the 1986 ANF LRMP. This project does not contain any OGD proposals. All applicable laws, regulations, policies and national and regional direction, as detailed in the Forest Service Manual and Handbook, are part of ANF LRMP direction. In the ANF LRMP, goals and objectives present a picture of what the ANF should look like and what services, products and experiences it should provide. Standards and guidelines provide direction for implementing projects and activities. Monitoring evaluates whether the goals and objectives are being met and determines if additional or different management direction is necessary.

The ANF Fiscal Year 2007 Monitoring and Evaluation Report is incorporated by reference. This report contains updates to information on forest health conditions and wildlife information. None of the items monitored in 2007 identified a need to amend the ANF LRMP (USDA-FS 2008a, p.59).

I. Proposal, Needs, and Issues

Background

The project area includes 5,319 acres of National Forest System (NFS) lands and is located in Warrants 5104, 5105 and 5267 in Kingsley Township and Warrants 3188, 3192, 3194, 4790, 4791, 4823, 5101, 5104, 5267 and 5282 in Howe Township, Forest County, approximately 6 miles north of Marienville, Pennsylvania.

Located in the middle Tionesta Creek watershed, the project area includes Allegheny and upland hardwoods, an oak component, wildlife openings, private OGD and associated roads, Forest Service System roads, a snowmobile connector trail and a number of small streams, one of which, Blood Run, is classified as a high quality cold water fishery by the Pennsylvania Department of Environmental Protection (DEP). The other small streams in the project area include Logan Run, Wildcat Run, Kingsley Run and Phelps Run, which are classified as cold water fisheries. Logan Run is also designated as a Class A wild trout fishery by the Pennsylvania Fish and Boat Commission (PBFC). All of these streams drain into Tionesta Creek, which forms a portion of the western border of the project area, and is important habitat for both aquatic and terrestrial wildlife species.

A roads analysis process (RAP) was started in November 2007. This included a road inventory, road condition assessment, and scoping period to identify road concerns within the area. Marienville District Ranger, Rob T. Fallon, established parameters that there would be no Forest Service road construction using new corridors within the Porkey Heights project area, and there would be no changes to the existing snowmobile system for this proposal. The public identified concerns associated with the existing snowmobile system; the public concern was primarily about what happened to the trail when it left NFS lands. While this is a transportation concern, it is beyond the scope of this project. If the Forest Service is part of any future solution to this concern, a separate proposed action will be made. The district ranger directed the interdisciplinary (ID) team to incorporate the road inventory and applicable public concerns to identify the minimum road system needed in the development of this proposal. The ID team considered the comments from the public and transportation inventory information in developing the project proposal.

Purpose and Need

The 5,319 acres of NFS lands within the project area are guided by ANF LRMP goals, indicating a desired condition or type of accomplishment sought during the implementation of the ANF LRMP. The purpose of the Porkey Heights Project is to implement ANF LRMP direction in the decision area. The ANF LRMP provides programmatic direction for how the ANF is to be managed for sustainable, multiple benefits. The ANF LRMP also divides the Forest into management areas (MAs), each with a specific objective and associated standards and guidelines. Proposed treatment units lie within MA 2.2 and MA 3.0. The goals and objectives for MA 2.2 and MA 3.0 are in the ANF LRMP (USDA-FS 2007c, pp. 109–112 and 113–115). All proposed treatments are consistent with management direction applicable to MAs 2.2 and 3.0.

The ID team looked at the location of the project and defined the project boundary and the “why here – why now.” The ID team identified the need to help achieve the desired condition in the ANF LRMP by addressing late structural vegetation objectives for MA 2.2 and age class distribution objectives for MA 3.0. There has been little vegetation management in the project area during the past 10 years. The underlying rationale defining “why here – why now for this project proposal is (1) in MA 3.0, there is a well distributed number of mature stands that could be treated to meet early structural age class objects and (2) in MA 2.2, there are a number of stands where treatments can enhance late structural forest habitat objectives. There are several site-specific opportunities within the project area for vegetation management

that would help achieve the desired conditions described in the ANF LRMP. An opportunity to enhance a resource is defined as a “need.”

The proposed action is based on the following needs for action and ANF LRMP goals:

- To provide a diversity of vegetation patterns across the landscape to represent well distributed habitats, a range of forest age classes and vegetative stages, a variety of healthy functioning vegetation layers, moderate to well stocked forest cover and the variety of vegetation species or forest types necessary to achieve multiple resource objectives and sustain ecosystem health (USDA-FS 2007c, p. 14).
- To provide forage and cover for a variety of wildlife species through habitat enhancements. To contribute to the conservation and enhancement of habitat integrity for species with viability concerns by protecting specific habitat elements crucial to the long-term sustainability of species. To provide nesting sites, breeding areas and young-rearing habitat free from human disturbance for species with viability concerns (USDA-FS 2007c, p 14).
- To implement non-native invasive plant (NNIP) species treatments that would limit the introduction and spread of these species, and conserve forest resources in a manner that presents the least hazard to humans and maintains or restores forest resources (USDA-FS 2007c, p. 13).
- To provide a safe, efficient, and economical transportation system that is responsive to public and administrative needs; having minimal adverse effects on ecological processes and ecosystem health, diversity and productivity, and is in balance with needed management actions (USDA-FS 2007c, p 16).
- Maintain, restore, or improve soil quality, productivity and function. Manage soil disturbances from management activities such that they do not result in long-term loss of inherent soil quality and function (USDA-FS 2007c, p.14).
- Maintain or restore watersheds and their associated stream and groundwater processes, channel stability, riparian resources and aquatic habitats to a functional condition (USDA-FS 2007c, p.14).
- There is an opportunity to improve hunter access and parking areas. These parking areas for hunting, fishing and dispersed recreation are needed to protect resources and the environment (USDA-FS 2007c, p 18). They also would facilitate outdoor recreation and provide a safe public transportation system.

The project area includes MA 2.2 (1,219 acres) and MA 3.0 (4,100 acres). This proposal would achieve the following ANF LRMP objectives related to each management area:

- MA 2.2 – This MA contributes to the desired condition by providing predominantly late structural forest habitat that links relatively large areas of older forest, or core areas, across the landscape. Vegetation management would provide complex late structural forest conditions and maintain mast-producing species. Uneven-aged management (single tree selection followed by group selection) along with reforestation treatments would restore a diverse seedling and sapling component, improving forest structural conditions and understory species diversity. This treatment accelerates development of certain structural components, which are characteristic of late structural forests. Intermediate thinning is proposed to accelerate development of late structural components, including large trees, down wood and canopy caps. Even-aged regeneration treatment (shelterwood seed cut followed by shelterwood removal) in an oak stand would establish an early structural oak seedling component. This would include the use of prescribed fire, which would reintroduce fire into a fire-adapted oak ecosystem to help conserve regional biodiversity and sustain ecosystem structure and function (USDA-FS 2007c, p 14). The

desired conditions and objectives for MA 2.2 are detailed in the ANF LRMP (USDA-FS 2007c, pp. 109–112).

- MA 3.0 – This MA contributes to the desired condition by providing a mix of vegetative conditions and quality timber products that contribute to the local and regional economy. Regeneration harvests, along with reforestation treatments would allow for the establishment of an early structural forest, which is characteristic of this management area and helps achieve the desired condition of a diversity of vegetation patterns across the landscape. The desired conditions and objectives for MA 3.0 in the ANF LRMP (USDA-FS 2007c, pp. 113–115).

Analyzing the land capability and landscape needs, the ID team has looked at the existing condition in the project area and identified site-specific opportunities for natural resource management that could help achieve the desired condition described in the ANF LRMP (**Purpose for the Action**). This includes establishing areas of young forest, improving stand conditions for optimum tree growth, improving forest structure, providing high quality hardwood timber, performing transportation activities on Forest Service System roads, treating non-native invasive plant (NNIP) species and improving wildlife habitat (**Need for the Action**).

Proposed Action

To help achieve the desired condition described in the ANF LRMP, the Forest Service proposes to implement vegetation treatments, reforestation treatments, NNIP species treatments, wildlife habitat enhancements and transportation activities. Proposed harvest activities would include both even-aged and uneven-aged management on 1,840 acres within the project area. To maintain and improve forest health through the promotion of stand growth, tree vigor and species diversity, contribute to a more balanced age class in MA 3.0 and promote late structural habitat in MA 2.2, the proposed action includes the following:

Proposed **Silvicultural activities** would include:

- Even-aged regeneration treatments, including shelterwood seed cuts and shelterwood removals, are proposed on 541 acres (10 percent of the project area). These treatments would be accompanied by reforestation treatments, including site preparation, herbicide application, planting, fencing or individual tree shelters, fertilization and crop tree release to provide and maintain age class and species diversity. The maximum number of reforestation treatments are proposed for a given treatment area, and many of the treatments occur on the same piece of ground.
- Even-aged intermediate thinning treatments are proposed on 1,207 acres (23 percent of the project area), to promote stand health, growth, tree vigor and species diversity. Approximately 157 of these acres (3 percent) would be accomplished non-commercially with the remainder harvested commercially. The proposed non-commercial thinnings (130 acres) within MA 2.2 are prescribed in order to lessen the competition on some of the minority tree species and would accelerate increases in height and diameter of the remaining trees found within these stands. These treatments would also provide an increased amount of downed logs with a varying range of diameters so that several stages of decay would remain on site for a long period of time. The remaining non-commercial thinnings (27 acres) are in MA 3.0 and contain dense patches of hemlock. The proposed treatments would increase the amount of sunlight reaching the forest floor, resulting in improved conditions for hemlock regeneration, and would decrease competition among the midstory and overstory hemlocks, resulting in increased growth rates of the released trees.
- Forest health activities would include reforestation-only practices on 757 acres (14 percent of the project area) to increase species diversity and promote tree growth in additional stands within the

project area. These would include crop tree release, spot herbicide, fencing, tree planting, prescribed burning and fertilization.

- Uneven-aged management regeneration treatments using single tree selection and group selection are proposed on 92 acres (2 percent of the project area), along with appropriate reforestation practices, to enhance complex stand structure and species diversity within the project area.
- Prescribed fire would occur on 54 acres (1 percent of the project area) to promote the existing oak component and prepare seedbed for butternut within the project. Areas may be burned up to three times to achieve desired conditions.
- The amount of reforestation treatments proposed and those actually implemented may not necessarily be the same. For example, while fencing is proposed on 642 acres, the forested stands actually fenced would likely be less. Management of the deer herd in recent years has been successful in reducing average deer population densities. To allow for management of site-specific deer browsing impacts, fencing is being proposed as an option. In recent years, fencing has been installed, on average, on less than 25 percent of those stands for which it was originally proposed. Herbicide application is proposed for 696 acres as a part of vegetation management. Of that total, 63 acres is planned to reduce dense interfering vegetation for planting, release or natural regeneration, in order to enhance species diversity and forest health. These herbicide applications would be applied to individual spots or small areas as opposed to whole stand broadcast treatments; likely resulting in herbicide application to only 25 percent of the acres proposed for this type of treatment. The remaining 633 acres are planned for herbicide application on 100 percent of the area proposed for treatment, and it is anticipated that herbicide would be applied to all of these acres proposed for treatment.

To facilitate access to stands proposed for treatment and provide for a safe and adequate public transportation system while protecting ecological resources in the area, the proposed action includes several road management activities.

Proposed **Transportation activities** include:

- One segment of forest road (FR) 214 (0.3 miles) would be reconstructed. Four existing non-system (NS) roads (totaling 1.8 miles of construction using existing corridors) are proposed to be upgraded and added to the Forest Service road system. A gate is proposed for one of these road segments (Non-system road 25484). No Forest Service road construction using new corridors is being proposed.
- FR180L (0.04 miles) and portions of FR180C (0.3 miles) and FR217 (1.4 miles) are proposed for decommissioning. Eight non-system road segments (1.2 miles) are also proposed for decommissioning.
- Approximately 19 miles of Forest Service System roads are proposed for maintenance. Limestone surfacing (2.1 miles) is proposed in areas adjacent or in close proximity to stream courses.
- Five existing stone pits are proposed for vertical and horizontal expansion to obtain stone for road construction (existing corridor), reconstruction, and maintenance (requiring 4.25 acres of horizontal expansion) of Forest Service System roads. Following expansion, four of these stone pits would be rehabilitated until needed again (12.9 acres of pit rehabilitation). Two stone pits (7 acres) are proposed for decommissioning and reclamation as wildlife shrub or herbaceous openings). One pit will be depleted after use, and the other has reached the maximum size allowed in MA 2.2 (USDA-FS 2007c, p. 112).

- Fifteen sites are proposed for improvement as parking areas for road safety and dispersed recreation activities, such as hunting, fishing and dispersed camping. Improvements to these sites would include hardening the parking area or road pull-off with road surfacing materials to prevent off-site erosion and sedimentation. To prevent off-road vehicle use, large boulders would be placed in selected sites. These treatments would occur on FR180, FR214 and FR217.

In order to improve wildlife habitat, the proposed action includes a number of treatments to maintain and enhance wildlife habitat in the project area.

Proposed **Wildlife habitat improvements** include:

- Planting native trees and shrubs, pruning and releasing fruit trees and releasing other mast-producing trees would provide food and cover for a variety of wildlife species. The repair of existing fencing and the replanting of these areas are proposed to maintain investments made in the past. Planting would occur on approximately 69 acres while pruning and release of fruit and mast producing trees would occur on 19 acres.
- The placement of 36 wildlife structures is proposed to increase nesting and roosting opportunities for cavity dwellers, especially for those wildlife species with viability concerns, including the northern flying squirrel.
- Maintaining or enhancing existing herbaceous openings (liming, disking, applying fertilizer, seeding, and mowing) on 34 acres is being proposed to enhance wildlife habitat. The proposed decommissioning (7 acres) of two stone pits is included in the total for herbaceous opening maintenance.
- Brush-pile construction is proposed to provide small mammal concealment and escape cover.
- NNIP species have become established within the project area and there is a need to treat 5 to 10 acres of infestations to limit further introduction and spread of these species (USDA-FS 2007c, p.13). Additional infestations may be documented as treatments are implemented and will be treated as appropriate following ANF LRMP direction. NNIP species exist along many of the roads in the project area; therefore, each individual site is not displayed on the maps.

The proposed activities for Alternative 1 are summarized in Table 1. More site-specific information on the proposed action and the list of stands in each category can be found in appendix B. The ID team also considered a no action alternative (see map 1).

Table 1: Activities proposed in Alternative 1 (Proposed Action)

Management Activity	Total
Even-aged Vegetation Management	Acres
Intermediate Thinning Harvests	1,050
Intermediate Thinning Harvests (non-commercial)	157
Shelterwood Seed Cuts/ Shelterwood Removal Harvests	532
Shelterwood Regeneration Harvests (Shelterwood Removal Cut with reserves)	9
Uneven-aged Vegetation Management	Acres
Single Tree Selection/Group Selection (1 st and 2 nd entry)	92
Road Management	Miles
Road Construction (Existing Corridor)	1.8
Road Reconstruction	0.3
Road Decommissioning	2.9
Limestone Surfacing	2.1
Road Maintenance	19.0
Install Gate (Number)	1
Pit Activities	Number/Acres
Pit Expansion (Additional Acres Cleared for Gravel Pits)	5/4.25
Pit Rehabilitation	4/12.9
Pit Reclamation (Decommissioning)	2/7.0
Understory Vegetation Treatments	Acres
Herbicide - Reforestation	696
Non-Native Invasive Plant Treatments (Herbicide and Manual Treatments)	5 to 10
Fertilization	302
Prescribed Burning	54
Fencing	642
Site Preparation	633
Tree Planting for Species Diversity	248
Release for Species Diversity	1,140
Wildlife Management	Acres (Sites)
Wildlife Planting - Trees and Shrubs	69
Wildlife Fencing	37
Wildlife Structure (Sites)	36
Brush Piles (Sites)	29
Prune and Release - Fruit/Mast Trees	19
Wildlife Opening Maintenance	34
Recreation Management (Sites)	(Sites)
Hunter & Dispersed Recreation Parking Areas	15

Decision to Be Made

The purpose of this EA will be to provide the responsible official, the Marienville Deputy District Ranger, with sufficient information and analysis to make an informed decision about the project in response to the purpose and need for action. The responsible official will also consider public input to the EA to decide the following:

- 1) Are there additional issues or alternatives that should be analyzed in detail?
- 2) Which of the alternatives would best help achieve the desired condition outlined in the ANF LRMP and purpose and need for action for the project area?

- 3) Would the proposed action and its alternatives pose any significant environmental impacts to warrant the need for an environmental impact statement?

This project does not require proposing any amendments to the ANF LRMP. A decision on this project is expected by April 2009. All proposed treatments would be implemented within 20 years.

Public Involvement

The project was listed in the ANF schedule of proposed actions beginning in the July 2006 issue. This quarterly publication is mailed to interested parties and is available on the ANF website.

On July 7, 2008 a scoping package was mailed to 300 individuals and organizations, including those who have expressed a desire to be notified about current projects, subsurface mineral owners and adjacent landowners. On July 7, 2008, a news release announcing the opening of the scoping period was issued to local newspapers, members of the media and other organizations and individuals. This information was also posted on the ANF website on July 9, 2008. Fifteen (15) responses were received and considered.

The Forest Service consulted with the Pennsylvania Historical and Museum Commission (State Historic Preservation Office in Pennsylvania) and the Seneca Nation of Indians Tribal Historic Preservation Office in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. All management activities proposed in the project are being reviewed by both of these agencies for potential impacts to heritage resources.

Issues

Scoping identified six preliminary issues, suggested alternatives for analysis and provided numerous comments. After careful review none of the preliminary issues were carried forward as significant issues because they were not supported with factual evidence. See a description of the alternatives considered but eliminated from detailed study in section II. See appendix A for a detailed discussion of the analysis of public comments by the ID team for the purpose of this analysis.

II. Alternatives

Introduction

The proposed action was developed by the ID team to respond to the purpose and need for action. No significant issues were identified through scoping (see appendix A). Of the four alternatives considered, two were eliminated from detailed study. Two alternatives were analyzed in detail; the proposed action (Alternative 1) and no action (Alternative 2).

Alternatives Considered but Eliminated from Detailed Study

The following alternatives were considered but were eliminated from detailed study as described below.

- 1. No Timber Harvesting** – There is concern that timber harvesting (removing wood) adversely impacts forest health. This alternative was considered but eliminated from detailed study because it fails to meet the purpose and need for this project. These include developing late structural conditions in MA 2.2 and improving the spatial arrangement of age classes in MA 3.0. An alternative with no timber harvesting would not be responsive to the Multiple Use Sustained Yield Act or the National Forest Management Act. Additionally, no timber harvesting on NFS lands is a national issue; and therefore, is beyond the scope of this project. The no action alternative is responsive to this concern.

The Forest Service has no argument that “logging” removes woody biomass from a site (that is an objective of the project). The ANF LRMP explicitly acknowledges the need to leave some wood on site by its requirements to preserve desired levels of woody material. Specifically, direction regarding “habitat and species diversity” (USDA-FS 2007c, p.80) and “Indiana bat” (USDA-FS 2007c, pp. 81-82) requires retaining woody debris, large den trees and large snags through guidelines that apply to all actions that implement the ANF LRMP. The Forest Service agrees with the need to leave coarse woody debris for wildlife, nutrient recycling and other resources. ANF LRMP standards and guidelines shall be followed to ensure that adequate amounts of coarse woody debris are left to meet the needs of wildlife and other resources and to maintain and enhance forest health.

- 2. Offset the impacts of oil and gas** – There is a concern of future OGD increasing the impacts to soil and water resources. The recommendation was made by the respondents to cancel the project. This alternative was considered but eliminated from detailed study, because it does not meet the purpose and need for this project. Potential cumulative effects from private OGD within the project area were analyzed along with Forest Service proposals.

OGD operators are required develop and implement erosion and sedimentation plans for their developments. These plans outline the Pennsylvania Best Management Practices (BMPs) used to minimize erosion and sedimentation to streams and wetlands. The Timber Harvest Operations Field Guide for Waterways, Wetlands and Erosion Control and the Oil and Gas Operator’s Manual contain the Pennsylvania BMPS for road and well pad construction (PA DEP 2005, PA DEP 2001). Used together the Pennsylvania BMPs and the 1986 ANF Forest Plan (USDA-FS 1986) contain requirements that would reduce impacts on water resources from OGD. These requirements include buffers on streams and wetlands and proper layout and construction of roads. When soil and water problems are identified, the Forest Service coordinates with OGD operators and the Pennsylvania DEP to resolve problems.

Restoration activities submitted during the roads analysis public involvement process included road obliteration and the restoration of abandoned oil and gas wells and rock pits. A number of the specific roads cited for road obliteration are needed for future Forest Service vegetation management and access to private ownership; therefore, they were not included as proposals. A separate alternative is not needed as Forest Service proposals have incorporated road decommissioning (including a portion of FR217) and maintenance (including 2.1 miles of limestone application), pit reclamation and rehabilitation, adding non-system roads to the Forest Service road system, and wildlife opening maintenance to improve or maintain soil and water resources as a part of the proposed action. The no action alternative is also partially responsive to this concern.

Alternatives Analyzed in Detail

The following alternatives were considered in detail:

Alternative 1 (Proposed Action)

This is described in section I on pages 4 to 7 and in appendix B.

Alternative 2 (No Action)

The proposed action would not occur at this time. All activities proposed in Table 1 would not occur with the exception of road maintenance, which may occur depending on available funding. Proposed vegetation treatments, transportation improvements to roads and parking areas, NNIP species treatments and wildlife habitat enhancements would not occur under this alternative.

Design Features

The proposed activities in Alternative 1 have been designed to be implemented in accordance with ANF LRMP forest-wide and MA 2.2 and 3.0 standards and guidelines (USDA-FS 2007c). Design features are highlighted applications of the ANF LRMP standards and guidelines. In some cases, the standards and guidelines provide options for how they may be applied. A design feature clarifies, where necessary, how these standards and guidelines may apply to specific actions in the project proposal.

Project **design features** for Alternative 1 include:

Soils and Water

- In stands with group II soils (**stands 632004, 636052, 646002, 646023, 648010, 632006, 637003, 646005, 646024, 648012, 632010, 637012, 646006, 646037, 648015, 632032, 637014, 646008, 647009, 648016, 632049, 637015, 646010, 647011, 648017, 636007, 645004, 646013, 647027, 648022, 636010, 645006, 646014, 647029, 648049, 636012, 645010, 646015, 647030, 648056, 636013, 645011, 646016, 647036, 636014, 645054, 646019, 647037, 636018, 645058, 646021, 648004, 636021, 645059, 646022, and 648006**), cutting and skidding is permitted from June 15 to September 30 and from December 15 to March 1 (**USDA-FS 2007c, p. 74**).
- Limestone surfacing should be applied on planned timber haul routes prior to any timber hauling (**USDA-FS 2007c, p. 75**).

Wildlife and Regional Forester Sensitive Species

- In order to provide and maintain additional species of conifer within the project area, no spruce trees will be harvested in **stand 632007 (USDA-FS 2007c, p. 80)**.
- Approximately 5 acres located within **stand 646024** consisting of a southwest-facing rocky ledge with numerous crevices will be included as a reserve area and no timber harvesting or heavy equipment will be permitted within this portion of the stand (**USDA-FS 2007c, pp. 80 and 87**).

- Prescribed burning in **stand 637007** will be conducted during the time of year when fire parameters can be met. If prescribed burning occurs from March through October, the area will be surveyed for wood turtles. Surveys will be conducted on the same day as prescribed fire is to take place. If the prescribed burn occurs on more than one day, surveys will be conducted prior to burning. Due to the amount of herbaceous vegetation in this stand, survey personnel will utilize rakes or other similar tools to move vegetation aside, which will improve ground surface visibility and in observing wood turtles, if present (**USDA-FS 2007c, pp. 80 and 87**).
- Prior to prescribed burning in **stand 637007**, all combustible material will be raked away from the base of all butternut trees in the stand (a minimum of 4 feet in diameter) and scattered to avoid creating mounds of combustible debris near the trees. Raking and scattering of combustible material will also be performed for other tree and shrub species located within the area proposed for prescribed burning. Other species to be protected include, but are not limited to, apple, crabapple, hawthorn, and elderberry. Prescribed burning will begin on the downwind side of the stand. Firing will be done in a manner in which a low intensity, low residence fire will occur around the trees, so that damage to the trees is avoided (**USDA-FS 2007c, p. 89**).
- The grapevine component will be maintained in **Stand 647044** by selecting reserve areas that contain this species or by reserving large oak trees that currently have grapevines affixed to or reaching their upper canopies (**USDA-FS 2007c, p. 80**).
- Fence installation will not occur within **Stand 647044** before the fence located in the western half of **Stand 648049** is removed (**USDA-FS 2007c, pp. 80 and 111**).

NNIP Species

- In order to reduce the potential of NNIP species being transported from stone pits to other areas, surveys for NNIP species have been conducted in the areas proposed for pit expansion. Treatment of NNIP species will occur before pit material is excavated (**USDA-FS 2007c, p. 53**).
- **Stand 637007** – In areas that contain butternut, spot (using backpack sprayers) and cut stem only treatments will be used to limit the potential for non-target mortality. Currently, only purple loosestrife (0.02 acres) and Dame’s rocket (0.04 acres) are documented within this stand (**USDA-FS 2007c, p. 89**).

Heritage

- Site-specific heritage site design features are not listed due to the confidential nature of the information. Standards and guidelines for heritage resources are listed in ANF LRMP. Appropriate heritage resource personnel will be contacted prior to formalizing any sale or implementation contract or other resource treatments involving ground disturbing activities to include any design features to protect heritage sites in contracts or agreements (**USDA-FS 2007c, p. 62**).
- In any contract or agreement, the following statement will be included, as appropriate: If any previously unknown or unrecorded sites are found during project implementation, any ground disturbing activity will cease and the appropriate heritage resource personnel notified. A heritage resource specialist will evaluate the situation and determine the proper course of action (**USDA-FS 2007c, p. 62**).

Scenery/Recreation

- Along ASL connector #6, reserve areas of ¼ acre in size shall be located with the guidance of a landscape architect (**USDA-FS 2007d, pp. 9–10**) (**Stands 645006, 645011, 645054, and 646013**).

- Along ASL connector #6, slash shall be pulled back 50 feet from the edge of the road or trail, and for an additional 50 feet, slash shall be lopped and scattered to a depth of 3 feet. Treatment should be accomplished within 1 year of harvesting (**USDA-FS 2007d, pp. 9–10**) (**Stands 632004, 636007, 636012, 636013, 636014, 636021, 637012, 637014, 637015, 645006, 645011, 645054, and 646013**).
- Along ASL connector #6, layout of log landings should incorporate special design features or screenings. After project completion, landings should be rehabilitated to mimic natural openings. Curved access roads in the foreground of CL1 and CL2 may be used to block the view of the landing from the road or trail (**USDA-FS 2007d, p. 11**) (**Stands 632004, 636007, 636012, 636013, 636014, 636021, 637012, 637014, 637015, 645006, 645011, 645054, and 646013**).
- Restrict release activities in a 200 foot buffer on either side of the user-created Logan Run trail to the dormant (leaf off) season in **stand 637002**. Slash in the buffer zone shall be lopped to 3 feet high to minimize the visual effects of this activity. Stems and branches that fall into the tread-way of the user-created trail shall be removed (**USDA-FS 2007d, p. 10**).
- Timber harvest and hauling snowmobile restriction – No hauling along **FR180 and FR180D** (ASL #6 connector) during the established snowmobile season on the ANF on weekends and legal holidays. No timber harvesting or reforestation treatments along **FR180 or FR180D** during this time period as well. This design feature also applies to the bi-annual Tour de Forest event (traditionally held the first weekend in October and the weekend before Memorial Day) (**USDA-FS 2007c, p. 60**).
- Snowplowing of designated snowmobile routes (**FR180 and FR180D**) shall be done as to leave an adequate snow mat (3 inches) for grooming, snowmobile operation, and road surface protection (Contract Clause (CT) #5.33 Snow Plowing). Commercial and administrative vehicle traffic shall run with their headlights on during the established snowmobile season (**USDA-FS 2007c, p. 61**).

Comparison of Alternatives – Actions and Outputs

Table 2: Comparison of Proposed Activities and Outcomes by Alternative

Management Activity	Alternative 1	Alternative 2
Even-aged Vegetation Management	Acres	Acres
Intermediate Thinning Harvests	1,050	0
Intermediate Thinning Harvests (non-commercial)	157	0
Shelterwood Seed Cut Harvests/Shelterwood Removal Harvests	532	0
Shelterwood Regeneration Harvests (Removal Cut with Reserves)	9	0
Uneven-aged Vegetation Management	Acres	Acres
Single Tree Selection/Group Selection	92	0
Volume (Millions of Board Feet) of Timber Harvested (first/second entry)	4.6/5.4	0
Understory Vegetation Management	Acres	Acres
Herbicide - Reforestation	696	0
NNIP Species Treatment	5 to 10	0
Fertilization	302	0
Prescribed Burning	54	0
Fencing	642	0
Site Preparation	633	0
Tree Planting for Species Diversity	248	0
Release for Species Diversity	1,140	0
Wildlife Treatments	Acres (Sites)	Acres (Sites)
Wildlife Planting - Trees and Shrubs (Acres)	69	0
Wildlife Fencing (Acres)	37	0
Wildlife Structure (Number)	36	0
Brush Piles (Number)	29	0
Prune and Release - Fruit/Mast Trees (Acres)	19	0
Wildlife Opening Maintenance	34	0
Transportation System Management	Miles	Miles
Road Construction (Existing Corridor)	1.8	0
Road Reconstruction	0.3	0
Road Decommissioning	2.9	0
Limestone Surfacing	2.1	0
Road Maintenance	19	0
Install Gate (Number)	1	0
Pit Activities	Number (Acres)	Number (Acres)
Pit Expansion (Number/Acres)	5/4.25	0
Pit Rehabilitation (Number/Acres)	4/12.9	0
Pit Reclamation (decommission) (Number/Acres)	2/7	0
Recreation Management	(Sites)	(Sites)
Hunter & Dispersed Recreation Parking Areas	15	0

Alternative 1 (Proposed Action) meets the purpose and need of providing a diversity of vegetation patterns across the landscape to represent well distributed habitats, a range of forest age classes and vegetative stages, a variety of healthy functioning vegetation layers, moderate to well stocked forest cover

and a variety of vegetation species or forest types. It proposes vegetation treatments that help achieve late structural vegetation objectives for MA 2.2 and structural age class distribution objectives for MA 3.0. Reforestation treatments would allow for the establishment of an early structural forest, which helps achieve the desired condition of a diversity of vegetation patterns across the landscape. This alternative would also maintain and enhance wildlife habitat on approximately 159 acres, including 69 acres of tree and shrub planting, 37 acres of fencing, 19 acres of apple tree maintenance and 34 acres of opening maintenance to provide forage and cover areas for wildlife. Prescribed burning would occur on 54 acres to promote oak and butternut regeneration. This alternative would treat up to 10 acres of NNIP species through a combination of manual, mechanical and chemical methods, which would reduce their impact to native plant and animal communities. Transportation activities include road construction and reconstruction on existing corridor to facilitate vegetation management. Road maintenance (19 miles) and limestone surfacing (2.1 miles) to protect water quality and riparian habitat would occur on Forest Service System roads. Parking area construction would be implemented on 15 sites to provide a safe public road system for dispersed recreation activities. Stone pit expansion would occur on approximately 4.25 acres. Stone pits would be rehabilitated (12.9 acres) after extraction or reclaimed (decommissioned) (7 acres) after extraction and depletion. Approximately 10 million board feet (MMBF) of timber would be harvested under this alternative in two entries.

Alternative 2 (No Action) would not accomplish the purpose and need. Any changes in vegetation would be the result of natural stand development or disturbances; declining stands would continue to deteriorate. Proposed wildlife and NNIP species treatments would not be implemented. Road construction, reconstruction and decommissioning would not occur. Road maintenance may occur but the level of maintenance would be dependent upon available funding. Within the project area, progress towards the desired condition, as stated in the ANF LRMP, would not be achieved.

III. Environmental Consequences

This section addresses the environmental consequences of the alternatives. The no action alternative (Alternative 2) provides a reference point for describing environmental effects of the action alternative. Where appropriate, the effects of Alternative 2 (no action) are discussed first to provide a baseline for describing the effects of the action alternative. This section focuses on the required factors listed in a finding of no significant impact (FONSI) to determine if an environmental impact statement (EIS) is necessary.

The analysis for this project is tiered to the ANF LRMP FEIS (USDA-FS 2007a) and ANF LRMP ROD (USDA-FS 2007b) for the ANF LRMP (USDA-FS 2007c). The following analyses found in the ANF LRMP FEIS (USDA-FS 2007a) are incorporated in this section of the EA:

- Oil, Gas, and Minerals (OGM); pp. 3-3 to 3-7
- Soils; pp. 3-7 to 3-21
- Hydrology; pp. 3-22 to 3-51
- Transportation; pp. 3-64 to 3-74
- Vegetation; pp. 3-77 to 3-179
- Wildlife and NNIS (NNIP in EA); pp. 3-179 to 3-295
- Recreation; pp. 3-296 to 3-328
- Scenery; pp. 3-370 to 3-380
- Heritage; pp. 3-380 to 3-384
- Economics; pp. 3-399 to 3-443
- Human Health and Safety; pp. 3-419 to 3-443

The Review of Information – OGM Activity and Air Quality (USDA-FS. 2008b) is incorporated by reference. This document provides an analysis of information pertaining to OGD on the ANF relative to regional air quality and its relevance to ongoing and pending projects related to the ANF LRMP.

A. Issue-Related Consequences

Although scoping identified several preliminary issues, none were characterized as significant by the ID team for the purpose of this analysis.

B. Effects Relative to Significance Factors

In 1978, the Council of Environmental Quality promulgated regulations for implementing NEPA. These regulations (40 CFR Parts 1500-1508) include a definition of “significantly” as used in NEPA. The 10 elements of this definition are critical to reducing paperwork through a finding of no significant impact (FONSI). If a FONSI determines that an action will not have a significant effect on the human environment, an EIS would not be required.

40CFR Part 1508.27 Significantly:

“Significantly” as used in NEPA requires considerations of both context and intensity:

- (a) *Context.* This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

As discussed in more detail below for other elements of significance, the context of this proposal is limited to the locale of the project area and the CE areas chosen by resource to analyze cumulative effects

of the proposed action. Even in a local context, this proposal would not pose significant short- or long-term effects. The ANF has over 20 years experience implementing similar projects, none of which have been found to contain significant adverse effects. ANF LRMP standards and guidelines, Pennsylvania Best Management Practices (BMPs) and project design features would minimize and avoid adverse impacts. Future projects would be analyzed in context with the activities as proposed and implemented under cumulative effects analyses by resource. The project area encompasses approximately 5,319 acres, which is approximately 1 percent of the ANF.

(b) *Intensity*. This refers to the severity of impact. The following would be considered in evaluating intensity:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

The action alternative poses beneficial and adverse impacts. Resource protection measures included in the action alternative minimize adverse impacts. Proposed activities are consistent with ANF LRMP forest-wide standards and guidelines (USDA-FS 2007c, pp. 53–100).

The long-term benefit to habitat from lessening the impacts from NNIP species is greater than any potential short-term impacts to non-target plants such as plant species with viability concerns (USDA-FS 2007g). If NNIP species are not treated, they may replace desired native plant species. Surveys for plant species with viability concerns were conducted in areas proposed for treatment. If a plant with viability concerns is found during NNIP species implementation, appropriate measures (determined by site-specific characteristics) will be implemented to conserve the native plant population.

2. The degree to which the proposed action affects public health or safety.

The proposed action would avoid adverse impacts to public health and safety through implementation of ANF LRMP standards and guidelines, Pennsylvania BMPs, project design features, timber sale contract requirements, Office of Safety and Health Administration (OSHA) requirements and standard operating safety procedures. Actions, such as dust abatement, signing of roads, identifying the area as an active timber sale area, safely securing truck loads and maintaining the timber haul routes, are standard precautionary measures that would be employed.

Prescribed Burning

Smoke emissions from prescribed burning (54 acres) to maintain or restore oak regeneration would be of short term duration. Smoke management through dispersion would be addressed in the burning parameters of the burn plan. Emissions from prescribed burning would not exceed federal air quality standards.

Use of Herbicides

Herbicides have been used to control interfering vegetation on the ANF since 1987. ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 54-59) used during herbicide application would minimize the risk of human exposure, off-site travel, non-target application and environmental damage from the activity. Herbicides are applied at the optimal time for their intended effect and to minimize additional exposure to non-target species. No adverse effects on human health or safety have been reported as a result of herbicide treatment on the ANF. Most of the proposed treatment areas (for reforestation) would be treated with a combination of glyphosate and sulfometuron methyl. Potential effects from herbicide use to control interfering plants have been examined in detail in appendix G of the ANF LRMP FEIS (USDA-FS 2007e).

Herbicide application for reforestation is proposed on 696 acres in Alternative 1. Alternative 2 proposes no herbicide application. Overall risks from the planned use of glyphosate and sulfometuron methyl are expected to be low (USDA-FS 2007b, p ROD-23). In the project area 100 percent of the broadcast applications are greater than 1700 feet from residences and 100 percent of hand applications (using

backpack sprayers) are greater than 600 feet from residences. There are no drinking water sources or residences in or near proposed herbicide application sites within the project area. Adjacent landowners would be notified in advance of the proposed spray activity. Signs would be posted along the perimeter of treatment areas where these areas are adjacent to open roads or trails, so people would be able to avoid those areas. Herbicides would be applied when minimal risk of accidental exposure is possible. In order to minimize accidental contact, warning signs, maximum wind speed caps (10 mph), directional spraying (near property lines and trails), landowner notification, timing of spray application and buffers would be employed. However, even if someone does contact herbicide residue or the spray mist in a treatment area, the risk to human health would be negligible (USDA-FS, 2007e, pp. G1-76–G1-102 and G1-131–G1-142). Cumulative effects to human health are not likely to occur because none of the herbicides persist in the environment or human body (USDA-FS 2007a, pp. 3-437–3-443 and USDA-FS, 2007e, pp. G1-76–G1-102 and G1-131–G1-142). Appendix G of the ANF LRMP FEIS states that the risks to workers from the proposed use of glyphosate and sulfometuron are negligible (USDA-FS 2007e, pp. G1-76–G1-80 and G1-131–G1-134). Further information regarding herbicide use for seedling establishment and its safety may be found in the ANF LRMP (USDA-FS 2007c, pp. A-33–A-38), the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-119–3-122 and 3-437–3-443) and appendix G of the ANF LRMP FEIS (USDA-FS 2007e).

Application rates and specific effects of herbicide application on aquatic and terrestrial ecosystems are discussed in the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-215–3-217), in the ANF LRMP (USDA-FS 2007c, pp. A-38–A-41) and appendix G of the ANF LRMP FEIS (USDA-FS 2007e). In addition, the potential risk of herbicide use on the ANF to humans, wildlife, terrestrial plants and aquatic species are discussed in appendix G of the ANF LRMP FEIS (USDA-FS 2007e). Therefore, the risk characterization to wildlife, terrestrial and aquatic plants and human health from exposures to groundwater and runoff (USDA-FS 2007e, pp. G2-73–G-82, G1-80–G1-91 and G1-131–G1-142) applies to herbicide use proposed in this project.

Water testing conducted in 1987 and 1988 on the ANF showed no detectable levels of herbicide downstream from treatment areas (USDA-FS 1991, p. 4-4). More recent monitoring work of herbicide treatments in 1999 conducted on power line right-of-ways has shown the same results. In 1999, water samples collected downstream from a right-of-way treatment contained no detectable herbicide with buffer strips as narrow as 13 feet for cut stem treatment (with glyphosate) or 58 feet for low volume foliar treatment (USDA-FS 2000).

The effect of herbicide on water quality was evaluated in 2002. A stream on the Bradford Ranger District was monitored adjacent to a 15 acre forested stand from August 7 to 24, 2002 after herbicide was applied. Laboratory analysis of the water samples did not detect the presence of glyphosate, aminomethylphosphoric acid or sulfometuron methyl. Consequently, water quality and beneficial uses were protected. Based on the effectiveness of the ANF LRMP standards and guidelines, water quality would be maintained at a level that supports the propagation of fish and other aquatic species. No impacts are expected to water quality of domestic or public water supplies within the project area or near sites proposed for herbicide treatment.

The proposed use of glyphosate and sulfometuron methyl will not adversely affect soil productivity or soil nutrient cycling (USDA-FS 2007e, pp. G1-40, G1-42–G1-44, G1-104–G1-106, G2-33, G2-42 and G2-44). The soils within the project area (see soils resource report, project file) have characteristics that are within the range for the soils considered during the herbicide analysis of appendix G of the ANF LRMP FEIS (USDA-FS 2007e, pp. G2-59, G2-60 and G2-70).

Anticipated effects to public health and safety from the treatment of NNIP species include the use of chemicals (herbicide), manual and mechanical control along road corridors and selected forested sites. ANF LRMP standards and guidelines for herbicide application would be implemented (USDA-FS 2007c, pp. 54–59) and are based on the human health risk assessment (appendix G) completed for the ANF LRMP FEIS (USDA-FS 2007e). Appendix A of the ANF LRMP (USDA-FS 2007c, pp. A-43–A-45)

contains additional information on site selection, herbicide selection, application methods and rates. The job hazard analysis (JHA) for NNIP species control identifies the safety measures for working along road corridors and will be used during implementation. Proposed NNIP species herbicide treatments are anticipated to have no adverse effects to public health or safety based on the amount of proposed treatment (up to 10 acres), spot spraying using backpack sprayers and with the implementation of ANF LRMP standards and guidelines and standard safety procedures.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Historic or cultural resources would not be affected by this project. These resources will be avoided through project design features and no treatment buffers.

There are no parklands in or near the project area that would be affected by this project.

Proposed NNIP species treatments occur in one stand that contains areas that are culturally sensitive. An archaeologist will be consulted before any chemical, manual, or mechanical treatments of NNIP species to avoid potential damage to heritage sites.

There are 1433 acres of prime farmland or farmland of statewide importance within the project area. Prime farmland and farmland of statewide importance are protected by law. The soils analysis shows that the proposed activities would not permanently affect soils considered prime farmland or farmland of statewide importance (see soil resources report, project file). Since the proposed activities would not alter the status of these soils as prime farmland or farmland of statewide importance a land evaluation and site assessment (LESA) determination is not required for this project.

Within the project area, there is one inventoried wetland according to the National Wetland Inventory (NWI). This wetland (16 acres) is associated with Tionesta Creek and is characterized as riverine, lower perennial, with an unconsolidated bottom and is intermittently exposed and permanent. Herbicide treatment for NNIP species will occur outside of wetland areas as per ANF LRMP standard and guidelines (USDA-FS 2007c pp. 54–59). Effects of proposed treatments will be reduced or eliminated by implementing ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 74–79) or (USDA-FS 2007c pp. 54–59) to all riparian corridors, including seeps, springs, vernal pools, wetlands, wet soils and intermittent and perennial streams within the project area.

The project area is located approximately 9.7 miles northwest of the Clarion Wild and Scenic River and approximately 15.4 miles east of the Allegheny Wild and Scenic River. Due to the distance of the project area to these rivers, no effects are anticipated to either of these rivers or their designation from the proposed treatments in Alternative 1.

The Pennsylvania Department of Conservation and Natural Resources (DCNR) recognizes one important mammal area (IMA) in the Hickory Creek and Tionesta Creek area (USDA-FS 2007c, pp. 8 and 11). This ecoregion has been described by the Pennsylvania DCNR as “having the highest stream quality for the state and the largest block of core forest state-wide” (USDA-FS 2007c, pp. 8). The project area is located within the IMA. The activities proposed in the project area are not anticipated to adversely affect the overall habitat or designation of the Tionesta Creek IMA. The IMA consists of over 300,000 acres and the proposed activities in the project area would occur on less than 1 percent of this IMA. Proposed activities within MA 2.2 and MA 3.0 maintain or provide habitat conditions that are utilized by fishers, river otters and northern flying squirrels – primary mammals of concern in the Tionesta Creek drainage IMA. Effects of proposed management on waterways are reduced or eliminated by implementing ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 74-79).

There are two important bird areas (IBAs) on the ANF. One is in the Tionesta Scenic and Research Area and the other is in a portion of the East Hickory Creek watershed (USDA-FS 2007c, pp. 8 and 11). Both of these areas are a substantial distance, approximately 8.5 miles and 5.5 miles respectively from the project area; therefore, there are no direct or indirect effects anticipated on these areas and their designation from the proposed activities. The Cooks Forest IBA directly south of the ANF proclamation line is located approximately 11.2 miles from the project area and is located in an entirely different watershed; therefore, there are no effects anticipated to this IBA. Habitat for birds in the project area would be maintained.

Ecologically important old growth areas on the ANF occur in the Tionesta Scenic and Research Natural Areas and Hearts Content Scenic Area (USDA-FS 2007a, p. 3-186). The project area is located approximately 8.5 miles from the Tionesta Scenic and Research Natural Areas and approximately 6.9 miles from the Hearts Content Scenic Area. The ANF LRMP FEIS recognizes eight high quality remote habitat areas for wildlife (USDA-FS 2007a, pp. 3-194). None of these areas occur in or adjacent to the project area; therefore, there are no effects anticipated to the high quality remote habitat areas or their associated wildlife habitat. There is no federally designated critical habitat for any of the federally listed threatened, endangered or candidate wildlife species within the ANF; and therefore, none in the project area.

There are approximately 325 acres (either whole or portions of 19 stands) in the project area classified and identified as currently mapped potential old growth (USDA-FS 2007c, p.115). All of the stands are in MA 3.0 and have been re-evaluated on the ground during the development of this project. Due to changes in stand boundaries and new mapping technologies, the boundaries of these stands have changed in some places, resulting in changes in stand acres. In alternative 1, silvicultural treatments are proposed in portions of four stands and reforestation treatments in three other stands (under 40 years old). In all intermediate and reforestation treatments, stand age would remain unaffected by the treatments. Thinning, single tree selection and group selection would increase growth on remaining trees, creating larger trees and selection treatments would create groups of tree regeneration for vertical diversity, both desired attributes of late structural forest. Approximately 8 acres of one stand would become early structural habitat, but 325 acres would remain mapped as potential old growth. The 1,219 acres of MA 2.2 within the project area also provides future late structural habitat.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

Legitimate controversy under environmental law must be based on credible scientific evidence. Public involvement efforts (see section I, public involvement and appendix A) have not revealed any controversies regarding the potential environmental effects of the alternatives. Proposed activities are similar in nature to well known practices on the ANF and are described in the ANF LRMP.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

Climate change is the interaction between increases in atmospheric carbon dioxide and other greenhouse gasses and associated changes in global temperature and precipitation patterns. In general, temperatures are thought to be increasing for most global ecosystems. These changes could cause ecosystem disturbances that alter ecosystem functions, species interactions, population biology, and plant and animal distribution. Changing climates will likely have some effect on the distribution, location and quality of suitable habitat for some plant and animal species. Climate change is a concern of global scope, and there is a great deal of uncertainty regarding the degree and timeframes for geographic shifts of forest communities and species habitat.

Uncertainty exists regarding the effects the project proposals may have on climate change, as well as the effects climate change may have on this area over the long-term. Because there is currently no reliable

way of predicting future climate change or its effects at the project level, the ANF LRMP provides for maintaining a diversity of plant and animal communities that will enhance the resiliency of the forest to respond to these changing conditions. The ANF LRMP also provides for monitoring forest vegetation for significant changes to forest health and forest threats that are present (USDA-FS 2007c, p. 50). The ANF LRMP FEIS further discusses climate change and the uncertainties associated with predicting the effects on forest vegetation (USDA-FS 2007a, pp. 3-83–3-84).

Strategies to address uncertainty include flexible approaches and adaptive methods that include managing for ecosystem resistance, resilience and adaptation (Millar and others 2007). Ecosystem resilience refers to the ability of ecosystems to return to their original function and processes following disturbance. Adaptation refers to the ability of ecosystems to adapt to changing conditions. To maintain forest ecosystem resistance and resiliency, particularly with uncertainties such as climate change, insects and disease infestations, the ANF LRMP emphasizes sustaining a diversity of forest structures and species across the landscape, using a flexible, adaptive approach (USDA-FS 2007c, pp. 14 and A-2, USDA-FS 2007b, p. ROD-24). By sustaining a diversity of forest structures and species, the ANF forest ecosystem will be better prepared to recover from larger scale disturbances.

The action alternative was designed to be adaptive and to achieve the goals and objectives identified in the ANF LRMP. ANF LRMP standards and guidelines and project design features would reduce the risk of adverse effects. All treatments proposed for this project constitute well established methods for vegetation management and are consistent with vegetation management practices outlined in appendix A of the ANF LRMP (USDA-FS 2007c), and do not contain unique or unknown risks. Proposed transportation activities, stone pit expansion, rehabilitation and reclamation, NNIP species treatments and wildlife enhancement treatments follow well established practices. Although herbicide use specifically for NNIP species control has not been implemented to date on the ANF, there are no anticipated effects on the human environment that are highly uncertain or involve unique or unknown risks. This is based on previous experience with the use of herbicides for reforestation purposes (using same herbicides and methods). Proposed treatments have been analyzed and implemented in the past on the ANF, and there is no evidence to warrant changing the methods and techniques proposed in the Porkey Heights Project.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

Due to the routine nature of the action alternative, no precedent would be set for future actions or represent a decision in principal about future management considerations. All proposed management activities help achieve the desired conditions for the project area and address the goals and objectives in the ANF LRMP. Any future decisions would need to consider all relevant scientific and site-specific information available at that time.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

The action alternative is not related to any other actions with cumulatively significant impacts and is not a component part of any larger action. Predicting the level of future activities is difficult; however, any future federal actions would be analyzed on their own merits and would be subject to the NEPA process. ANF LRMP standards and guidelines would continue to provide direction in decision making to protect the land and the resources from adverse impacts in the future.

Direct effects are impacts that occur at the same time and place as the proposed activities. Indirect effects are impacts that occur at a different place or later time than the proposed activities. Direct and indirect effects can adversely affect or benefit resources. Cumulative effects (CE) are impacts that result from the incremental effects of the proposed action when added to past, present and reasonably foreseeable future

actions, regardless of land ownership. An individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other actions, the effects may be significant. The descriptions and analyses are based on the best available information about the resources in the affected environment.

Past management activities within the project area within the last 10 years include timber harvests and reforestation treatments and are summarized in Table 9. Routine road and trail maintenance, such as grading and brushing, has occurred as needed and when funding was available. The project area contains no private land.

Direct, indirect and cumulative effects as well as design features (if any) will be discussed in terms of the physical environment (soils, water, transportation and air quality), the biological environment (vegetation, wildlife and NNIP species) and the social environment (heritage, scenery, recreation, economics and environmental justice). Design features are highlighted applications of the ANF LRMP standards and guidelines. In some cases, the standards and guidelines provide options for how they may be applied. A design feature clarifies, where necessary, how these standards and guidelines may apply to specific actions in the project proposal.

Private Oil and Gas Development Projections

Within the project area, all subsurface oil and gas mineral rights are privately owned. Currently, there are approximately 85 existing private oil and gas wells within the project area. Nine OGD wells have been drilled within the project area within the past 5 years. The rate of OGD can vary based on economics, technology and supply and demand. Thirty-six (36) new private OGD wells have been proposed within the project. They are currently being reviewed and would likely occur within the CE time period (2009 to 2028). Based on the information presented in OGD analysis (see project file), the ID team decided to use the ANF LRMP FEIS assumptions in order to project future rates of OGD within the project and CE analysis areas. Using the average future private OGD projection (USDA-FS 2007a, p. 2-60) of wells per year (0.001 wells/acre), it can be estimated that a little over 5 wells per year could be developed within the project area over the next 20 years, resulting in 106 new wells. This level of OGD would affect 2.6 percent of the project area and result in the creation of 138 acres of non-forested habitat. Cumulative effects from private OGD on each resource are discussed in their respective sections using these assumptions; however, as the boundary of the CE area varies by resource, the potential area affected by OGD could also vary.

7.1 Physical Environment

7.1.1 Soils

Specific information regarding soils, including soil types found in the project area, can be found in the soil resource specialist report (in the project file).

The following soil quality statement is applicable to all treatment areas.

Forest Service handbook (FSH) 2509.18 (soil management) suggests a maximum threshold of 15 percent reduction in “measurable or observable soil properties or conditions, or any measurable or observable reduction in soil wetland or hydrologic function,” shall not be exceeded as a result of land management treatments (USDA-FS 2005). This measurement of “detrimental soil conditions” would be applied to treatment areas (individual treatment units within a project). The ANF has instituted a monitoring program to evaluate soil properties at the conclusion of management activities to determine if the 15 percent maximum is exceeded. Those “soil conditions” that are most relevant to this project are compaction, erosion and displacement. System roads, trails and administrative facilities such as campgrounds, are not included in measurements for loss of soil productivity.

Short-term effects to soils relate to a recovery period of 1 to 3 years. These effects are apparent until the affected area develops a vegetative cover and responds to site treatments to minimize soil movement and compaction. Long-term effects to soils result from soil displacement and could last for more than 100 years. The effects result from the removal of the upper portion of the soil profile. This part of the soil profile contains a large amount of the soil's organic matter and available plant nutrients, and therefore, its productivity or quality. The replacement of this part of the soil takes a long time and depends on local climate and ecological conditions

Design features for Alternative 1 include:

- In stands with group II soils (stands 632004, 636052, 646002, 646023, 648010, 632006, 637003, 646005, 646024, 648012, 632010, 637012, 646006, 646037, 648015, 632032, 637014, 646008, 647009, 648016, 632049, 637015, 646010, 647011, 648017, 636007, 645004, 646013, 647027, 648022, 636010, 645006, 646014, 647029, 648049, 636012, 645010, 646015, 647030, 648056, 636013, 645011, 646016, 647036, 636014, 645054, 646019, 647037, 636018, 645058, 646021, 648004, 636021, 645059, 646022 and 648006), cutting and skidding is permitted from June 15 to September 30 and from December 15 to March 1 (USDA-FS 2007c, p. 74).

Direct and Indirect Effects

General effects to soils are discussed in the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-7 to 3-21). Site-specific effects of proposals are located in the soil resource report (project file).

Alternative 2 – No Action

Alternative 2 proposes no soil disturbing activities. Areas of bare soil existing in the project area, primarily roads and trails, have a potential for erosion and sedimentation. Soils would continue to erode in these areas until some physical point of stabilization is achieved. Natural weathering and erosion occur at background levels. Soils in the watershed would continue to acidify due to acid deposition.

Alternative 1 (Proposed Action)

ANF LRMP standards and guidelines, Pennsylvania BMPs and other resource protection measures would limit the effects from soil disturbing activities to possible short-term increases in soil erosion and sedimentation but with no long-term adverse effects.

Road Management

The direct and indirect effects of road maintenance, reconstruction and construction (on existing corridors) are minimal on the underlying soils because they were already compacted and their internal drainage characteristics altered by the original road building operations. Placement of additional pit run stone surfacing on the preexisting road bed would have no further effect on the underlying soils. As in any road building project, proper road design and alignment, ditch design and culvert sizing and placement are necessary to prevent erosion and sediment production, movement and deposition from occurring.

Road reconstruction is proposed for 0.3 miles. Reconstruction would include a higher level of disturbance than that associated with maintenance. Widening of the existing road corridor would be necessary in some places, in addition to placement of culverts in new locations and the replacement of existing worn out and undersized culverts. Hauling and placement of pit run sandstone, realignment and re-contouring of the road crown, ditch cleanout and reshaping would also be required during the reconstruction process. Over the short-term, areas of bare soil would be prone to erosion as would portions of newly constructed or cleaned ditches.

Road construction on existing corridors is proposed on 1.8 miles. These corridors may have been abandoned or have been used infrequently for decades. Direct effects are similar to road reconstruction. Depending on soil moisture conditions, direct effects may include soil compaction, rutting, displacement and a slower rate of water infiltration. Geotextile fabric could be employed on wet soils prior to placement of the stone to help stabilize the road bed. Seeding and mulching of cut banks would stabilize them.

Installation of correctly sized culverts in construction or reconstruction projects is an important component of road management. This activity should have relatively little impact as a source of sediment as long as the culverts are excavated and replaced according to accepted engineering standards for Forest Service System roads. Where culvert replacement occurs within the designated filter strip width of a stream channel, silt fences could be used to prevent sediment movement into nearby springs and creeks.

Road maintenance activities would include brushing, cleaning culverts and ditches, blading the road surface and adding surface rock as needed for timber hauling. There are 19 miles of maintenance proposed in Alternative 1. Short-term effects would include increases of soil movement during road maintenance activities. However, road maintenance and limestone surfacing may correct current problems of soil erosion and sedimentation from roads. Limestone would be applied to sections of road at stream crossings with the intent of suppressing erosion of the road surface and reducing the movement of sediment into the affected section of stream. Stone pit expansion would result in the soil resource being taken out of production until the pit is rehabilitated after use or reclaimed when depleted.

Decommissioning would make the road unusable, restore the roadbed to an unroaded condition and minimize or eliminate the potential for soil erosion and sedimentation from the site.

Vegetation Treatments

The majority of soil disturbance would occur during timber harvesting. Skid trails, using rubber tire skidders are created in order to remove the timber. Log landings are also created in order to temporarily deck the timber until it can be loaded onto trucks and hauled off-site. Areas of compaction on log landings may result from blading of the surface and heavy equipment use while stock piling logs. Kochenderfer and Edwards (1997) reported that the amount of soil exposed as a result of skid trails and trucking roads decreases rapidly after logging. This is because grasses and shrubs become re-established in the disturbed areas. The study measured skid and truck roads in 1987 and again 5 years later in 1992. The disturbed area in the skid roads decreased from 6.2 percent of the logged area in 1987 to 5.1 percent in 1992. The disturbed area in truck roads decreased from 4.5 to 3.1 percent in the same time period. It is thought that practically all skid roads, especially in heavily cut areas, would eventually convert back to forest. However, Kochenderfer and Edwards (1997) recommended that water-control structures are necessary on closed out roads whether they are skid trails or abandoned system roads, because bare soil (up to 4 percent of the area) can remain on these roads even after six growing seasons.

In conventional harvesting operations, the impacts of unbladed primary skid trails and unbladed log landings are considered to be short term impacts to soil productivity because there would be no removal of the surface soil horizons. These horizons may be mixed due to rubber tire movement on top of the soil surface, but the majority of the soil remains on site and relatively in place. Table 3 shows the sensitive soils within the proposed treatment areas.

Understory Vegetation and Reforestation Treatments

All of the activities (with the exception of herbicide, fencing and fertilizer application, which are discussed in the following section) are low intensity activities, done primarily by field crews using either hand tools or motorized equipment like chain saws, brush cutters, and augers, and for this reason the chance of soil compaction would most likely be minimal. Direct and indirect effects from soil erosion and sediment production from these activities would be minimal as well, because differing combinations of

surface debris and understory plants found in both untreated and harvested stands would provide a barrier or cover, effectively protecting the soil surface from rain splash erosion. Crib fencing and individual tree shelters would cause minimal soil compaction due to the localized nature of this task.

Non-native invasive plant species treatment would rely primarily on the use of hand tools and possibly spot herbicide spraying to accomplish this objective. Hand tool use, and its effects is discussed above, while the use of herbicide is discussed in the previous section.

Understory Vegetation Treatments (Herbicide, Fencing and Fertilizer Application)

Herbicide, fertilization and fencing treatments using heavy equipment have the potential for greater soil compaction, but even these treatments, when applied with ANF LRMP standards and guidelines, would likely cause minimal impacts to the soil resources. Herbicide is applied by a sprayer in swaths 50 to 60 feet wide, and granular fertilizer is applied similarly in swaths which are up to 100 feet wide, minimizing the number of passes a machine would make for each type of application, with a concurrent reduction in the potential for soil compaction. Fence building and maintenance activities have a potential for compaction and erosion in a roughly 10 foot wide zone along the perimeter of the fence used as a travel way to access the fence with mechanized equipment. The potential for compaction could be expected to increase in proportion of the number of trips. Nevertheless, compaction could still be relatively low, due to the small size of the vehicle used (either an ATV or a 4 x 4 pickup), the relatively low number of trips and presence of woody surface debris would have on compaction rates. The potential for erosion from bare ground would diminish rapidly as grass, forbs and woody debris accumulates in the perimeter track providing a protective cover for the soil. On steeper slopes, water bars would be installed to prevent water from running downhill and causing gully formation in the track.

Both glyphosate and sulfometuron methyl herbicides are proposed in Alternative 1. Glyphosate herbicide adsorbs readily to soils and becomes relatively immobile immediately after application, so there is limited potential for residual effects or effects to soil nutrients. The behavior of glyphosate residue in soil has been tested in a wide range of environmental conditions, which bracket those found on the ANF. Based on these studies, the soil half-life of glyphosate on the ANF is estimated to be less than 60 days with half-life in the litter of the forest floor to be less than 30 days. The half-life of glyphosate is shorter than average in silt loam soils and longer than average in sandy soils (USDA-FS, 2007e, pp. G1-42–G1-43). Glyphosate does not accumulate in the soil, and soil microflora degrades it to aminomethyl phosphonic acid, which is somewhat more stable than glyphosate. The principal end products of glyphosate decomposition are carbon dioxide, water, nitrogen and phosphate.

Sulfometuron methyl herbicide is more mobile in some soils than glyphosate, but it has a relatively short half-life in acidic soils, such as those found on the ANF. Sulfometuron methyl is much less mobile at pH 6 and below (acidic conditions) and in soils having high organic matter contents; therefore, little soil mobility is expected in the types of soils found on the ANF (USDA-FS, 2007e, p. G1-106). It is listed as “inhibitory” under certain laboratory conditions for some soil fungi and bacteria. Schreffler and Sharpe (2003) indicate that sulfometuron methyl applied after timber harvest acidifies soil, but the results were not statistically significant. No other studies have indicated that sulfometuron methyl has the side effect of soil acidification. Given conditions that exist on the ANF, the proposed use of sulfometuron methyl will not adversely affect soil nutrient cycling or soil productivity (USDA-FS 2007e, pp. G1-106, G2-42). Microbial degradation of sulfometuron methyl occurs, but slowly. Non-microbial hydrolysis (a type of chemical decomposition) appears to be an important mechanism in sulfometuron methyl dissipation. Sulfometuron can break down in a few days to several weeks depending on soil and air temperatures, but based on average soil conditions found on the ANF, the half life is expected to be less than 3 weeks (USDA-FS, 2007e, pp. G1-106, G2-42). Principal products of the breakdown of sulfometuron methyl include saccharin, carbon dioxide, and methyl 2-(aminosulfonyl) benzoate. Both herbicides are formulated to target plant growth, and available studies do not indicate that either glyphosate or

sulfometuron methyl affects nutrient cycling in forest soils (e.g. nitrogen mineralization) (USDA-FS, 2007e, p. G1-44).

Soils within the stands proposed for herbicide application have a loamy texture. Sixty (60) percent have a silt loam texture characterized by a zero to 50 percent sand fraction, a 50 to 87 percent silt fraction and a zero to 27 percent clay fraction. The remaining 40 percent of the soils have a sandy loam texture characterized by a 43 to 85 percent sand fraction, a zero to 50 percent silt fraction and a 15 to 43 percent clay fraction. Soil organic matter content for the silt loam soils in the project is approximately 2.7 percent, and these soils have a pH of around 4.9. Soil organic matter for the sandy loam soils is about 3, with a pH range around 4.5 (USDA-SCS 1985).

These soils fall within the range of soil conditions considered during the ANF LRMP FEIS herbicide analysis (USDA-FS 2007e, pp. G2-59, G2-60, G2-70). Therefore, the risk characterization to wildlife and terrestrial plants, aquatic plants and human health from water related exposures to both ground water and runoff (USDA-FS 2007e, appendix G, pp. G2-73–G2-82, G1-80–G-91, and G1-131–G-142) applies to the herbicide use proposed in this project. Overall risks from the planned use of glyphosate and sulfometuron methyl are expected to be low (USDA-FS 2007b, p. ROD-23). The proposed use of glyphosate and sulfometuron methyl will not adversely affect soil productivity or soils nutrient cycling (USDA-FS 2007e, pp. G2-44, G1-106, G2-33, and G2-42).

Alternative 1 proposes fertilizing 16 units totaling 302 acres. Concern over leaching losses of base cations associated with the use of nitrate-nitrogen fertilizers has led to a limitation on the use of this form of nitrogen. Since the concern over base cation loss is greatest on the plateau and shoulder landform positions, the need for nitrogen application in units occupying these positions has been evaluated more carefully prior to prescribing this activity.

Wildlife Management Treatments

Wildlife enhancements consist of planting mast producing trees and shrubs, pruning and release of fruit trees and placement of nesting structures and brush piles. These improvements would have minimal direct and indirect effects on soil resources other than ensuring that planting sites remain vegetated with a mixture of trees and shrubs resulting in low potential for soil erosion and sedimentation from affected units. These plantings and nesting structures are usually made or installed with hand tools or power driven augers. Scalping, which removes ground cover from a 1 foot square patch to expose bare soil, is usually done preparatory to planting as a means to control competing vegetation and to get the newly planted seedlings off to a good start. In some cases, either individual tree shelters or “cribs,” measuring 10 feet x 40 feet enclose a group planting. Due to the minimal amount of soil disturbance for the planting and fencing activities, no loss of soil productivity is anticipated as a direct or indirect effect of this action.

Included in this project is a proposal to maintain and manage wildlife openings (includes constructed wildlife openings, inactive and depleted pits) which would require agricultural practices such as disking, seeding and applying limestone and fertilizer. As with any operation of this type, any potentially detrimental impact to the soil resource can be minimized by staying off and refraining from cultivating soils when they are too wet, following soil conservation practices and using mulch and a fast growing companion crop to reduce soil erosion and protect the developing stand of grass and legumes. Once a stand of grass and legumes is established, the erosion potential of the site would be minimized for the life of the planting.

In general, direct and indirect effects of wildlife treatments are expected to be relatively minor (see wildlife resource report [in the project file] for additional details and further description of the proposed treatments).

Prescribed Burning

Disturbance of the soil's physical properties from prescribed burning would be variable depending on the burning conditions and fuel loading at the time the fire was lit. In all likelihood, a fire of this type would burn at varying intensities across a stand, but still leave a layer of duff and scattered woody debris on the soil surface. This covering of organic matter would act as a barrier against rain splash, and protect the physical properties of the soil. The possibility of soil erosion would be greatly reduced by the presence of a duff layer and woody debris (Pritchett 1979, pp. 420–424).

The effects of prescribed fire on the soil's chemical properties are more variable. Low intensity, infrequent burns proposed for this project are thought to have minimal effects on the soil resource. In general, some carbon and nitrogen would be lost to the atmosphere, although the amounts are variable. Nitrogen is especially prone to fire loss due to the lower temperatures at which it volatilizes (goes into the atmosphere). Nitrogen could be replaced by atmospheric inputs and by the incorporation of unburned organic matter into the soil. Losses of phosphorus and other nutrients like potassium, magnesium and calcium would be slight due to the higher temperatures at which they volatilize. These nutrients would most likely remain in the ash for future plant uptake (Pritchett 1979, pp. 424–430).

Detrimental Soil Conditions

Table 3 displays the total effects to soils from the activities proposed in Alternative 1. These acreages were approximated based on interpretations and descriptive information for the soil map units (USDA-SCS 1985) found within the proposed treatment areas. Potential detrimental effects to these soils resulting from project activities would be minimized through implementation of ANF LRMP standards and guidelines and project design features, such as seasonal restrictions and avoidance of sensitive areas. The project area is approximately 5,319 acres in size, and vegetation management (silvicultural) activities would occur on approximately 1,840 acres of treatment units. Five stone pits would be expanded by an additional 4.25 acres, while four stone pits (12.9 acres) are proposed for rehabilitation. Two stone pits, (7 acres) are proposed for reclamation or decommissioning.

As a result of this project it is anticipated that between 10 to 15 percent (or between 184 and 276 acres) of the treatment units would experience detrimental effects from this project, which is at or below the threshold established for soil disturbance on the ANF (USDA-FS 2005). Any detrimental effects that occur within the proposed treatment areas would most likely be localized and not carry over to the cumulative effects analysis area.

Table 3: Soil Disturbance Category and Sensitive Soils Found within the Project Area and Cumulative Effects Analysis Areas.

Sensitivity	Alternative 1 (Acres ¹)	Alternative 2 (Acres ¹)	Cumulative Effects Area (Acres ²)
10 to 15 percent Disturbance	184 to 276 ³	0	N/A
Wet soils	1,105	0	2,415
Erosion and Rutting Hazards severe(moderate)	16 (266)	0	59 (920)
Equipment Limitation – severe(moderate)	282 (1,575)	0	982 (2,964)
Slope – greater than 25 percent	282	0	964
Mass Wasting Hazard	315	0	1,870
Prime Farmland	652	0	924
Farmland of Statewide Importance	156	0	509

¹Acres falling into sensitivity categories for alternatives 1 and 2, where the total area of silviculture and reforestation treatment units is 2,404 acres. Wildlife acres were not included because they overlap in some cases, and wildlife treatments are very low intensity and should have little effect on the soil resource. See wildlife sections for additional information.

²Acres falling into sensitivity categories for the cumulative effects area, where the total cumulative effects area is 5,319 acres. All of the cumulative effects area occurs within the boundary of the Allegheny National Forest. These figures are for comparison purposes only, since activities occurring as part of Alternative 1 are not expected to affect the cumulative effects area and vice versa.

³Shows a range of 10 to 15 percent of the acreage for Alternative 1. For alternative 1, the higher end of the range is the maximum acreage that could be detrimentally affected by the project, without exceeding Forest Service, Region 9 guidelines (USDA-FS 2005).

Cumulative Effects

The CE analysis area selected for the soils resource is the project area (5,319 acres) (see map 1). This boundary was selected for the cumulative effects analysis because it encloses all of the proposed treatment areas for the project, and the enclosed land area is drained almost exclusively by tributaries to Tionesta Creek. The choice of boundary was also influenced by the fact that these tributary streams, which flow across the ANF, go on and drain a minimum amount of private land after leaving the ANF. Also, few reaches of streams in the cumulative effects area flow from private land to the ANF, reducing the possibility of sediment being moved from private to federal land by this transport mechanism. Cumulative effects on soils are such that they are typically a result of multiple disturbances on the same site.

The temporal scale used to evaluate the CE analysis area on the soil resource will be 10 years prior and 20 years into the future. Ten (10) years into past includes past management activities. Twenty (20) years into the future would allow for proposed activities to be completed. Removal cuts may take 15 years to complete depending on the establishment of advance regeneration. Therefore, a 30 year time frame will

be analyzed. Detrimental effects from soil compaction related to a single event are not expected to persist beyond 5 years. Likewise, in the rare and limited instances where cover is removed from the soil surface (other than roads, landings and similar areas), reestablishment of plant cover can be expected to occur in less than 5 years. Given the preceding, some effects may be analyzed using a longer time scale, such as 20 years into the future, to show the long-term effects on soils.

Acid Deposition

Acid deposition occurs within the CE analysis area independent of Forest Service management and is anticipated to continue at an increasing rate as more fossil fuel is burned to meet energy needs around the world. It is difficult to predict the potential impact of more efficient power plants and the shifts to other forms of energy production, such as nuclear, wind and solar, which do not have atmospheric emissions. Soil acidification is a naturally occurring phenomenon, and by inference, it can be expected to continue at an increasing rate throughout the CE analysis area as acid deposition increases.

Although the Clean Air Act has been responsible for overall reductions of sulfur concentrations in the air, acid deposition from atmospheric sources could continue to increase the amount of nitrogen and sulfur in the soil, with a resulting increase in soil acidity. These increases in soil acidity would lead to continued leaching of calcium and magnesium through the soil profile. This leaching, when combined with the lack of limestone and dolomite in the dominant geology of the ANF, would result in continuing losses of calcium and magnesium from the soil profile.

Harvest methods affect the nutrient cycling of the forest floor differently (Elliott and Knoepp, 2005). Methods, such as whole-tree harvesting, that remove excess organic material have more detrimental effects on nutrient availability than stem-only methods, which leave organic material (branches, leaves, tree crowns) at the harvest site (Elliott and Knoepp, 2005). Short harvest rotations have shown decreases in soil base cations due to the lower accumulation of organic matter and higher soil disturbance (Grigal, 2000). Likewise, soil disturbing activities, including skidding and log yarding, decrease soil productivity by removing soil organic matter and increasing compaction (Berger and others 2004). Because the majority of the base cations in the watershed come from litter fall, soil disturbance should be limited as much as is reasonably possible. Methods for harvesting should leave woody debris and slash material on site to augment nutrient and organic matter input (Mann and others 1988). Whole-tree harvesting should be avoided and instead stem-only or sawlog harvesting should be used. A particular type of harvest system could exacerbate the loss of base cations due to acid deposition. Implementation of ANF LRMP standards and guidelines, project design features and Pennsylvania BMPs would ensure that soil disturbance is minimized and coarse woody debris is left on site. Whole tree harvesting is not being proposed in any of the alternatives.

Alternative 2 – No Action Alternative

Under this alternative, no new management activities will occur. Overall, soil would continue to erode at the very low level or background rates common to a forested landscape at equilibrium with the rates of soil formation and erosion. This would be different on bare areas or sloping terrain, all of which could have accelerated rates of erosion due to a lack of cover, steeper and longer slopes and poor water infiltration rates where surfaces are compacted. The preceding is especially true on areas such as roads, which need periodic maintenance to maintain proper drainage and erosion control features. Since road maintenance may not occur within the CE area as a part of this project, erosion and sources of sediment originating from Forest Service System roads may not be corrected under this alternative.

Without future vegetation management, trees would mature and down woody debris would accumulate over time and decay slowly releasing more carbon into the atmosphere and the soil. Assuming that the stands regenerated adequately, somewhat of a mixed age distribution of age classes would result where the larger, older trees would contain relatively large amounts of sequestered carbon, but their rate of carbon sequestration would be less than the rate for younger trees. Conversely, younger trees would

contain relatively low amounts of sequestered carbon, but the rate at which they sequestered atmospheric carbon would be higher than the rate for older trees. Regeneration would most likely develop at a slower rate in this alternative; therefore, the rate of carbon sequestration would be slower than in Alternative 1. The amount of carbon sequestered would be related to the volume of biomass on a per acre basis. Some areas may fail to regenerate due to interfering vegetation.

Alternative 1 (Action Alternative)

Proposed activities include conventional logging and landing and skid trail development that disturb the soil surface and possibly the subsoil to some degree. Soil development would then be setback, and it could take many decades for that soil to recover to its native state. In the case of roads, it would take a change in management and road obliteration to see soil recovery occur.

Regeneration would most likely develop at a faster rate in Alternative 1; therefore, the rate of carbon sequestration would be greater than in Alternative 2. The amount of carbon sequestered would be related to the volume of biomass on a per acre basis.

Table 9 summarizes past management activities within the CE analysis area over the last 10 years including reforestation treatments and timber harvest. Scattered stands from the Crop Tree Release I–V, West 127 Salvage and Herbicide Diversity Study projects lie within the CE analysis area. Routine maintenance, such as grading and brushing, has occurred as needed when funding is available.

Many additional activities have the potential to cumulatively affect soil resources. They vary in scale and scope from recreational activities, such as hiking and dispersed camping, to road construction and maintenance. Over time, soil compaction may occur, low levels of erosion may develop and small amounts of sediment may be produced, but none are measurable at the project level.

On the ANF, stands can be eliminated or restricted spatially and temporally to either avoid wet soils or to restrict management activities to drier seasons and periods of the year. Additionally, wet soils are often designated as reserve areas during project layout, which restricts most ground disturbing activities from occurring. In Alternative 1, up to 5 percent of the productive soils would be disturbed during timber harvest and reforestation activities.

There are approximately 85 wells impacting 85 acres within the CE analysis area. Nine (9) of these wells have been drilled within the past 5 years. It is reasonable to expect OGD to continue within the CE analysis area and result in additional areas with long term compaction due to road and well pad construction. Using the average future private OGD projections (USDA-FS 2007a, pp. 2-60) of wells per year (0.001 wells/acre), it can be estimated that 5.3 wells per year could be developed within the CE analysis area resulting in 106 new wells over the next 20 years. This level of OGD, along with proposed Forest Service stone pit expansion in Alternative 1, would result in approximately 2.7 percent (143 acres) reduction in productive soils within the CE analysis area over the next 20 years. The 1986 ANF LRMP standards and guidelines for private OGD and Pennsylvania BMPs would reduce erosion created by road construction and maintenance and the volume and type of traffic these roads support.

7.1.2 Water Resources

Specific information by watershed is shown in the water resources report (see project file). The analysis area, consisting of the project area plus pit development outside of the project area, is contained by four 6th field sub-watersheds within the single 5th field Tionesta Creek watershed (Table 4). Portions of 12 named drainages are present within the project area.

Table 4: Watershed hierarchy, drainages, and treatment acres proposed within the Porkey Heights Project Area.

5 th field watershed	6 th field subwatersheds	Drainages within Project Area	Drainage area (acres)	Project area acres in drainage	Percent of drainage in project area	Treatment acres proposed	Percent of drainage in treatment areas
Tionesta Creek	Blue Jay Creek	West Branch Bluejay Creek	5,036	21	<1%	12	<1%
	Salmon Creek	Coalbed Run	864	76	9%	38	4%
		The Branch	7,320	23	<1%	20	<1%
	Tionesta Creek (middle)	Blood Run	861	846	98%	284	33%
		Kingsley Run	792	411	52%	221	28%
		Logan Run	2,132	1851	87%	870	41%
		Panther Run	375	64	17%	52	14%
		Phelps Run	981	952	97%	515	52%
		Tionesta Creek (middle)	17,055	539	3%	173	1%
		Wildcat Run	397	354	89%	164	41%
	Tionesta Creek (upper)	Hastings Run	1,305	76	6%	12	1%
		Lindsey Hollow	417	110	26%	51	12%

Design features for Alternative 1 include:

- Limestone surfacing should be applied on planned timber haul routes prior to any timber hauling (USDA-FS 2007c, p. 75).

Direct and Indirect Effects

Environmental Consequences will be summarized based on the effects from proposed Forest Service activities. The cumulative watershed effects section evaluates effects from private and Forest Service activities. Consistency of alternatives with Pennsylvania BMPs and ANF LRMP standards and guidelines is presented at the end of this section.

Effects of the alternatives were analyzed on five of 12 drainages listed in Table 4. Blood, Kingsley, Logan, Phelps and Wildcat Runs are each more than 50 percent contained within the project area (see Table 4). Beyond these drainages, it is assumed that the cumulative effects of proposed activities would be masked or diluted to a point where connections with potential site disturbance would not be apparent or measurable.

Summary of Effects

- ANF LRMP standards and guidelines will minimize direct and indirect effects to streams and wetlands. Overall, activities will be limited or avoided around streams and wetlands. Riparian corridors and wetland management zones are designed to provide filtering of sediment, herbicide and fertilizer, protect water temperatures and allow for a recruitment of large woody debris (LWD) into stream channels and wetlands (USDA-FS 2007c.)
 - Vegetation management treatments proposed in Alternative 1 would reduce basal area by no more than 9.1 percent in any project drainage. Effects to water quantity are minimized by limiting basal area reduction to less than 25 percent in a watershed.
 - To calculate reductions in basal area, shelterwood seed cuts harvests/shelterwood removal harvests and shelterwood removal harvests were considered as total basal area reduction; however at least 10 percent basal area would be left in each stand, which would reduce potential effects. Intermediate thinning harvests (commercial and non-commercial), single tree selection and group selection were considered to have 50 to 75 percent of the basal area remaining after harvest.
 - Under Alternative 1, herbicide applications are proposed on 13.7 percent (up to 706 acres) of project. The majority of these treatments are located away from streams. Those stands that overlap streams or riparian areas will be protected through herbicide buffers identified in the ANF LRMP (USDA-FS 2007c, pp. 57-58).
 - No vegetation management treatments or herbicide applications are proposed in Alternative 2.
- New road construction has the greatest potential to impact water resources where it is located within 300 feet of streams or 100 feet of wetlands. None is proposed in either alternative.
- Road segments within 300 feet of streams are most likely to be hydrologically connected to streams. Where non-system road corridors are to be reconstructed to Forest Service standards, it is likely that the length of road hydrologically connected to streams and the amount of erosion and sedimentation would be decreased.
 - Alternative 1 proposes road construction on existing corridor of 1.8 miles of non-system roads. Given that some of these existing corridors are currently grassed over, construction would cause short-term disturbance to soils, but these effects should be minimal after establishment of vegetation. These projects will provide long-term benefits by reducing the volume of runoff and sediment entering area streams.
 - Alternative 2 does not propose to add any existing road corridor to the FS road system.
- Proposed road reconstruction and maintenance would improve water quality and stream flow regimes by decreasing the length of roads hydrologically connected to streams (Sheetz and Bloser 2008). Limestone surfacing would be done in conjunction with road maintenance, particularly on roads within 300 feet of streams to minimize the movement of sediment into streams from hauling and erosion of pit run surfacing (Sheetz and Bloser 2008.)
 - Alternative 1 proposes reconstruction of 0.3 miles and maintenance of an additional 19 miles of Forest Service System roads. In addition, limestone surfacing would be applied to 2.1 miles of Forest Service System roads within 300 feet of streams (Table 1).
 - In Alternative 2, conditions would remain the same within the project area.
- Road decommissioning would cause short-term disturbance to soils, but these effects should be minimal after establishment of vegetation. Decommissioning would provide long-term benefits by

reducing compacted surfaces and restoring natural flow of water resources. This benefit would be greatest on road segments within 300 feet of streams.

Water Quality

Sedimentation from roads is the principle concern for water quality and aquatic habitat identified in the ANF LRMP FEIS (USDA-FS 2007a) and will be the primary focus for this discussion. In the ANF LRMP, new road construction within 300 feet of streams is identified as having the greatest potential to change current stream conditions. Existing road corridors within 300 feet of stream that are converted to Forest Service System roads could reduce sedimentation where roads are improved to Forest Service standards. In addition, hauling can impact water quality, which is addressed through road use plans. Proposed road maintenance (19 miles,) construction on existing corridor (1.8 miles), reconstruction (0.3 miles) and decommissioning (2.9 miles) should reduce sedimentation over the long term. Roads that are currently grassed over may have an increased potential for sedimentation during reconstruction. The potential for sedimentation would be higher just after construction and during hauling. Erosion control measures and limestone surfacing would minimize the potential for sedimentation.

The ANF LRMP FEIS (USDA-FS 2007a) provides documentation that demonstrates minimal effects to water temperature, buffering capacity, nutrient concentrations and sediment concentrations from the vegetation management and reforestation activities proposed in this project. This is based on ANF LRMP standards and guidelines that will be applied to proposed activities. These ANF LRMP standards and guidelines meet or exceed Pennsylvania BMPs (PA DEP 2005). Appendix G, the herbicide risk assessment of the ANF LRMP FEIS (USDA-FS 2007e) has reviewed effects to groundwater and surface water regarding aquatic life and human health water quality criterion. The assessment found that ANF LRMP standards and guidelines would ensure that treatments would protect water quality and if effects occur they should be minimal and short-term (USDA-FS 2007c.)

The majority of stands proposed for treatment within this project are located away from streams and water resources. Where streams and water resources occur within stands, ANF LRMP standards and guidelines will be applied to identify riparian corridors along streams. Riparian corridors will be defined as stated in the ANF LRMP, which would keep the majority of activities more than 50 feet from intermittent streams, 100 feet from perennial streams and 200 feet from Logan Run. Riparian corridors are designed to provide adequate filtering of sediment, fertilizer and herbicide, protect water temperature and allow for recruitment of LWD into stream channels.

Water Quantity

As identified in the ANF LRMP FEIS (USDA-FS 2007a), runoff from roads is the principle concern for water quantity and changes to aquatic habitat. In the ANF LRMP, new road construction within 300 feet of streams is identified as having the greatest potential to change current stream conditions. No new road construction is being proposed with this project. Existing road corridors within 300 feet of stream that are converted to Forest Service System roads would reduce water quantity impacts where roads are improved to Forest Service standards and runoff is infiltrated or slowed before it reaches streams. Road maintenance (19 miles), construction on existing corridor (1.8 miles), reconstruction (0.3 miles) and decommissioning (2.9 miles) should help minimize sedimentation over the long term by diverting water from road ditches onto the forest floor.

The ANF LRMP FEIS (USDA-FS 2007a) provides documentation that demonstrates minimal effects to water quantity when vegetation management activities are distributed over several watersheds. ANF LRMP standards and guidelines will provide the greatest controls to water quantity by maintaining an intact forest floor and minimizing soil disturbance (Stuart and Edwards 2006). Effects to water quantity would be minimized by limiting basal area reduction to less than 25 percent in a watershed. This is based on studies that show reductions in basal area that approach 25 percent were found to have measurable increases in annual water yield (Hornbeck and Kochenderfer 2000.) Annual increases in water yield due

to timber removal are largely a result of increases in summer low flow, primarily during the growing season (Megahan and Hornbeck 2000.) The average time until hydrologic recovery of a harvest is between 3 and 10 years (Hornbeck and Kochenderfer 2000), and stream flow regime recovery in central Pennsylvania takes approximately four years (Lynch and Corbett 1990.) It is assumed that watersheds on the ANF respond to forest disturbance in a similar manner.

Cumulative Effects

Cumulative effects of project alternatives were analyzed on five of twelve drainages listed in Table 4: Blood, Kingsley, Logan, Phelps and Wildcat Runs. The Logan Run drainage will be the primary focus of discussion from this point forward because it is the drainage that is most likely to be impacted by current, proposed and future activities. It is also the only stream in the CE analysis area that is designated as a Class A wild trout fishery by the PFBC. Beyond Logan Run and the other project drainages, it is assumed that cumulative effects of proposed activities would be masked or diluted to the point that potential site disturbance would not be apparent or measurable. The time frame for cumulative watershed effects, unless otherwise specified for a given activity or effect of activities, begins ten years prior in 1999, extends through the proposed implementation of the project and ends ten years after the last proposed activity in 2029. This timeframe is intended to include any previous effects of management and natural activities cumulatively with current, proposed and reasonably foreseeable future activities.

Based on the implementation of timber harvest activities in Alternative 1 in combination with approved and reasonably foreseeable Forest Service and private activities, cumulative effects to water quality and water quantity within the project and CE analysis areas are expected to be minimal. This conclusion is supported by the following: (1) ANF LRMP standards and guidelines are designed to minimize effects to water resources and water quality (USDA-FS 2007c) and they meet or exceed Pennsylvania BMPs; (2) treatments would be spread across the landscape and over time; (3) the majority of treatments are located away from streams; (4) proposed road improvements in the project area; and (5) private OGD would be regulated by Pennsylvania DEP to minimize effects to water resources.

Based on GIS data and district records, timber harvests and reforestation treatments have been completed or scheduled for completion on 368 acres of NFS lands within the project area since 1999. Previous projects within the project area included Crop Tree Release I–V, Herbicide Diversity Study Removal and West 127 Salvage projects. Private timber harvest predictions based on the ANF LRMP FEIS (USDA-FS 2007a, Table 3-42) and are expected to be negligible. NFS lands occur on 87 to 98 percent of the Blood Run, Logan Run, Phelps Run and Wildcat Run drainages and 60 percent of the Kingsley Run drainage. The remainder of Kingsley Run is largely owned and managed by a single industrial timber company and projects on private and NFS lands would reduce basal area by no more than 6 percent in that drainage. Given that these treatments would be spread out over a ten year period and considering that effects to water resources from vegetation activities last less than five years in Pennsylvania (Lynch and Corbett 1990), effects from basal area reduction would not be likely increased stream flows. In addition, increases in stream flow are not expected considering the fact that basal area reductions would not surpass 10 percent in any project drainage. This is well below the 25 percent basal area reduction threshold, which may cause measurable increases in stream flow.

Future projects that were not considered in this analysis would likely be implemented after the effects of previously approved reductions have faded. The ANF LRMP FEIS (USDA-FS 2007a) provides documentation that demonstrates minimal effects to water quantity when vegetation management activities are dispersed over watersheds.

Cumulative effects from herbicide treatments are not expected in any alternative. Under Alternative 1, herbicide applications are proposed on 13.7 percent (up to 706 acres) of project area. The majority of these treatments are located away from streams. Those stands that overlap streams or riparian areas will

be protected through herbicide buffers identified in the standards of the ANF LRMP (USDA-FS 2007c, pp. 57-58.) No herbicide treatments have occurred in project area within the past 10 years.

Overall, transportation activities in this CE analysis area are expected to reduce the hydrologic connectivity of the road network to streams and reduce sedimentation. Proposed road maintenance (19 miles,) construction on existing corridor (1.7 miles), reconstruction (0.3 miles,) and decommissioning (2.9 miles) should reduce runoff to streams thus improving water quality and stream flow regimes by decreasing the length of roads hydrologically connected to streams (Sheetz and Bloser 2008.) Limestone surfacing would be done in conjunction with maintenance, particularly on road segments within 300 feet of streams to minimize the movement of sediment into streams from hauling on roads and erosion of pit run surfacing (Sheetz and Bloser 2008.) Since no new construction is proposed and all existing corridors have some degree of soil compaction, changes in stream-flow are not expected. No other new Forest Service road construction or reconstruction is currently planned or approved in project area during the next 10 years. Decommissioning of roads would increase infiltration of ground water, reduce effects on stream flow regime, reduce elevated peak flows and change timing of peak flows.

Private OGD throughout the twelve project area drainages (9,389 acres) has resulted in 357 existing wells. Based on the information presented in private OGD analysis (see project file), the ID team decided to use the ANF LRMP FEIS assumptions in order to project future rates of development within the CE analysis area. Projected future private OGD was based upon the ANF LRMP FEIS (USDA-2007a, p. 2-60) average future projection of 512 new wells per year (0.001 wells per year per acre.) Given this assumption, over the next 20 years it is expected that an additional 9.4 wells per year will be drilled throughout the twelve CE analysis area drainages and acres of disturbance would increase from 357 acres (3.8 percent) to 601 acres (6.4 percent) over the next 20 years. In the entire Logan Run drainage (2,132 acres) projected OGD would result in a total (past, present and projected) of 112 wells and affecting 124 acres (5.8 percent). Combined with impacts from current, proposed and future activities, basal area reduction would remain below 14 percent in the drainage, much lower than the 25 percent threshold, and there should be no measurable effects on water quantity. Private OGD operators are required develop and implement erosion and sedimentation plans for their developments. These plans outline Pennsylvania BMPs used to minimize erosion sedimentation to streams and wetlands. The Timber Harvest Operations Field Guide for Waterways, Wetlands and Erosion Control and the Oil and Gas Operator's Manual contain Pennsylvania BMPs for road and well pad construction to control erosion and sedimentation (PA DEP 2005, PA DEP 2001). Used together, Pennsylvania BMPs and 1986 ANF LRMP standards and guidelines for private OGD contain requirements that would reduce impacts on water resources from OGD. These requirements include buffers on streams and wetlands and proper layout and construction of roads. When soil and water problems are identified, the Forest Service coordinates with the private OGD operators and the Pennsylvania DEP to resolve problems. Soil and water problems on non-system roads are expected to diminish when these roads are added to the Forest Service road system.

Timber harvesting is expected to occur on 10 percent of the private lands within the CE analysis area per decade. Adherence of Commonwealth BMPs for road construction and timber harvesting will minimize effects to water resources on private harvesting activities in the CE analysis area drainages.

Consistency with Commonwealth and Forest Plan Standards

The Commonwealth anti-degradation policy requires that at a minimum existing water uses and level of water quality necessary to protect the existing uses shall be maintained and protected. There are no streams within project listed as "water quality limited" by the Pennsylvania DEP as of the latest 303(d) listing of stream channels impaired from meeting Commonwealth water quality standards (PA DEP 2006.) Therefore, based on Pennsylvania DEP review, water quality in all streams within the analysis area meets all Commonwealth standards and all protected uses.

The PFBC has designated Logan Run as a Class A wild trout stream. Class A streams support a population of naturally produced trout of sufficient size and abundance to support a long-term and rewarding sport fishery. Pursuant to 58 Pa. Code §57.8a, it is the PFBC’s policy to manage self-sustaining Class A wild trout populations as a renewable natural resource. Class A wild trout populations represent the best of Pennsylvania’s naturally reproducing trout fisheries. The PFBC manages these stream sections solely for the perpetuation of the wild trout fishery with no stocking.

The ANF LRMP (USDA-FS 2007c, p. 14) identifies desired condition and goals for aquatic ecosystems to maintain the protected use of waters. These include maintaining or restoring watersheds and their associated stream and groundwater processes, channel stability, riparian resources and aquatic habitats to a functional condition. It also includes providing quality, quantity and duration of stream flow to maintain levels that support desired aquatic species or the most restrictive beneficial use. ANF LRMP desired condition includes providing riparian areas that have dynamic, multi-age and multi-layered vegetative communities that promote floodplain structure, stream channel stability; aquatic diversity and natural recruitment of LWD and other sources of organics and riparian areas that are occupied by vegetation that provide habitat for riparian dependent species. Following ANF LRMP standards and guidelines, including timber harvest buffers, would help meet these desired conditions.

Alternative 1 is not expected to cause impacts to aquatic life from the proposed activities; therefore, Alternative 1 would meet the intent of the anti-degradation policy, Pennsylvania BMPs and ANF LRMP water quality standards and guidelines.

7.1.3 Transportation

Direct and Indirect Effects

The existing road system was inventoried in 2007 and 2008. Proposed transportation and road management activities are disclosed in appendix B. The effects of these treatments on other resources have been considered in those applicable resource effects analyses. Table 5 shows the mileages and management of the current road system within the project area:

Table 5: Current total (miles) of road system and road management

Road	Open	Closed	Restricted	Total
Forest Service	9.9	4.7	2.5	17.1
Municipal	0	0	0	0
Non-System	0	10.7	0	10.7
Total Roads	9.9	15.4	2.5	27.8

The Forest-wide Roads Analysis (USDA-FS 2003) defines the three categories for road management:

- Open** – road is typically open for public traffic
- Closed** – road is typically closed for public traffic
- Restricted** – road may be open or closed to public traffic or types of public traffic depending on the time of year and resource needs.

Within the project area, 58 percent of the Forest Service System roads are open, 27 percent are closed and 15 percent are restricted.

Alternative 2 (No Action)

The proposed transportation activities, including stone pit expansion, would not occur in this alternative and any sedimentation caused by roads would continue to occur. Under this alternative, no non-system roads would be added to the Forest Service road system and no gates would be installed. Non-system roads would remain in their current state. The Forest Service would continue to maintain system roads periodically based on available funding and to work with private interests concerning maintenance on non-system roads. Road management (miles of open, closed and restricted roads) would stay the same.

Alternative 1 (Proposed Action)

Five stone pits are proposed for expansion; four of the stone pits are located outside of the project area. No new stone pits are being proposed. The current size of the five stone pits is 10.6 acres. Proposed stone pit expansion is 4.25 acres, which would become non-forest land. In addition to horizontal expansion, the five stone pits have the potential for vertical expansion (floor ripping and processing). Pit management plans will be developed for each pit showing expansion and rehabilitation requirements. Pit rehabilitation, including re-contouring and re-vegetation, would take place after use.

Two stone pits, one listed for expansion (FR180A) and one currently depleted (NS99021), are proposed for reclamation or decommissioning (7 acres). The FR180A pit would be reclaimed, once the stone has been extracted. Pit reclamation would include re-contouring, re-vegetating (seed, liming, mulching) and tree and shrub planting.

Fifteen (15) parking areas (40' x 20') would be constructed. Ten (10) of the parking areas would be located along FR180; the rest would be located along FR180H, FR180B, FR217 and FR214. This work would provide a safe transportation system in areas that lack pull-offs facilitating two-way traffic. In addition, these parking areas would facilitate dispersed recreation activities, such as hunting, fishing and camping.

No Forest Service road construction - new corridor is being proposed in either alternative. There are four segments (1.8 miles) of road construction on existing corridors. This involves adding four non-system roads (NS18628, NS43683, NS25484 and NS25342) to the Forest Service road system and bringing them up to Forest Service standards. They would continue to be managed as closed roads. These roads are needed to provide access for vegetation management. A new gate would be installed at the entrance to NS25484 to protect resources. All other road segments connect to the Forest Service road system where access is controlled by an existing gate. Approximately 0.3 miles of FR214 would be reconstructed to provide access for vegetation management. Road maintenance is being proposed for 19 miles of Forest Service System roads in Alternative 1. Maintenance includes a variety of activities such as brushing, surfacing, culvert replacement, reconditioning and applying limestone surfacing. Under this alternative, there are 2.1 miles of limestone surfacing proposed for road segments within 300 feet of drainages, as well as reapplying limestone surfacing due to loss and deterioration. Proposed road reconstruction and maintenance would result in increased road safety and reduced soil erosion and sedimentation.

Approximately 2.9 miles of road decommissioning are being proposed in this alternative. There are five levels of road decommissioning:

- Level 1:** Block road with on-site materials i.e., boulders, trees, stumps
- Level 2:** Block road and remove drainage structures, restore natural drainages using channel crossing restoration techniques
- Level 3:** Block road, remove drainage structures and install water bars in accordance with road grades
- Level 4:** Block road, remove drainage structures and scarify the road surface
- Level 5:** Full re-contouring of the road template

All of these levels would involve seeding and mulching of disturbed areas, where necessary. Decommissioning is expected to reduce soil erosion and sedimentation effects to nearby drainages.

Under Alternative 1:

FR217 (1.4 miles) – the first 0.5 miles of this section would receive level 1 and remaining portions (0.9 miles) of this road would receive levels 1, 2 and 3;

FR180C (0.3 mile portion) – would receive levels 1 and 2;

FR180L (0.04 miles) – would receive levels 1, 2 and 3.

All non-system roads would receive at least level 1 decommissioning. Some non-system roads would receive levels 1, 2 and 3 because culverts would be removed and water bars installed. On NS25345, which crosses the upper portion of Logan Run, a large culvert would be removed over the stream. For the non-system roads, the road template would remain to provide access for use in emergencies or for future use by OGD. In addition, the Forest Service continues to work with private oil and gas developers to improve their roads to benefit soil and water resources.

Under Alternative 1, road management changes are due to decommissioning segments of Forest Service System roads (FR180C, FR180L and FR217) and adding non-system roads added to the Forest Service road system. FR180L and FR217 are currently managed as open roads, while FR180C is managed as restricted. The four non-system roads being added to the Forest Service road system are currently managed as closed roads and would continue to be managed as remain closed roads. Under Alternative 1 there would be a decrease of open road mileage from 9.9 miles to 8.5 miles (49 percent), an increase in closed road mileage from 4.7 miles to 6.2 miles (36 percent) and no change in the restricted roads miles. In the ANF LRMP FEIS, the percentage of open, closed and restricted roads is projected under Alternative Cm (the selected alternative) at roughly 33 percent in each category (USDA-FS 2007a, p.3-79).

Cumulative Effects

The transportation CE analysis area is the project area (5,319 acres) (see map 1). With the exception of some road maintenance and pit expansion, all proposed road activities take place within the project area. The CE analysis period encompasses a timeframe of 10 years into the past was used as it would incorporate completed and ongoing activities from past projects. A timeframe of 20 years into the future was used to allow for all proposed and reasonably foreseeable activities to be completed and resulting vegetation changes to occur. The entire time frame extends from 1998 to 2028. It also accounts for additional road construction that may occur as a result of OGD on NFS lands for the next twenty years. Future OGD would likely increase the miles of non-system roads within the project area.

There has been no road construction – new corridor associated with Forest Service management activities in the CE analysis area in the past 10 years and none is proposed with this project. There is approximately 0.125 acres of stone pit expansion proposed in the FY07 Regeneration Project, which is located in the project area. No other planned road construction or management changes associated with Forest Service activities are anticipated in the reasonably foreseeable future.

Alternative 2 (No Action)

ANF LRMP FEIS assumptions concerning OGD were applied to the project area. For each new well drilled an estimated 0.25 miles of road is constructed for access to the well. An estimated 106 new wells may be developed within the project area in the next 20 years (see project level cumulative effects analyses for OGD, project file). This amounts to approximately 27 miles of new road to access OGD wells that may be constructed during the CE period under both alternatives. Under this alternative, no additional Forest Service road construction or roadwork would take place, with the exception that road maintenance may occur as needed and is dependent on funding and use. Cumulative effects would not result from the no action alternative. Stone pit expansion (0.125 acres) in the FY07 Regeneration Project would take place under this alternative.

Alternative 1 (Proposed Action)

Table 6 represents the proposed action and additional OGD based on model assumptions.

Table 6: Proposed total (miles) of road system and road management

Road	Open	Closed	Restricted	Total
Forest Service	8.5	6.2	2.5	17.2
Municipal	0	0	0	0
Non-System	0	37.7	0	37.7
Total Roads	8.5	43.9	2.5	54.9

Cumulatively, under this alternative in the CE analysis and project area, the Forest Service road system falls short of the ANF LRMP FEIS projection under Alternative Cm (the selected alternative) for a road system managed as 33 percent each in open, closed and restricted (USDA-FS 2007a, p. 3-79). No other road management changes other than those under Alternative 1 are being proposed. Alternative 1 would move the road system towards the projection in the ANF LRMP FEIS. Under Alternative 2, the percentage of Forest Service roads in each category remains the same as the present condition.

With the addition of 0.125 acres of stone pit expansion from the FY07 Regeneration Project, the total amount of pit expansion in this alternative would be approximately 4.37 acres. The need for additional stone pit expansion beyond that analyzed with this or other approved projects would require additional environmental analysis. There is concern about the quantity, quality and access to stone in the future. Consequently, alternate (off-forest) sources for stone and gravel may be needed or investigated in the future. Approximately 27 miles of new road may be built to access OGD wells that may be constructed during the cumulative effects period under both alternatives.

7.1.4 Air Quality

Due to the regional nature of air quality issues, most of the pollution affecting the ANF is from external sources. Current air pollution impacts occurring on the ANF result from numerous sources including automobiles, off-road construction equipment, wild fires, factories, oil refineries and power plants, all of which contribute to the regional pollution load. The ANF is situated near the industrial heart of the United States and near a high concentration of coal-fired electric generating facilities; the leading source of sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions. A large percentage of the United States population lives within a day's drive of the ANF.

The Clean Air Act (CAA) sets the standards for air quality in the United States. National Ambient Air Quality Standards (NAAQS) set air quality standards for six criteria pollutants with which the entire country must comply. Primary NAAQS standards are set based on human health criteria. It is up to state air quality regulatory agencies to come up with state implementation plans to ensure these standards are met in their respective states. If the standards are not met for any criteria pollutant, the area is designated as non-attainment for the pollutant. The Clean Air Act Amendments (CAAA) of 1977 established the prevention of significant deterioration (PSD) program. These amendments designated specific wildernesses and national parks as Class I areas. Under Title I, Part C of the CAA, Federally mandated Class I areas are provided with an additional measure of protection. The ANF has no Class I areas within or near its administrative boundaries.

When looking at the impacts of air quality, it is important to keep in mind that a handful of pollutants contribute to a variety of air quality related effects. These pollutants are a concern because of their impacts to human health and natural resources. Air pollutants are generally classified as either primary or secondary pollutants. Those emitted directly into the atmosphere as products of combustion are classified as primary pollutants, while those formed when primary pollutants undergo atmospheric chemical reactions are classified as secondary pollutants. Descriptions of criteria pollutants can be found in the

ANF LRMP FEIS (USDA-FS 2007a, pp. 3-52 – 3-55) and in the Review of Information – OGM Activity and Air Quality, ANF (USDA-FS 2008b) (located in the project file).

Under the CAA, states must identify air quality control regions for the purpose of demonstrating attainment (or non-attainment) of the NAAQS. In the vicinity of the project area, these air quality control regions are identified as individual counties. Since air pollution is regional in nature and has the potential to disperse beyond project boundaries, emissions will be evaluated in the context of the four-county (Elk, Forest, McKean and Warren) pollution load. For this reason, the scope of the air quality analysis will extend to the four-county boundary, which includes the air quality control regions where the project area and the ANF are located. Emissions were evaluated on an annual load basis assuming that activities would be evenly distributed over 5 years. The residence time in the atmosphere for most air pollutants is short lived and high concentrations of pollutants emitted during an activity dissipate and move out of the area. In other words, the pollutants emitted during one day of activities would not necessarily remain in the atmosphere and accumulate with those emitted during a subsequent day.

Direct and Indirect Effects

The primary ANF management activities that contribute to air quality emissions are timber harvest, all terrain vehicle (ATV) use and prescribed fire. Fine particulate matter (PM), nitrogen oxides (NO_xs), volatile organic carbons (VOC) and carbon monoxide (CO) emissions from these activities contribute to the total pollution load and are the criteria pollutants addressed in this analysis. Ozone as a secondary pollutant is dependent on multiple factors for its formation and can not be estimated directly. However, NO_xs are the limiting factor in ozone production and can serve as an indicator for ozone. The goal here is to address the estimated emissions of critical pollutants from ANF management activities to assess whether or not they would significantly impact attainment of the NAAQS or significantly contribute to harmful conditions for humans in nearby communities. Therefore, potential emissions of these pollutants as they compare to the four-county emissions will serve as indicators for air quality effects in the first step screening analysis. *All counties near the project area are currently in attainment status for all criteria pollutants.*

The regional emissions data were obtained from the most recent and accurate emissions database available for this area. Currently, this is the 2002 VISTAS base case emissions database. The estimated emissions were derived from the emissions estimates used in the ANF LRMP FEIS. Three ANF management activities were analyzed using the same methods employed for the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-52 to 3-63): timber harvest, prescribed fire and ATV trail use. It can be assumed that if predicted emissions from the proposed ANF management activities contribute a small enough percentage to the total pollution load, they would not impact attainment of the NAAQS. A percentage threshold of 5 percent has been chosen for the emissions comparison. If emissions from ANF management activities do not exceed 5 percent of the total pollution load in the region, they will be considered below our level of concern. The threshold of 5 percent was chosen to be very conservative in protecting air quality. Air regulations often include a five percent change as a threshold for more rigorous or refined air quality analyses. Although we are more concerned with emissions from ANF management activities on the NAAQS, this threshold seemed appropriate for this analysis because PSD increments represent a percentage of the total NAAQS.

Alternative 2 (No Action)

There would be no newly proposed Forest Service management activities in the project area under this alternative, and thus no additional emissions of pollutants.

Alternative 1 (Proposed Action)

Timber harvest emissions and prescribed burning for the project were analyzed and compared to the four-county area. There are no ATV trails within the project area; therefore, ATV emissions were not included in the project level analysis but are included in the cumulative effects analysis. Table 7 shows the direct and indirect air quality effects for the project. As shown in Table 7, potential emissions from the proposed

timber harvesting operations and prescribed burning in this alternative are negligible and do not increase four-county emissions by 5 percent; therefore, are below the level of concern.

Implementation of all activities would be consistent with state and federal laws and Forest Service regulations and handbooks regarding management of prescribed fire. ANF LRMP standards and guidelines, Pennsylvania BMPs and prescribed burn plans would limit effects to air quality from prescribed burning. The ANF uses the best available smoke management techniques and technology to alleviate nuisance or human health impacts of smoke in local communities and sensitive areas.

Table 7: Direct and Indirect Air Quality Impacts from Proposed Timber Harvests and Prescribed Burning in the Porkey Heights Area to the Four-County Area

Alternative	Pollutant	Rx Fire Emissions (Tons per Year)	Timber Harvest Emissions (Tons per Year)	ANF Management Emissions ¹ (Tons per Year)	Four County emissions (Tons per Year)	Percent ANF Management Increase of Four County Emissions ¹
1	VOC	0.0000	0.0132	0.0066	12,047	0.00
	PM	44.3340	0.0006	44.3343	5,322	0.83
	NOx	0.2970	0.0126	0.3033	11,188	0.00
	CO	268.2720	0.0668	268.3054	66,765	0.40
2	VOC	0.0000	0.0000	0.0000	12,047	0.00
	PM	0.0000	0.0000	0.0000	5,322	0.00
	NOx	0.0000	0.0000	0.0000	11,188	0.00
	CO	0.0000	0.0000	0.0000	66,765	0.00

¹ANF management emissions include emissions from proposed timber harvest and prescribed burning. There are no ATV trails within or near the project area.

Cumulative Effects

Air quality control regions in the vicinity of the project area are identified as individual counties. For this reason, the scope of the air quality CE analysis will extend to the four-county boundary (3,122 square miles combined), which includes the air quality control regions where the project area and the ANF are located. Due to the transient nature of air quality, past actions do not affect current conditions, therefore; the timeframe for the cumulative effects air quality analysis is 2009-2028. This analysis is based on the Review of Information – OGM Activity and Air Quality analysis dated July 31, 2008 for the ANF LRMP FEIS. The cumulative air quality analysis evaluated emissions occurring on the ANF from prescribed burning, timber harvest, ATV vehicles and OGD activities within the four-county area.

As shown in **Table 8**, air emissions will be increasing over the next 20 years, primarily due to OGD. These increases in emissions may degrade air quality in the four-county area. ANF management activities would yield a very minor change from the 2002 four-county area emission levels (all less than 5 percent). The 5 percent threshold is a conservative reference point to display the level of potential change. It is not the threshold for significant adverse effects. Because expected emissions do not increase four-county emissions by 5 percent, no cumulative effects to air quality are expected from implementation of this project.

Table 8: Cumulative Air Resource Effects

Alternative	Pollutant	OGM Emissions (Tons per year)	ANF Management Emissions ¹ (Tons per Year)	Cumulative Emissions (Tons per year)	Four-County Emissions (Tons per Year)	Percent ANF Management and OGM Increase of Four-County Emissions (2 nd Decade)	Percent ANF Management Increase of Four-County Emissions (2 nd Decade) ¹
1	VOC	11,564	297	11,861	12,047	98.46	2.47
	PM	258	153	411	5,322	7.72	2.88
	NOx	1882	187	2,069	11,188	18.49	1.67
	CO	30,328	2,878	33,206	66,765	49.74	4.31
2	VOC	11,564	297	11,861	12,047	98.46	2.47
	PM	258	153	411	5,322	7.72	2.88
	NOx	1882	187	2,069	11,188	18.49	1.67
	CO	30,328	2,878	33,206	66,765	49.74	4.31

¹ANF management emissions includes emissions from timber harvest, prescribed burning and ATV use (from Table 1 in Review of Information – OGM Activity and Air Quality, Allegheny National Forest [USDA-FS 2008b]).

7.2 Biological Environment

7.2.1 Vegetation

Specific information regarding vegetation management, including general effects of silvicultural treatments and rational for individual stand outcomes can be found in the vegetation report (located in the project file).

Direct and Indirect Effects

Alternative 2 (No Action)

The proposed activities would not occur at this time and only routine custodial or maintenance activities would occur in the project area. Since no harvest or reforestation treatments would occur under this alternative, any changes in vegetation would be the result of natural stand development or disturbance processes. No new early structural habitat would be created except for that caused by natural processes or potential future management in another project. Stands not thinned would continue to grow slowly in diameter with increased mortality from smaller trees dying out due to competition. Stands not harvested by individual tree selection and group selection would not change much in horizontal diversity, especially with desirable tree species because openings in the tree canopy would not be created and regeneration would not take place. It is estimated that interfering vegetation (fern, grass, American beech and striped maple) would be present over most of the project area within 20 years. Shade tolerant trees and shrubs, such as American beech, black birch and striped maple, grasses and ferns would probably continue to dominate the understory over time. Horizontal diversity, or patchiness across the landscape, would decline unless natural disturbances or future vegetation management created new age classes. Beech, birch and striped maple would grow into the midstory and contribute towards vertical diversity (canopy depth).

Alternative 1 (Proposed Action)

This alternative would utilize timber harvesting as a management tool on 1,840 acres within the project area. Under this alternative, even-aged management would create 541 acres of early structural habitat over the next decade. Shelterwood seed cuts and shelterwood removal harvests are proposed on 532 acres and delayed overstory removals on 9 acres to allow more sunlight to reach the forest floor, which would promote favorable conditions for new tree seedling growth. Intermediate thinning is proposed on 1207 acres, which would maintain or improve forest health through promotion of stand growth, tree vigor and

species diversity. Uneven-aged management using single tree selection and group selection is proposed for 92 acres. A majority of the stands are not adequately stocked with desirable regeneration and additional reforestation treatments are necessary to achieve this goal. The proposed reforestation activities include 633 acres of site preparation, 696 acres of herbicide application, 248 acres of planting, 302 acres of fertilization, 54 acres of prescribed burning, 1140 acres of release and 642 acres of fence installation (see Table 1, and Tables B-1 and B-2 in appendix B). Reforestation treatments would control competing vegetation long enough to allow tree seedlings to become established improving species diversity in the understory in treated stands. Forest types under this alternative would not change because of the use of reforestation treatments. This alternative would contribute toward the need to provide wood products to the local economy by harvesting approximately 10.0 MMBF of timber in two entries.

Cumulative Effects

A timeframe of 10 years (1999-2008) into the past was used in this analysis to incorporate completed and ongoing activities from past projects. A timeframe of 20 years (2009-2028) into the future was used to allow for all proposed and reasonably foreseeable activities to be completed and resulting vegetation changes to occur. The CE analysis area for this project encompasses the project area (5,319 acres). There is no private land in the CE analysis area. Enlarging the geographic scope to include lands outside the project area could dilute the potential cumulative effects because adjoining areas currently do not have management planned around the project area. The cumulative effects on vegetation are discussed in terms of treatment amounts, age class (early successional and late successional stages) and understory and midstory vegetation.

The following assumptions were used for NFS lands in the CE analysis area. Future final even-aged regeneration harvests in Alternative 2 would treat 12 percent of MA 3.0 and 6 percent of oak forest types and 4 percent of non-oak forest types in MA 2.2 in the second decade (2019-2028). Future final even-aged regeneration harvests in Alternative 1 would be zero because 12 percent of the MA 3.0 acres are being proposed in this alternative. Future intermediate thinning for both alternatives would be 20 percent of MA 3.0 acres in the CE analysis area. Reforestation activities including planting, fencing and fertilizing would occur on approximately 20 percent of the final harvest acres in the second decade. Herbicide application and site preparation are expected to occur on 100 percent of the final harvest acres. Intermediate thinning on the NFS lands is estimated to be 20 percent for the second decade. In order to establish oak regeneration, it may be necessary to burn the proposed oak stands in Alternative 1 in the first decade up to three times. It was estimated 60 acres may be burned up to three times in the second decade in Alternative 2.

Cumulative Effects from Harvest Treatments

Previously approved vegetation management activities within the CE analysis area, have been completed. To meet ANF LRMP direction for MAs 2.2 and 3.0 in the second decade (2019 to 2028), silvicultural treatments are expected to occur on 10 percent (or 545 acres) of the CE analysis area in Alternative 2. This would include final harvests and associated reforestation treatments. Table 9 summarizes treatments that have occurred or are anticipated to occur within the CE analysis area. ANF accomplishment records have been reviewed to determine the level of activity that has occurred within the CE analysis area in the past decade.

The projected total even-aged final harvest activity comes from this project and potential future harvests from Forest Service lands. The projected final harvest is 10 percent for both alternatives for the 30 year CE analysis period. Therefore, a large portion (90 percent) of the analysis area is not anticipated to be regenerated during this time period.

Table 9: Cumulative Vegetation Totals by Treatment for CE Analysis Area (5,319 acres)

Treatment	Past Treatments 1999-2008 Acres/Percent of CE area	Cumulative Totals (past, present, future) (Acres/Percent of CE area) ¹	
		Alt 1	Alt 2
Shelterwood Seed/Removal Cut	0	532 (10%)	545 (10%)
Overstory Removal	9	18 (<1%)	9 (<1%)
Salvage Only	15	15 (<1%)	15 (<1%)
Individual Tree/ Group Selection	0	36 (1%)	0 (0%)
Individual Tree/Group Selection in late successional habitat in MA 2.2 (RUMFC)	0	56 (1%)	0 (0%)
Thinning in late successional habitat in MA 2.2 (AMFC)	0	150 (3%)	0 (0%)
Intermediate Thinning	0	1057 (20%)	1057 (20%)
Herbicide	0	696 (13%)	545 (10%)
Fencing	53	695 (13%)	598 (11%)
Site Preparation	19	652 (12%)	564 (11%)
Fertilization	153	455 (9%)	262 (5%)
Planting	26	274 (5%)	135 (3%)
Tree Shelters	22	22 (<1%)	22 (<1%)
Burning	0	162 (3%)	180 (3%)
Release	234	1374 (26%)	779 (15%)

¹Multiple treatments can occur on any given acre, for example, a stand with a shelterwood seed cut, could have received herbicide application, site preparation for natural regeneration, and then the final harvest. The table shows the total acres of treatment, not the actual physical number of acres that may have received one or more treatments

Cumulative Effects for Early Age Classes and Late Structural Forest

Table 10 displays the present age class distribution found within the CE area and forecasts the distribution that would occur in twenty years (in year 2028) between the alternatives. There are minor differences in age class distribution anticipated between the alternatives; however, there is a difference between the alternatives and the present condition. Age class changes in Alternative 1 are a result of the regeneration harvest and reforestation treatments proposed in this project. Changes in Alternative 2 are a result of regeneration harvests and reforestation treatments proposed in future projects on NFS lands.

Table 10: Age Class Distribution for CE Area by 2028

Age Class	Present Condition Year 2008	Alternative 1 Year 2028	Alternative 2 Year 2028
Openings	2%	2%	2%
0-10 years	0%	0%	10%
11-20 years	9%	10%	0%
21-50 years	6%	12%	12%
51-110 years	82%	38%	43%
111+ years	1%	38%	33%

In Alternative 1, 541 (10 percent) acres of early age class would be created in the within the CE analysis area. The cumulative effects of Alternative 1, in combination with other actions, are predicted to increase the early structural habitat towards the ANF LRMP direction for MA 3.0. In Alternative 1, 10 percent of the CE analysis area would be 11 to 20 years old by 2028 because of the proposed regeneration harvests in this project (first decade); however, zero percent of the CE analysis area would be 0-10 years old by 2028 because no future regeneration harvests would be proposed in the second decade. In Alternative 2, zero percent of the CE area will be 11 to 20 years old by 2028 because there is no proposed regeneration harvests in the first decade; however 10 percent of the CE area would be 0-10 years old by 2028 because 545 acres may be proposed in future projects in the next decade. The acres calculated for the future early age class is 10 percent of all the acres within the project area.

In both alternatives late structural forest, 111+ age class would increase to 33 (Alternative 2) to 38 (Alternative 1) percent of the CE analysis area by 2028. This is greater than the ANF LRMP desired condition, which is 10 percent by 2020 and 28 percent of late structural forest by 2060 (USDA-FS 2007c, p. 19). Alternative 1 would increase from 1 to 38 percent. In Alternative 2, late structural forest would increase from 1 to 33 percent. This assumes the 10 percent in the 0-10 year age class all comes from the 111+ age class within the CE analysis area by 2028 in Alternative 2. In the long term, areas managed for late structural forest would continue to be influenced by the legacy of deer browsing impacts, introduced and native forest insects and natural disturbances over time. Mature (51-110 age class) forest habitat would be reduced from 82 percent to 44 percent or less, which is less than the ANF LRMP desired condition of 72 percent by 2020 and 48 percent by the year 2060 (USDA-FS 2007c, p.19). By 2028, 38 percent in Alternative 1 and 43 percent in Alternative 2 would be in this condition. Regardless of the alternative, there is a similar distribution in age classes in the mature and late structural forest.

Cumulative Effects to Understory and Midstory Vegetation

The principle effects of past and proposed vegetative management activity are most easily seen in changes related to species diversity and structure. Diversity is defined as the distribution and abundance of different plant and animal communities and species within an area. Structure is defined in terms of horizontal as well as vertical vegetative components, such as herbaceous, understory, midstory, and overstory layers (vertical) as well as how these layers are distributed across the landscape (horizontal). The following summary of anticipated cumulative effects takes into account what has happened and what can reasonably be expected to take place in the CE analysis area.

Concerns with interfering forest understories and lack of diverse seedling regeneration exist throughout the project area. All of the regeneration prescriptions include the application of herbicide. The primary objective of its use is to create conditions favorable for seedling development and growth. This process will increase seedlings height in final harvests and group cuts creating a successful regeneration. Without the use of herbicides and other reforestation treatments, beech, birch, striped maple, grasses, and ferns would continue to dominate the understory within the CE analysis area. These areas will likely be dominated by beech, striped maple, and birch, with pockets of other tree species developing where they are protected from deer browsing. Current encroachment of fern, grass, striped maple and beech brush in the understory would inhibit growth of seedlings and continue to spread where canopy gaps occur. If deer densities move from its present desired level to a higher density, there could be a decrease in plant species in the long term (greater than 50 years).

No herbicide has been applied in the project area within the last 10 years. Within this project, 696 acres of herbicide (13 percent of the CE area) would be applied under Alternative 1. Even-aged regeneration activities (under Alternative 1) would create early-structural habitat that would otherwise be lacking within the project area under Alternative 2. The herbicide application proposed in Alternative 1 would reduce the amount of fern, grass, striped maple, pin cherry, and beech. After herbicide treatment, a fuller range of plant communities would be expected to occupy the understory (USDA-FS 2007a, pp. 3-145 to

3-147). These would include tree species as well as shrubs, forbs and wildflowers, that are presently absent. Fencing in Alternative 1 would contribute to maintaining plant diversity within specific stands.

There will be 1.8 miles of road construction within an existing road corridor and 0.3 miles of road reconstruction anticipated as part of Alternative 1 within the CE analysis area. Fifteen parking areas will be improved under Alternative 1 along existing Forest Service roads impacting approximately ¼ acre of forested land. Within the CE analysis area under Alternative 1, one pit will be increased in size by one acre, with another 3.25 acres of pit development outside the CE analysis area. There are currently 85 existing private oil and gas wells in the CE analysis area for a total of 85 acres impacted. It is foreseeable that additional OGD would occur within the CE analysis area in the future. Based on the information presented in OGD analysis, the interdisciplinary team decided to use the ANF LRMP FEIS assumptions in order to project future rates of development within the CE analysis area. Under Alternatives 1 and 2 this would result in approximately 106 new wells over the CE analysis time period. This level of OGM development would affect 2.6 percent of the CE analysis area and result in the creation of 138 acres of non-forested habitat. Future OGD and road activities could potentially increase the amount of fern, grass, striped maple and beech brush in the understory in stands surrounding these new roads and well pads as throughout the CE area. These activities will decrease forest cover and increase non-forested habitat acres within the CE area. Although non-forest habitat is created, wells and lease roads are regarded as non-forest inclusions within forested stands for the early age class and late-structural forest for this analysis. Cumulative effects similar to those discussed in the ANF FEIS LRMP (USDA- FS 2007a, pp. 3-172 and 3-173) are expected in the CE analysis area.

7.2.2 Non-Native Invasive Plant Species

Surveys for NNIP species were conducted in treatment stands, riparian areas, stone pits, openings and road corridors within the project area. Seventeen (17) NNIP species were documented within the project area (see appendix b). The project file contains the field survey data sheets. Most of the NNIP species infestations are small in size (often a single plant), scattered and found along road corridors. However, infestations of single or small number of plants also occur within forested areas. Most NNIP species on the ANF are shade intolerant.

Management activities that cause ground disturbance and remove forest canopy, such as timber harvests, road construction, reconstruction and decommissioning, stone pit expansion and maintaining wildlife openings, have the greatest potential to facilitate the introduction and spread of NNIP species on the ANF. The ability of NNIP species to be introduced and spread into an area depends on the level of disturbance, habitat type disturbed and presence of seed sources and dispersal vectors (Parendes and Jones 2000).

Design features for Alternative 1 include:

- In order to reduce the potential of NNIP species being transported from stone pits to other areas, surveys for NNIP species have been conducted in the areas proposed for expansion. Treatment of NNIP species will occur before pit material is excavated (**USDA-FS 2007c, p. 53**).
- **Stand 637007** – In areas that contain butternut, spot (using backpack sprayers) and cut stem only treatments will be used to limit the potential for non-target mortality. Currently, only purple loosestrife (0.02 acres) and Dame’s rocket (0.04 acres) are documented within this stand (**USDA-FS 2007c, p. 89**).

Direct and Indirect Effects

Alternative 2 (No Action)

The proposed activities would not take place under this alternative. Existing NNIP species infestations are anticipated to persist and spread, particularly along roadways. Proposed NNIP species treatments and associated benefits and effects would not occur. The benefits of reforestation activities, which make conditions less conducive for the establishment and spread of shade tolerant NNIP species, would not be realized.

Alternative 1 (Proposed Action)

This alternative would create 541 acres of early successional habitat over the next decade. Shelterwood seed cuts and shelterwood removal harvests are proposed on 532 acres and delayed overstory removals on 9 acres to allow more sunlight to reach the forest floor promoting favorable conditions for new seedling growth. Single tree selection and group selection are proposed on 92 acres, intermediate thinning on 1,057 acres, intermediate thinning for late structural enhancement on 150 acres and release on 1,140 acres. Road management activities include 19 miles of road maintenance, 1.8 miles of road construction on existing corridor, 0.3 miles of road reconstruction, 2.9 miles of road decommissioning and expanding 5 stone pits for 4.25 acres.

Proposed vegetation management creates conditions conducive to the spread of NNIP species through ground disturbance and forest canopy removal. However, these effects are expected to be short term. Within 5 years of ground disturbance, the disturbed area would be re-vegetated; and within 10 to 15 years after timber harvest, the forest canopies would close or re-establish and no longer providing desirable growing conditions for shade intolerant NNIP species.

Road management activities create conditions conducive to the spread of NNIP species through ground disturbance and canopy removal. Roadways are the primary corridors for spread of NNIP species. In upper Michigan, haul roads have been shown to be the primary conduit for the dispersal of introduced species into the interior of managed stands; this study is considered to be applicable to the ANF as well (Buckley and others 2003). The amount of ground disturbance or canopy removal anticipated for the proposed road construction in an existing corridor and road reconstruction is less than constructing a new corridor because the majority of land-use conversion has already taken place. Road decommissioning also creates areas of ground disturbance; however, these areas are re-vegetated, which lessens the growing space available for NNIP species. Stone pit expansion creates conditions conducive to the spread of NNIP species through ground disturbance and canopy removal. After rock material has been removed, these areas of disturbance would be seeded with desired vegetation, and once established, this vegetation would aid in reducing the potential for NNIP species to become established and spread. However, pit expansion is considered a long-term effect (a change in land-use). In order to reduce the potential for NNIP species to become introduced and spread in these areas, standard operating procedures, such as equipment cleaning and seeding with desired vegetation, would be implemented.

Under Alternative 1, approximately 5 to 10 acres of NNIP species scattered throughout the project area, primarily along roads, would be treated reducing the number and spread of infestations. Some infestations would require multiple treatments. Current inventories indicate that infestations are scattered and small. It is anticipated that infestations would increase in size during the course of this project (20 years) and that additional sites or species may occur, for analysis purposes it is estimated that 5 to 10 acres of NNIP species treatments may occur over the next 20 years

While proposed management activities may create conditions conducive to the establishment and spread of NNIP species, direct and indirect effects are not anticipated to be significant under any action alternative.

- Based on the amount of amount of documented NNIP species within proposed harvest sites, the number of proposed harvest sites, the scattered location of sites and the time frame over which the activities would occur, these activities are not anticipated to produce significant effects. Currently, there are 7 stands with NNIP species (0.07 acres).
- Treatment of known infestations would reduce the number and spread of infestations within the project area.
- The long term effects of habitat conversion from road construction and stone pit expansion on NNIP species are expected to increase in these areas. However, re-vegetation of these areas with desired species as well as treatment of NNIP species could lessen potential effects from NNIP species
- Implementation of ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 53–54) and standard operating procedures, such as treatment of NNIP species, equipment cleaning and seeding with desired vegetation, would be implemented to reduce the potential for NNIP species to become established and spread.

Cumulative Effects

The NNIP species CE analysis area encompasses the project area (5,319 acres) and includes the 4 stone pits south of the project area. This CE analysis area was deemed to be of adequate size based on the type, amount and distribution of the proposed activities. Enlarging the CE analysis area beyond the project area boundary would dilute the possibility of detecting any cumulative effects to NNIP species from Forest Service and non-Forest Service activities within the project area. The time-frame for the CE analysis is (2008-2028). Within 20 years it anticipated that proposed activities would be completed and areas with vegetation management activities would have developed closed canopy conditions. Cumulative effects related to NNIP species are evaluated by assessing the current condition and proposed and reasonably foreseeable activities on NFS lands.

In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects. It is unclear as to how and when these NNIP species were introduced. It is recognized that species such as multiflora rose and common buckthorn's major mode of long-distance dispersal are birds and they may have been introduced that way. However, multiflora rose was historically planted for wildlife food and cover by various agencies throughout Pennsylvania, the ANF and potentially within the project area. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. For these reasons, the analysis of past actions in this section is based on current environmental conditions.

Based on the analysis presented under the direct and indirect effects section, activities most likely to result in effects from Forest Service management activities to NNIP species within the CE analysis area include: short-term effects - vegetation management, long-term effects - road management and pit expansion. Non-federal activities most likely to result in effects to NNIP species within the CE analysis area include long-term effects - OGD. There is no private land within the CE analysis area.

Short-term effects - Vegetation Management

Cumulatively, in 2028 the 0-20 age class resulting from final harvest is estimated to be 541 acres (10 percent) under Alternative 1 and 545 acres (10 percent) under Alternative 2 – this may be proposed in

future projects in the second decade (vegetation report, project file). The 10 percent increase in 0-20 age class by 2028 is not anticipated to have significant effects on NNIP species based on the temporary nature of these openings and the amount and scattered distribution of the vegetation management activities.

Long-term effects - Conversion of Forest to Non-Forest

Openings or non-forest habitat that currently exist within the cumulative effects boundary are largely the result of past road building and OGD. Of this, approximately 85 acres exists as permanent openings associated with OGD.

Road management activities - road construction in existing corridor, reconstruction, decommissioning and maintenance have varying levels of ground disturbance; however, the over all effect is that open-edge habitat is created and maintained. Road management activities proposed under Alternative 1 occur in areas that already have no to sparse canopy cover. The goal for the disturbed areas outside the road bed is to revegetate them with desired species, which would limit available growing space for NNIP species. However, these areas are considered long-term effects in that they would not likely be reforested within the next 20 years leading to the exclusion potential of shade intolerant NNIP species.

Forest habitat conversion from proposed activities includes 4.25 acres of stone pit expansion. Four (4) out of 5 stone pits are outside the project area and are included in this analysis as a connected action under Alternative 1. There is no stone pit expansion proposed under Alternative 2 by 2028. Forest habitat conversion from private OGD is projected to be approximately 138 acres by 2028. Currently 3.6 percent of the CE analysis area is non-forest habitat and by 2028 is estimated to be 6.3 percent under Alternative 1 and 6.2 percent under Alternative 2. This increase is not anticipated to have significant effects on the introduction or spread of NNIP species.

Based on the discussions presented under direct, indirect and cumulative effects and the implementation of ANF LRMP standards and guidelines and project design features, there are no significant effects related to the introduction or spread of NNIP species anticipated under any action alternative.

7.2.3 Wildlife

General effects to wildlife and their habitat are discussed in the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-179–3-295). Site-specific effects to wildlife and their habitat are discussed in detail in the wildlife report, project biological assessment (BA) and project biological evaluation (BE) for this project (see project file). The effects analyses presented in these documents evaluate the effects of the proposed action on Management Indicator Species (MIS), threatened, endangered and sensitive species and other species with viability concerns. On a landscape scale, the diversity of plant and animal life present in the project area is dependent upon the availability of habitat and various forest structural stages, composition and patterns. The wildlife report analyzes habitat structure including early structural and mid-structural conditions as well as older forests. Habitat compositions including oak forest, conifer components, openings, streams and wetlands are analyzed as well as habitat patterns such as connectivity and remote habitat. Collectively, these documents assess the effects to wildlife and their habitat that would be expected to occur under each of the alternatives analyzed.

In MA 2.2, vegetation management activities are directed toward restoring late-structural forest habitat with an emphasis on sustaining complex forest structure and continuity. This MA emphasizes older, late-structural forests that link relatively large (core) areas of older forest across the landscape. Management of wildlife habitat emphasizes species with viability concerns, remote and interior species with high sensitivity to disturbance and protection of unique micro and macro habitats. The goals and objectives of MA 2.2 are detailed in the ANF LRMP (USDA-FS 2007c, pp. 109–112). The project would retain a variety of coarse woody debris (CWD) so that several stages of decaying logs would be retained for

longer periods of time. In combination, the retention of CWD and the reestablishment of desirable forested conditions with tree seedlings would provide suitable habitat for indigenous species.

Wildlife management in MA 3.0 emphasizes early-structural species, including deer in all forest types and squirrel in oak types. Specialized habitats and inclusions within this MA receive treatments to specifically benefit game and non-game species and species with viability concerns. The goals and objectives of MA 3.0 are detailed in the ANF LRMP (USDA-FS 2007c, pp.113-115).

Wildlife travel patterns and corridors would remain near riparian areas and areas possessing forest cover conditions for many species in the project area. Some species will use and adapt to non-forested areas created by OGD.

Design features for Alternative 1 include:

- The grapevine component would be maintained in **Stand 647044** by selecting reserve areas that contain this species or by reserving large oak trees which currently have grapevines affixed to or reaching their upper canopies (USDA-FS 2007c, p. 80).
- Fence installation will not occur within **Stand 647044** before the fence located in the western half of **Stand 648049** is removed (USDA-FS 2007c, pp. 80 and 111).

Cumulative Effects

The cumulative effects (CE) on threatened and endangered species, Regional Forester's sensitive species (RFSS), MIS, game species, additional species with viability concerns and wildlife habitat types are described in the project BA, project BE and wildlife report, respectively.

For the wildlife effects, the CE analysis area is based and varies depending on the species under consideration, its home range and potential effects of activities. The CE analysis area includes 13,840 acres of both NFS and private lands. Approximately 2,779 acres of private lands occurs within the CE analysis area on three separate parcels and sub-surface mineral rights are privately owned across the entire CE analysis area. The CE analysis area contains 11,061 acres of NFS lands managed as MA 3.0 (9,085 acres) and MA 2.2 (1,975 acres). This CE analysis area was selected based on common land uses, soil types, habitat conditions, and vegetation types. The locations of past OGD, MAs and the locations of proposed silvicultural treatments within the project area were additional factors taken into consideration determining the CE analysis boundary.

The CE analysis period is a reasonable length of time when environmental changes have happened and are likely to reoccur. These changes must be somewhat measurable and encompass the past, present and short-term foreseeable future. For the project, the CE analysis period encompasses the last decade when changes in forest habitat would have occurred during the last planning period to 2028 when reforestation effects, such as release cuts and fence maintenance are complete, and resulting vegetation changes have occurred plus a disclosure of activities through the next planning period.

For the threatened and endangered species and for all but eight RFSS, based on habitat availability in the project, species requirements and documentation records, the CE analysis areas presently have no occupied habitat. Because these species are absent, individuals would not be directly impacted by the proposed activities. The CE analysis area is considered occupied habitat for eight RFSS (butternut, ocellated darter, harpoon clubtail, midland clubtail, ski-tailed emerald, Maine clubtail, zebra clubtail, and bluebreast darter).

The mature deciduous and mixed deciduous and conifer forest habitats, opening habitat and wetlands found in the project area provide suitable habitat for three threatened and endangered species (Indiana bat, small whorled pogonia and northeastern bulrush) (see project BA, project file). The streams, riparian areas, wetlands, seeps, springs, vernal pools and mature deciduous and mixed deciduous and conifer forest habitats found in the project area currently provides suitable but unoccupied habitat for 42 RFSS

(see project BE, project file). Although suitable habitat would be altered by vegetation management and transportation activities, only 4.25 acres of forest habitat under Alternative 1 would be converted to non-forest habitat due to stone pit expansion and based on OGD rates, an additional 389 acres (3 percent) of the CE analysis area is expected to be impacted by future OGD. Even with this conversion of habitat and the effects of the proposed activities, an estimated 70 percent of the CE analysis area would maintain forest conditions by 2028 in the CE analysis area. Both 1986 and 2007 ANF LRMP standards and guidelines, Pennsylvania BMPs and project design features are expected to conserve important habitat features for these species.

ANF LRMP standards and guidelines apply to those species that are associated with more hydric conditions. Preferential treatment is given to riparian corridors and wetlands wherever they occur. There are 24 RFSS and one endangered species (northeastern bulrush) that have suitable but unoccupied habitat in the streams, wetlands and along the riparian corridors within the CE analysis area. These species are strongly linked to environments associated with small-size streams or tied to hydric conditions whether located in forested or non-forested habitat. With the implementation of ANF LRMP standards and guidelines protecting the habitat of these species, no adverse cumulative impacts are anticipated.

Another two endangered species (clubshell mussel and northern riffleshell mussel) and 11 RFSS, which are associated with medium to large-size stream, river, and reservoir ecosystems, are not documented and have no suitable habitat in the project or CE analysis areas. No cumulative effects on these species are anticipated.

Game Species

Substantial monitoring efforts regarding harvest trends, hunter distribution and pressure, health and condition of harvested animals, and local population estimates and habitat conditions have been made on a consistent basis over the last two decades. Investments have been made in wildlife habitat enhancements across the ANF that directly benefits game species.

The mature deciduous hardwood and seedling and sapling forest conditions in the project area provide suitable habitat for the black bear, white-tailed deer, wild turkey, ruffed grouse and woodcock. Sections of streams provide habitat for brook trout. Except for the woodcock, these species have been documented in the project area. Under Alternative 1, early structural habitat would increase by 541 acres (10 percent) in the project area. The proposed regeneration of mature stands would benefit these species by providing escape and winter cover for the black bear, desirable browse for deer, nesting and brood-rearing conditions for wild turkey and breeding and foraging habitat for ruffed grouse and woodcock. Over the long-term, the establishment of additional conifer cover through planting would improve winter cover. Enhanced opening habitat is expected to improve foraging and brood-rearing habitat. Oak regeneration activities would provide a new age class of this important mast-producing species. A slight increase in opening habitat, because of 4.25 acres of pit expansion located on four pits outside of, and one within, the project area would result from Alternative 1.

Although final harvests would produce a noticeable shift from mature mast-producing forest to early-structural habitat on a project-scale, this change is not considered substantial as an estimated 70 percent of the CE analysis area would continue to support mid- to late-structural habitat throughout the 20 year analysis period. Proposed reforestation activities are expected to establish stands with a more diverse and desirable mix of trees and shrubs, which over the long-term, would support a diverse assemblage of game and non-game species.

The majority of the CE analysis area is under federal jurisdiction (80 percent) and projected timber harvests and associated reforestation activities could affect approximately 50 percent of this land over the next twenty years. Twenty (20) percent of the CE analysis area consists of private lands, and timber harvests are project to occur on 35 percent of these lands within the next 20 years. With anticipated OGD, approximately 3 percent of the forest habitat within the CE analysis area would be converted to non-forest

(opening) habitat over the next 20 years. Game species would continue to find suitable cover, foraging and denning habitat within the project area and CE analysis area under Alternative 1.

Cold-water streams are the primary habitat for brook trout. Of the six perennial streams located within the project area, four have been documented to contain brook trout: Blood Run, Logan Run, Kingsley Run, and Phelps Run. No adverse indirect effects to brook trout are anticipated from proposed activities, because effects to water quality and aquatic habitat from proposed and reasonable foreseeable Forest Service activities are minimized with the implementation of ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 74–79). Over the long-term, road maintenance, including limestone application, and decommissioning in Alternative 1 are expected to have positive effects on water quality especially at point-sources of sedimentation. Private OGD is regulated by Pennsylvania laws and BMPs. On NFS lands, resource administrators and specialists recommend and implement conservation measures that minimize effects to aquatic environments. Streams are also protected with implementation of Pennsylvania BMPs for OGD and timber harvesting on private lands.

The effects of the proposed action favor wildlife that spends part or all of its life cycle in early structural habitat. Proposed actions and future final harvests have the greatest potential to affect mature forest habitat. Considering the desired future condition of these management areas, efforts that strive to achieve a better balance of forest conditions are likely to improve forest health and resilience as well as enhance habitat for a variety of game species.

7.3 Social Environment

7.3.1 Heritage

Heritage resources within the project area include prehistoric sites and historic sites related to logging, OGD and homesteads. Section 106 of the National Historic Preservation Act (NHPA), as amended, requires state and federal agencies to avoid degradation or destruction of sites eligible for the National Register. Eligibility has not been determined for any of the sites within the project area. Until evaluated, recorded sites are managed as though they have been determined eligible. At this time, heritage resources identified in the project area will be avoided.

Design features for Alternative 1 include:

- Site-specific heritage site design features are not listed due to the confidential nature of the information. Standards and guidelines for heritage resources are listed in the ANF LRMP. Appropriate heritage resources personnel will be contacted prior to formalizing any sale or implementation contract involving ground disturbing activities to include any design features to protect heritage sites in contracts or agreements (USDA-FS 2007c, p.62).
- In any contract or agreement, the following statement will be included, as appropriate: If any previously unknown or unrecorded sites are found during project implementation, any ground disturbing activity will cease and the appropriate heritage resource personnel notified. A heritage resource specialist will evaluate the situation and determine the proper course of action (USDA-FS 2007c, p.62).

Direct and Indirect Effects

Alternative 2 (No Action)

No proposed activities would occur; therefore, there would be no effects to heritage resources since there would be no change to these resources from proposed activities.

Alternative 1 (Proposed Action)

Alternative 1 would not affect heritage resources since heritage resources will be avoided through project design and the use of no treatment buffers. ANF LRMP standards and guidelines, resource protection measures and design features have been successfully applied on the ANF for many years to protect

heritage resources. Upon completion of timber harvests, skid trails are routinely blocked with slash or otherwise made impassible to vehicular traffic, effectively reducing potential access to heritage sites.

Cumulative Effects

The CE analysis area for the heritage resources is the project area. The boundary was selected because it encloses the proposed treatment areas, with the exception of some pit expansion areas, which occur outside the project area. These areas were also surveyed for heritage sites. The temporal scale is the same as for most other resources, 10 years prior and 20 years into the future, which allows for the implementation of all of the proposed activities.

Heritage resources and sites would be protected under all alternatives. Future projects as well as OGD will be reviewed to ensure that heritage resource sites are protected. Future activities would be designed to avoid or mitigate effects to heritage resources. Therefore, there are no anticipated cumulative effects to heritage resources from the proposed or reasonably foreseeable activities in any alternative.

7.3.2 Scenery

The scenery analysis is based upon the scenery management system (SMS), as described in USDA-FS Agriculture Handbook 701, Landscape Aesthetics: A Handbook for Scenery Management (USDA-FS 1995). SMS is a tool to manage viewsheds and is useful in maintaining diversity and preventing unacceptable alteration to scenic resources. Two primary indicators are used to measure impacts to scenic resources:

1. The existing landscape character of the project area will remain intact, and
2. Treatments in the project area and alternatives meet or exceed the ANF LRMP mapped Scenic Integrity Levels (SILs), (USDA-FS, 2007c, pp. 62-64).

The landscape character in the project area can be described as a dense forest of hardwood species (black cherry, red maple, sugar maple, beech, yellow birch, white ash and yellow poplar) with pockets and stands of conifers (hemlock, white spruce, white pine) located on a forested plateau bisected by small streams that flow mainly into Tionesta Creek. OGD and utility right-of-ways are found in the area.

The desired condition for scenery is represented by three SILs found within the project areas. These include high, moderate and low SILs. Table 11 describes SILs and acres within the project area required to meet or exceed scenery standards on the ANF. SILs were developed from scenic inventory data and include concern levels (CL), scenic attractiveness and scenic classes. For example, CL 1 represents locations where forest visitors have a high interest in scenery, such as along high traffic travel routes (roads and trails); concentrated use areas (campgrounds, visitor centers and vistas) or water bodies (lakes, rivers and streams). Concern levels are used in determining the appropriate design features needed to meet SILs for the proposed activities.

Table 11: Scenic Integrity Levels in and near the Project Area

SIL	SIL Acres in Project Area (%)	Description/Desired Condition	Concern Level Corridors¹
High Scenic Integrity (H)	1033 (20)	Appears Unaltered – The valued landscape character appears intact. Deviations may be present, but are not evident because they repeat the form, line, color, texture and pattern common to the landscape character so completely and at the appropriate scale (USDA-FS 1995, p. 2 - 4).	CL1 – SR 666 and Tionesta Creek
Moderate Scenic Integrity (M)	3586 (67)	Appears Slightly Altered – The valued landscape character appears slightly altered. Noticeable deviations must remain visually subordinate to the landscape being viewed (USDA-FS 1995, p. 2 - 4).	CL2 – Allegheny Snowmobile Loop (ASL) Connector #6
Low Scenic Integrity (L)	710 (13)	Appears Altered – Deviations from the valued landscape character may begin to dominate the landscape being viewed, but they should borrow valued attributes such as size, shape, edge effect, and pattern of natural openings, vegetative type changes, or architectural styles that may occur elsewhere (USDA-FS 1995, p. 2 - 4).	CL3 – all system and non-system roads and streams not specified as CL1 and CL2

¹ Concern Levels (CL) or levels of interest in scenery: CL1 = High; CL2 = Average or Moderate; CL3 = Low

Design features for Alternative 1 include:

- Along ASL connector #6, reserve areas of ¼ acre in size shall be located with the guidance of a landscape architect (USDA-FS 2007d, pp. 9– 10) (Stands 645006, 645011, 645054, and 646013).
- Along ASL connector #6, slash shall be pulled back 50 feet from the edge of the road or trail, and for an additional 50 feet, slash shall be lopped and scattered to a depth of 3 feet. Treatment should be accomplished within 1 year of harvesting (USDA-FS 2007d, pp. 9–10) (Stands 632004, 636007, 636012, 636013, 636014, 636021, 637012, 637014, 637015, 645006, 645011, 645054, and 646013).
- Along ASL connector #6, layout of log landings should incorporate special design features or screenings. After project completion, landings should be rehabilitated to mimic natural openings. Curved access roads in the foreground of CL1 and CL2 may be used to block the view of the landing from the road or trail (USDA-FS 2007d, p. 11) (Stands 632004, 636007, 636012, 636013, 636014, 636021, 637012, 637014, 637015, 645006, 645011, 645054, and 646013).

Direct and Indirect Effects

Alternative 2 (No Action)

If Alternative 2 were implemented, none of the proposed treatments would take place and there would be no change in the current scenery condition. A large natural disturbance may require rehabilitation to meet or exceed mapped SILs. In other cases, the natural processes that occur may be seen as pockets of dead and dying trees and large openings in the canopy. This alternative meets or exceeds the mapped SILs for the area.

Alternative 1 (Proposed Action)

The most noticeable changes impacting the natural appearing landscape character of the forest are from harvesting activities that remove trees in the canopy and vegetation in the understory. Effects to the scenery along CL1 and CL2 corridors would be mitigated through implementation of AFN LRMP

standards and guidelines and project design features to minimize effects. Short term impacts to scenery may be evident, with vegetation growth returning within 1-5 years of harvest. Reforestation treatments with short term impacts include: herbicide application, site preparation, fencing, prescribed burning, release, planting and fertilizing. These measures provide the benefits of a continuously regenerating forest while maintaining the scenery integrity of the forest over time.

Effects from proposed timber harvests with implementation of design features meet or exceed the mapped SILs as stated in the ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 62-64). Further information on the technical principles and guidelines used to meet or exceed SILs can be found in Allegheny National Forest Scenery Management Implementation Guide (USDA-FS 2007d, pp. 7-11) and National Forest Landscape Management Handbooks for utilities, roads, timber and recreation (see Forest Service Manual 2380.61 for current publication).

Cumulative Effects

The scenery CE analysis area is a 7,500-acre area that utilizes the project area boundary on the south and east sides and is expanded on the north and west to include CL1 corridors for Tionesta Creek and SR666. Although proposed timber harvest treatments that may impact scenery are located within the project area, corridors with a high interest in scenery are included in the CE analysis area.

The CE analysis time period starts 10 years prior to the project proposal and extends 20 years into the future. It provides for an overall view of the incremental impact of vegetation management and OGD activities in combination with past, current and future project proposals. It is difficult to predict exactly where or what activities would occur in the future, but it is important to remember that future federal activities would be subject to the NEPA process to ensure that scenic quality is protected. The desired condition outlined in the ANF LRMP would guide choices and protect the land from cumulative effects as projects are proposed in the future. The standard practice on the ANF is to meet or exceed SILs by implementing scenery management principles during inventory and design phases of project planning and implementation. Forest-wide monitoring of the scenic resource is conducted every 5 years to ensure practices meet ANF LRMP standards and guidelines. Past monitoring has demonstrated a 99 percent success rate in meeting or exceeding scenery standards (USDA-FS 1998, p.60) and this is expected to continue in the future. Private land adjacent to NFS lands is not subject to Forest Service scenery guidelines. The impacts of timber harvests on private lands can be seen on the side slope along SR666 corridor north of the project area.

The number of new OGD wells and accompanying roads would probably continue to increase in the CE analysis area. The rate of OGD can vary based on economics, technology and supply and demand. The effects of expanding OGD on scenery would be most evident along CL1 and CL2 travel ways. Areas with the greatest impacts may require rehabilitation if OGD activities fail to meet the specified SILs.

In summary, past, present, and proposed federal actions will meet or exceed SILs. The impact of private OGD as viewed from CL1 and CL12 corridors may require short term rehabilitation to meet or exceed the mapped SILs. Since OGD is considered a historic land use that defines the landscape character of this area, impacts of the OGD would be sufficiently absorbed into the surrounding vegetation pattern within 5 to 10 years. The ANF coordinates with mineral owners for their access to their private mineral estates. Currently, the ANF is applying the 1986 ANF LRMP standards and guidelines for private OGD.

7.3.3 Recreation

This recreation analysis is based upon the Recreation Opportunity Spectrum (ROS), and uses two primary indicators for measuring impacts: (1) whether the alternatives are consistent with (ROS) settings, and (2) changes to recreation activities and use patterns in the project area.

Design features for Alternative 1 include:

- Restrict release activities in a 200 foot buffer on either side of the user-created Logan Run trail to the dormant (leaf off) season in **stand 637002**. Slash in the buffer zone shall be lopped to 3 feet high to minimize visual effects of this activity. Stems and branches that fall into the tread-way of the user created trail shall be removed (**USDA-FS 2007d, p. 10**).
- Timber harvest and hauling snowmobile restriction – No hauling along **FR 180 and FR 180D** (ASL #6 Connector) during the established snowmobile season on the ANF on weekends and legal holidays. No timber harvesting or reforestation treatments along **FR180 and FR180D** during this time period as well. This design feature also applies to the bi-annual Tour de Forest event (traditionally held the first weekend in October and the weekend before Memorial Day (**USDA-FS 2007c, p. 60**).
- Snowplowing of designated snowmobile routes (**FR180 and FR180D**) will be done as to leave an adequate snow mat (3 inches) for grooming, snowmobile operation, and road surface protection (Contract Clause (CT) #5.33 Snow Plowing). Commercial and administrative vehicle traffic will run with their headlights on during the established snowmobile season (**USDA-FS 2007c, p. 61**).

Direct and Indirect Effects**Alternative 2 (No Action)**

If Alternative 2 were implemented, there would be no change from the current condition of the recreation resources since proposed timber harvests and reforestation activities would not take place. Under Alternative 2 (No Action), all ROS indicator settings would remain the same. Therefore, ROS objectives would be met in MA 2.2 and 3.0. Wildlife habitat would change under natural disturbance regimes. Proposed habitat improvements for the benefit of game species and hunters would not occur. If this alternative were implemented, maintenance would continue on roads and trails dependent on funding.

No change in recreation activities is anticipated under this alternative. FR180 is the only motorized trail (ASL connector) in project area. If Alternative 2 is implemented, there would be fewer large vehicles sharing the road with snowmobiles, but the need for caution on this shared use road and trail would remain unchanged. No parking areas would be constructed under Alternative 2; therefore, no additional opportunities for dispersed camping and parking would be available. Hunters may be impacted if the proposed timber harvests and reforestation activities do not occur; allowing the existing condition to remain would provide no new areas of young vegetation for browse or soft mast, making them less desirable for species, which depend on these food sources. Some hunters may find stands with interfering vegetation, which are not treated, may be less desirable for hunting. Under this alternative, there would be no improvements to roads, including limestone surfacing application, which could maintain or improve water quality increasing fishing opportunities.

Alternative 1 (Proposed Action)

At each harvest or reforestation location the treatment activity is expected to occur over a two to five year period. The effects of implementing Alternative 1 are described by how they contribute to the ROS classification of roaded natural. The ROS indicators are access, remoteness, site management, visitor management, social encounters and visitor impact. These indicators exceed (conditions exceeding the norm), meet (normal conditions expected to be found in the setting), are inconsistent (conditions incompatible with the standard, but which may be necessary to meet other management objectives) or are unacceptable (conditions not acceptable under any circumstances) with the roaded natural classification.

- **Access:** The proposed road actions in Alternative 1 would have some direct effects on access. The roads where 1.8 miles of construction on existing corridor and 0.3 miles of reconstruction are

currently closed to public vehicle access, and would remain closed to the public under both alternatives. These roads would still provide walk-in access for hunting and dispersed camping opportunities. Road maintenance activities would occur on 19 miles and may cause some of the public to be displaced for a short term during the actual road work, but roads receiving maintenance that were traditionally open will remain open to the public. Approximately 2.9 miles of both system and non-system roads would be decommissioned to prevent vehicle use to decrease soil erosion and sedimentation and improve water quality. Road decommissioning would decrease vehicle access to those areas that were open to the public before, but these actions would increase opportunities for a remote recreation experience.

- **Remoteness:** Remoteness may temporarily be impacted as a result of the noise from harvest activities especially for dispersed campers using established campsites and pull-out areas along FR180 and FR217 (Stands 645006, 636008, 637003, 636013, 637012, 637015, 636021, 632004, 632010, 646014, 646015 and 648010) and for hunters throughout the project area. The increased noise and traffic from harvest activities throughout the entire project area would not be out of the norm for roaded natural areas as frequent “sights and sounds of man” are the norm.
- **Site Management:** Site management values, (DL – development level), would not change because there are no developed recreation facilities in the project area. Log landings and road pull-outs may encourage camping, but this would not change the development level of recreation sites in the area.
- **Visitor Management:** Visitor management techniques proposed in Alternative 1 include decommissioning 2.9 miles of road, the installation of controlling structures (such as gates or earthen barriers), fenced harvest units and improved parking areas. These actions would not affect the roaded natural ROS class since the standard for a roaded natural setting is noticeable regimentation and controls that harmonize with the natural environment.
- **Social Encounters:** Social encounters may temporarily increase or decrease due to harvest and reforestation treatments, because some public displacement would occur (i.e. hunters and dispersed campers). Timber harvest and reforestation activities might send some forest users into other areas of the forest. However, the number of displaced recreationists would be limited, as most areas in the project area receive low to moderate use. Thus, no change to the values of the ROS setting indicators is expected for the roaded natural ROS class within this project area.
- **Visitor Impacts:** The value would not change, as evidence of other users is not likely to increase or decrease in the project area as a result of proposed activities in Alternative 1. Improved parking may make some sites more attractive for use than in the past, but resource indications show that current impacts are low because camping at these sites is generally in self-contained units, and parking improvements would not change this use.

In general, the timber harvest and reforestation activities, as well as proposed road work in Alternative 1, would have a limited effect on recreation activities and use patterns in the project area. Direct effects to forest visitors in areas of concentrated use of timber harvest activities and road construction may include a temporary interruption of the recreation experience (camping, hiking, driving for pleasure, hunting, fishing and snowmobiling). Some recreation activities (dispersed camping, hunting, or fishing) may see a temporary decrease in use as a result of proposed activities, but others may actually have an increase (i.e., bird watching or hunting for species that are dependent on early structural habitat). Field observations show that recreationists, who are affected by timber harvesting and road maintenance activities, will simply move to another location and resume their recreation experience, often within a few miles. Reforestation activities, such as, fencing, herbicide and prescribed burning may displace forest visitors to adjacent areas of the forest for their recreation activity for one to six months after treatment (until green leafy vegetation returns) depending on a person’s personal preference.

Road maintenance activities should improve roads and permit easier access to NFS lands across the project area. Driving for pleasure is a very popular activity on the ANF, especially during the spring wildflower, fall foliage and hunting seasons. Alternative 1 proposes stone pit expansion to supply stone for transportation proposals. Pending the rehabilitation of these stone pits and whether they are located on open or restricted roads, some forest visitors may be affected as these pits would not be as accessible for camping, target shooting or parking vehicles for other dispersed activities such as hunting and berry picking.

- **Developed Recreation:** There are no developed recreation sites within the project boundary, so there are no effects anticipated to developed recreation.
- **Hiking Trails:** There are no designated hiking trails within the project. Logan Falls is a dispersed site and would continue to be managed as such under both alternatives. There is a non-system trail leading to the falls that has light use and no observed resource problems. However, it is a steep trail and exceeds the standards for a pedestrian trail. One proposed crop release unit (637002) straddles the upper portion of this trail. This is a young stand of predominantly birch saplings and small poles. Restricting release activities in a 200 foot buffer on either side of the trail to the dormant (leaf off) season would minimize the visual effects of this activity. By restricting release activities to the dormant season, the release would also occur during the time when use is minimal. Slash in the buffer zone shall also be lopped to 3 feet high to minimize the visual effects of this activity. Any stems and branches that fall into the treadway of the trail shall be removed.
- **Motorized Trails:** FR180 and FR180D are part of the Allegheny Snowmobile Loop (ASL) known as connector #6. Stands 645011, 645054, 645006, 636007, 636012, 636013, 636/014, 637012, 637015, 636021, 637014, 632004, and 646013 are located along these roads and proposed for timber harvest and reforestation activities. Direct effects to the users of the ASL would include safety hazards of meeting large vehicles and equipment on these roads while snowmobiling. Implementation of ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 60–64) and project design features would minimize the safety risks to snowmobile riders during timber harvesting and reforestation activities. With the project design features that restrict timber harvest and hauling, the implementation of Alternative 1 would not adversely affect snowmobile riders using connectors to the ASL.
- **Dispersed Camping:** Dispersed camping occurs primarily in pull-outs along FR180 and FR217 within the project area. There is another site on FR218, and camping may occur near Logan Falls. Stone pits are also used for dispersed camping, particularly by RVs. Direct effects would include the temporary interruption of the camping experience by loggers using dispersed parking areas or campsites as log landings or by campers seeing and hearing large trucks hauling timber near their campsites. A positive direct effect would be the availability of more campsites for dispersed camping use once timber harvest and hauling activities are completed and new log landings become available for dispersed camping. The expansion and subsequent rehabilitation of existing stone pits that are not behind gates would provide additional dispersed camping opportunities.
- **Hunting and Fishing:** Hunters would be impacted by both timber harvest and reforestation activities proposed in Alternative 1. Hunters would be displaced in the short term by timber harvest activities, but in the long term, treatments would add some variety to habitats found along the roads and in general forest areas, attracting more wildlife species. In proposed regeneration harvest areas, hunting would improve for species dependent upon early structural habitat. However, the resulting slash may make it more difficult for persons with limited mobility to move through these stands to hunt or retrieve their game. Road access and those roads open for the hunting seasons would be improved through proposed road maintenance in the project area; however, once the 1.4 miles of FR217 are decommissioned, access to that area would be walk-in

only, which could reduce the number of hunters in the area. Proposed fencing would also have an impact on hunters as it would impede mobility through the forest. As a result, some hunters may be displaced to adjacent areas until the fences are taken down (in approximately 10 years). However, there is a small number of hunters who like to hunt within fences and may enjoy the new hunting opportunities within these fenced areas.

Fishing opportunities would not be impacted by the activities proposed in Alternative 1. Water quality and aquatic habitat would be protected through ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 72–79). Access to fishing areas would remain the same during project implementation until the 1.4 miles of FR217 are decommissioned when access to portions of Blood Run and the east side of Tionesta Creek becomes walk-in only, which could reduce fishing pressure on this stream.

- **Potential Wilderness:** There are no identified potential wilderness areas within the project area as defined in FSH 1909.12, section 71.1-71.12. Minister Creek, a wilderness study area under the ANF LRMP, is 0.5 miles north of the project area. No effect to potential wilderness designations is anticipated.
- **High Recreation Use Corridors:** There are no high use recreation corridors (CL1) within the project area. None of the proposed activities would create any CL1 corridors. Timber harvesting and reforestation treatments would be evident to forest visitors traveling FR180 (CL2) for a short period of time (1-3 years after harvest). Herbicide and prescribed burning treatments would be very evident immediately after the application as there would be a contrast to the nearby green leafy vegetation. ANF LRMP standards and guidelines include visitor access controls during herbicide or prescribed burning treatments that would protect visitors from chemicals, smoke or other safety hazards (USDA-FS 2007c pp. 56–57 and 95).
- **Special Events or Unique Features:** FR180 and FR180D have been used for the bi-annual Tour de Forest in spring and fall. Timber harvest contracts shall specify that no timber harvesting or hauling shall take place in the stands listed above under “Motorized Trails” on the weekends of this event in order to protect the rider safety. No effects are anticipated to Logan Falls.

Cumulative Effects (CE)

The CE analysis area for recreation resources is the same as project area (5,319 acres). The effects to recreation in the project area are localized and stay within the project area. Likewise, the effects to recreation activities outside the project area are similar to those within it, and their effects do not extend into the project area. The time period considered for the CE analysis is 10 years prior to this project and 20 years into the future to consider effects from past activities, already approved projects not yet completed and the anticipated completion of activities proposed through this project.

In the past 10 years, no recreation projects have been completed within the project area with the exception of routine maintenance of the ASL connector trail. This included roadside brushing and removal of deadfalls and hazard trees from the trail corridor.

The demand and interest in recreation activities on NFS lands changes over time and space. It is important to consider how recreation may or may not change within the CE analysis area and the aforementioned time frame. The following projections are made concerning recreation activities in the northern assessment regions of the U.S. from 1995 to 2050 based upon the primary recreation activities taking place: hiking will increase 31 percent, snowmobiling will increase 22 percent, off-road driving will increase 9 percent, dispersed camping will decrease 16 percent, hunting will decrease 1 percent, fishing will increase 27 percent, and sight-seeing will increase 50 percent (Bowker and others 1999). As these projections show, the demand for most primary recreation activities will probably increase in the near future as will the U.S. population. However, the amount of public land available for recreation is not

projected to increase proportionally. In fact, because of budget constraints, some areas of public land are actually being closed to public use. The result is that more and more users are concentrated onto fewer and fewer acres of public land. People desiring developed facilities of the ANF may find the remaining areas more crowded in the future. However, some of those visitors may decide that dispersed camping along roadsides and stone pits will satisfy their needs. Since these areas are already hardened, the possible increased use is not expected to result in detrimental environmental effects. Still others may decide to go elsewhere to a facility that provides the experience they desire and not return to the ANF. Therefore, cumulative effects to recreational activities and use patterns are not expected to increase for Alternative 1.

The ANF has recently completed a Recreation Facilities Analysis (RFA). This analysis was part of a nation-wide effort to identify costs and revenues associated with developed recreation sites and then propose a strategy to decrease deferred maintenance costs and manage the sites within the constraints of a Forest's annual recreation budget. Part of the strategy recommended the downsizing, closing or decommissioning of all or parts of 13 developed recreation areas. One is an organizational camp, 7 are public campgrounds, and 5 are day-use facilities. There are no developed recreation sites within the project area; therefore, no direct effects are anticipated to developed recreation sites within the ANF. Future NEPA analysis would be undertaken for any RFA recommendations or proposals. Indirectly, if the recommendations are carried forward in a separate NEPA analysis, some transfer of use may occur where individuals may seek out dispersed camping sites for use in the project area. However, the reason most campers chose developed campgrounds over dispersed areas is for the facilities provided. Since the facilities they are seeking are not available in the project area, they are more likely to visit developed campgrounds that are still open than to seek dispersed campsites.

Vegetation Management Activities

The age of stands within the CE analysis area was compiled to illustrate how well forest visitors would be able to use the area, should either alternative be implemented. Claims are often made that timber harvesting has reduced recreation opportunities on the ANF; however, the effects of vegetation management on recreation do not accumulate over time. Recent timber harvest areas (less than 20 years of age) are usually more difficult for forest visitors to use because fencing impedes access, slash is abundant and sapling or briar growth is very thick. However, forest visitors are able to utilize most stands of young forest (21 to 50 years of age) or mature forest (51+ years of age). Table 10 shows the age classes of timber for each alternative within the CE analysis area. By 2028, under Alternative 1 approximately 88 percent of the project area will remain in a forested condition (greater than 21 years old). Under Alternative 2 this percentage would be approximately the same. Both alternatives would retain the majority of the CE analysis area in a condition easy for recreationists to use while Alternative 1 would provide more early structural habitat and increased hunting opportunities in the short term. By 2028, both alternatives would have approximately 10 percent in the 0 to 20 year old age class. The regeneration harvests proposed under Alternative 1 would affect the appearance of these stands and could affect the amount of non-hunting recreational use these areas receive. However, many of these areas are not used by recreationists outside of those who hunt. Recreationists, such as hunters, will generally enter and walk through the forest at the easiest points to access an area, and their travel patterns will differ every time they visit. Recreationists, with a favorite campsite or fishing hole or who follow a defined trail, would see changed conditions from their favorite site or along their route and may be displaced from that site or route, depending on personal preference. In the CE analysis area, forest visitors may be displaced from these areas for 10 to 50 years depending on personal preference. The proposed activities in Alternative 1 are consistent with past management and compatible with the current recreation use in the area.

Oil and Gas Management Activities

An additional cumulative effect to recreation is private OGD, which can change at any time and is based on economics, technology, supply, and demand. The effects of OGD on recreation would include a loss of solitude (due to machinery noise and vehicle traffic), easier access (due to additional road miles), a more modified environment (due to additional roads and wells) and a reduction in visual quality. These effects

do accumulate over time and may result in further concentrated recreation use on areas of public land that have not been developed for oil and gas extraction. Field observations show that intensively OGD fields do not receive the same amount of recreational use as do undeveloped areas in the same MA. Under all alternatives, if predicted OGD occurs, it would have an effect on recreation in the CE analysis area because it changes the character and the use patterns in the area where it occurs. Because OGD allows more access into the area, visitors with a high tolerance for the modification of the area may find using the area easier, while visitors, who desire a more natural condition or remote experience, may move elsewhere to recreate. The amount of use may or may not change, but the nature of the use would change depending on the user's individual preference.

7.3.4 Economics

Direct and Indirect Effects

Alternative 2 (No Action)

With the implementation of Alternative 2, none of the proposed activities would be carried out. Therefore, there would be no monetary implementation costs other than the normal custodial and stewardship costs associated with managing a national forest. There also would be no monetary return to the federal treasury. The costs in Table 12 relate to inventory and planning costs for this project.

Alternative 1 (Proposed Action)

Under Alternative 1, proposed timber harvests would provide an economic benefit. In the short-term, income and jobs would be produced through harvest and subsequent reforestation projects. Timber management activities would improve the diversity of tree species, foster the establishment of species that are shade intolerant to moderately shade intolerant, ensure a continuing supply of mast producing species and provide for a sustained yield of high-quality hardwoods. While there would be costs to the government associated with the implementation of this alternative, the costs would be offset by the returns to the national treasury (timber returns and increased tax base from new jobs) and to the local economy (new jobs and associated spending). Table 12 shows a general summary of the net cash flow comparison of priced activities proposed in each alternative for relative comparison. It should not be considered actual yields or losses, nor does it attempt to analyze all resource values. We recognize that many of the values generated by the alternatives (both positive and negative) involve goods and services that are not priced in the marketplace and are thus not represented in this comparison. These goods and services involve such things as habitat for native species, birding, fishing, hunting, hiking, snowmobiling, scenic beauty and high quality water. The effects each alternative has on these types of non-priced goods and services are found elsewhere within this section under other resource headings.

In considering the effects on recreation activities in the project area, it is recognized that the proposed management activities could negatively affect some forest users in their use of the land proposed for treatment. Based on the short-term impacts to recreational resources and the potentially beneficial effects that would result from the proposed activities (i.e., enhanced wildlife habitat which supports wildlife species, hunting, and berry picking, etc.), the balance of these effects would indicate no significant effect on recreation income or related jobs.

As shown in Table 12, a direct effect of Alternative 1 would be the varying amounts of total costs, which indicate the level of jobs related to the layout, marking, administration and reforestation treatments prescribed in the alternative.

Table 12: Economic Analysis of Costs/Returns to U.S. Government

	Alternative 1	Alternative 2
Total Costs¹	\$4,280,187	\$1,100,000
Total Returns²	\$6,690,000	\$0
Net Cash Flow³	\$2,409,813	(-) \$1,100,000

¹ Total costs represent the costs to the US Government from implementing activities such as transportation activities, herbicide application, fence installation, site preparation, wildlife habitat improvements and timber sale planning and administration.

² Total returns represent the revenues generated from the harvest of timber on NFS land.

³ Net cash flow is calculated by: (Total Return – Total Cost)

Cumulative Effects

The spatial cumulative effects boundary for the economic resource is the four-county area (3122 square miles combined) (Warren, Forest, Elk and McKean). This boundary is used because the project occurs in one of these counties (Forest), and it is likely that much of the products produced and the jobs filled would be within the four counties. The time frame for this cumulative effects analysis is 30 years (1999 to 2028). This time frame is used, because it encompasses the period in which a majority of the commercial treatments would occur, federal funds would be expended, and related monies would be distributed to the county.

Past, present and future activities occurring within this cumulative effects area include timber harvest, reforestation, road building, recreation, OGD and wildlife activities. The ANF LRMP FEIS contains a history of the economic and demographic conditions within the four-county area (USDA-FS 2007a, pp. 3-399–3-410). Primary Forest Service related contributions from projects are related to forestry, logging, recreation and manufacturing. OGD and support services also make large contributions to local economies. Additional details can be found in the cumulative effects discussion for the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-412–3-413).

Alternative 2 (No Action)

There are no direct or indirect effects to the local economy from Alternative 2; therefore, there are no cumulative effects.

Alternative 1 (Proposed Action)

Management activities proposed in Alternative 1 would be expected to impact the local economy, including local jobs for contractors, who purchase timber, and primary and secondary wood processors, who hire local people to harvest, haul and process timber and who spend money at local businesses. Local employment also supports the needs of people coming into the area to hunt fish and enjoy other recreation activities. These impacts were assessed in the ANF LRMP FEIS for each of the alternatives (Alternatives A through D) that were analyzed in detail (USDA-FS 2007f, pp. B-78–B-98). On a proportional basis (according to land area), the cumulative effect on the local economy of proposed Alternative 1 management activities would most closely approach the effects shown from ANF LRMP FEIS Alternative Cm (the selected alternative).

The historical activities, private land harvesting activities and future management activities would be the same for each alternative and continue to contribute to the local economy as jobs are supplied within the

industry and material is transported and processed in local mills. Revenue to the local economy would come in the form of salaries to workers, returns from the national treasury and wood product sales.

7.3.5 Environmental Justice

Environmental justice involves fair treatment and meaningful involvement of all people, regardless of race, color, national origin or income, with respect to the development, implementation and enforcement of environmental policies and projects. The geographic scope considered under the environmental justice review is Forest County, in which the project area is located. Criteria for low income and minority populations are based on census statistics for the state of Pennsylvania by county. The temporal scope of the analysis is based on the 2000 census information (for detailed analysis, see the environmental justice worksheet, project file).

Direct, Indirect and Cumulative Effects

Statistics for low income and minority populations in Forest County do not exceed requirements for additional environmental justice review (see environmental justice worksheet, project file). Therefore, no direct, indirect, or cumulative effects to low income households or minorities would occur from the implementation of either alternative.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

There are no active scientific (research) study areas located within the project area; hence, there would be no adverse effects.

The project area was surveyed for heritage resources in 2008. Heritage resources will be avoided and protected with buffers. Avoidance of or monitoring of logging and other activities in and around heritage resources by archaeologists would ensure that heritage resources are not affected. If any new heritage resources are discovered during implementation of this project, operations will cease in the area of the new discovery until adequate site boundaries can be identified on the ground for avoidance. Eligibility for listing in the National Register of Historic Places has not been determined for any of the heritage sites documented within the project area.

Areas proposed for NNIP species treatments occur within treatment stands and along road corridors and are not anticipated to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. Treatments are also not anticipated to cause loss or destruction of significant scientific, cultural or historical resources.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973.

In compliance with the requirements of ESA, the Forest Service prepared a BA of this project's potential effects on the Indiana bat, small-whorled pogonia, northern riffleshell mussel, clubshell mussel and northeastern bulrush, which is incorporated by reference. Actions are within those analyzed in the ANF LRMP FEIS BE (USDA-FS 2007g). In summary, three of the five species (Indiana bat, small-whorled pogonia, and northeastern bulrush) have suitable habitat within the project area, but have not been documented in the project area. The remaining two species (northern riffleshell mussel and clubshell mussel) have no suitable habitat in the project area. There is no federally designated critical habitat for any of the federally listed threatened, endangered or candidate wildlife species (16 U.S.C 1532 (5) (A)) within the ANF and therefore, within the project area (project BA, p.11, project file). A **may affect, not likely to adversely affect** determination was reached for the Indiana bat. A **no effect** determination was reached for the small-whorled pogonia, northeastern bulrush, northern riffleshell mussel and clubshell

mussel. Actions are within those analyzed in the ANF LRMP BE and appropriate ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 81-84) will be followed to protect these species and their habitat.

Potential effects associated with NNIP species treatments to endangered or threatened species or their habitat have been analyzed and reported in the ANF LRMP FEIS BE (USDA-FS 2007g) and the project BA and BE (project file). These effects are anticipated to be non-significant with the implementation of ANF LRMP standards and guidelines (USDA-FS 2007c).

10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

None of the alternatives would threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment. The proposed activities considered in this analysis are consistent with the ANF LRMP and the NFMA.

Regional Forester's Sensitive Species (RFSS)

A BE for the 61 RFSS listed for the ANF was prepared for the project (project file). Based on habitat availability in the project, species requirements, historic and current documentation, the project area presently has occupied habitat for 8 RFSS, suitable unoccupied habitat for 42 RFSS and unsuitable habitat for 11 RFSS listed for the ANF. Findings from the project BE indicate that Tionesta Creek along with associated habitat located within and adjacent to this large stream provides habitat that is currently occupied by 8 RFSS, including the butternut, ocellated darter, harpoon clubtail, midland clubtail, ski-tailed emerald, Maine clubtail, zebra clubtail, and bluebreast darter. The streams, riparian areas, wetlands, seeps, springs, vernal pools and mature deciduous and mixed deciduous and conifer forest habitats found in the project area currently provide suitable habitat for 42 RFSS. Another 11 RFSS are associated with medium to large-size stream, river and reservoir ecosystems are not documented and have no suitable habitat in the project area. In summary, a **may impact individuals, but not likely to cause a trend toward federal listing determination or loss of species viability** was reached for one RFSS, the timber rattlesnake. Implementation of ANF LRMP standards and guidelines and project design features that protect potential den habitat and reserve CWD will reduce the risks to and improve the viability of the timber rattlesnake. The streams, riparian areas, wetlands, seeps, springs, vernal pools and mature deciduous and mixed deciduous and conifer forest habitats found in the project area currently provide suitable habitat for 42 RFSS. Although suitable habitat would be altered by vegetation management and transportation activities, none of these species would be directly impacted as suitable habitat is currently unoccupied. There would be a 4.25 acre loss of hardwood forest habitat over the long-term due to stone pit expansion. Approximately 70 percent of the wildlife CE analysis area (13,840 acre) would remain as mature forest in 2028. ANF LRMP standards and guidelines and project design features will retain important habitat features for these RFSS (for example, the retention of conifer inclusions would benefit the northern goshawk). An evaluation of cumulative effects shows that the proposed federal and reasonably foreseeable federal and non-federal activities would not cause a trend toward federal listing of these RFSS. A **no impact** determination was reached for the remaining 60 RFSS (see project BE, project file). With the implementation of 2007 ANF LRMP standards and guidelines, 1986 ANF LRMP standards and guidelines for private OGD, Pennsylvania BMPs and project design features, no adverse impacts are anticipated on any RFSS.

Design features for Alternative 1 for RFSS include:

- In order to provide and maintain additional species of conifer within the project area, no spruce trees will be harvested in **stand 632007 (USDA-FS 2007c, p. 80)**.
- Approximately 5 acres located within **stand 646024** consisting of a southwest-facing rocky ledge with numerous crevices will be included as a reserve area and no timber harvesting or heavy equipment will be permitted within this portion of the stand (**USDA-FS 2007c, pp. 80 and 87**).

- Prescribed burning in **stand 637007** will be conducted during the time of year when fire parameters can be met. If prescribed burning occurs from March through October, the area will be surveyed for wood turtles. Surveys will be conducted on the same day as prescribed fire is to take place. If the prescribed burn occurs on more than one day, surveys will be conducted prior to burning. Due to the amount of herbaceous vegetation in this stand, survey personnel will utilize rakes or other similar tools to move vegetation aside, which will improve ground surface visibility and in observing wood turtles, if present (**USDA-FS 2007c, pp. 80 and 87**).
- Prior to prescribed burning in **stand 637007**, all combustible material will be raked away from the base of all butternut trees in the stand (a minimum of 4 feet in diameter) and scattered to avoid creating mounds of combustible debris near the trees. Raking and scattering of combustible material will also be performed for other tree and shrub species located within the area proposed for prescribed burning. Other species to be protected include, but are not limited to, apple, crabapple, hawthorn, and elderberry. Prescribed burning will begin on the downwind side of the stand. Firing will be done in a manner in which a low intensity, low residence fire will occur around the trees, so that damage to the trees is avoided (**USDA-FS 2007c, p. 89**).

Management Indicator Species and Species with Viability Concerns

Management indicator species (MIS) are used in concert with other indicators to gauge the effects of management on wildlife habitat. The five MIS on the ANF are the timber rattlesnake, northern goshawk, cerulean warbler, mourning warbler and aquatic invertebrates. Forest-wide MIS habitat status and trends, preferred habitat, threats and management emphasis are discussed in the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-194–3-204). These species are closely associated with ecological communities of management interest. An analysis of the MIS for the project is located in the wildlife specialist report (project file).

Timber rattlesnake and northern goshawk

The timber rattlesnake and northern goshawk are also RFSS. The timber rattlesnake is a species of remote deciduous forests; den sites are crucial to supporting viable timber rattlesnake populations. The northern goshawk is a species of mid- to late-structural mixed deciduous and conifer forests, often containing a diverse landscape and structural conditions. Each of these species and its habitat are protected through the implementation of ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 84 and 87). The effects of the proposed activities and determinations for the timber rattlesnake and northern goshawk have been discussed in the RFSS portion of this section and in the project BE (see project file).

Cerulean warbler

The cerulean warbler is a species of mid- to late-structural oak forests with some canopy gaps. This species has not been documented in the project area but could be present as approximately 16 percent of the project area supports mid- to late-structural northern red oak and oak hardwood stands.

The proposed action would have a short-term effect on potential habitat of the cerulean warbler because 15 acres of mid- to late-structural northern red oak habitat is proposed for a shelterwood seed cut and shelterwood removal harvest. However, no substantial adverse effects are anticipated to the cerulean warbler because several other stands containing red oak occur within the project area and would be retained. In addition, the relatively short-term loss of the mature oaks in this stand would eventually be offset by the future establishment of young red oak seedlings and saplings, a habitat component, which is lacking not only in the project area, but also on the ANF and in this region of the country.

The proposed action includes planting 450 white oak seedlings in three stands increasing the oak component within the project area. Over the long-term, these trees are expected to become inclusions within hardwood stands but would not provide sufficient habitat to support a viable cerulean community. Individual or small groups of oak trees are found in proposed treatment areas and the majority of these inclusions would be retained as reserve trees or within ¼-acre reserve areas. Alternative 2 would have no adverse effect on this species but would not regenerate 15 acres of oak habitat.

Mid to late structural habitat would be retained on approximately 70 percent of the CE analysis area under Alternative 1 (by 2028), and would provide stop-over habitat for the warbler during spring and fall migration. Because of its minority status on the landscape, oak trees would be retained whenever possible, when encountered during the OGD on the ANF.

Aquatic invertebrates

Aquatic invertebrate diversity and relative abundance are used as indicators of aquatic habitat and water quality of streams, which are important for a diversity of fish, dragonflies, mussels, and other aquatic species. Suitable habitat exists in the project area's streams and riparian areas. Numerous surveys for aquatic invertebrates and water quality monitoring have been conducted on the perennial streams found within the project area. In 1998, Logan Run, Blood Run, Kingsley Run, and Phelps Run were surveyed by the Pennsylvania DEP for aquatic macroinvertebrates and water quality. Samples taken from these four streams show that they are dominated by aquatic insect families that indicate water quality in these streams ranging from good to excellent. The Pennsylvania DEP conducted more recent aquatic macroinvertebrate surveys on Logan Run and Blood Run in 2007. Based on the aquatic insects documented in these streams, water quality was determined to be excellent (PA DEP 2007).

There are 98 stands under Alternative 1 proposed for timber harvests and reforestation activities. A breakdown of the proposed treatments shows that portions of 45 stands are within 300' of perennial or intermittent streams in the project area. Depending on individual stand shape, size, and location, these portions can range from less than one acre up to 75 percent of the stand. Fourteen (14) of these stands involve reforestation activities, release or non-commercial thinning where no timber harvests would be conducted or trees removed. Since only portions of these stands would be treated, the structure of these stands would benefit as a whole, and none of these treatments are expected to have an adverse effect to these streams or riparian corridors. The other 31 stands are proposed for timber harvest, herbicide application or other reforestation treatments. Buffer zones (ANF LRMP standards and guidelines) of forest vegetation would keep fine sediments, fertilizer and herbicide from reaching waterways and degrading the suitable habitats of aquatic species. These buffer zones would also ensure that the physical structure of the stream (including CWD) would not be altered, shade would be retained over the streams, increases in water temperature or evaporation rates would be minimized and the introduction of pollutants would be avoided. In addition, guidelines pertaining to Logan Run, a Class A trout stream, and Blood Run, one of the four long-term monitoring streams, specifically limit activities along and within these streams (USDA-FS 2007c, pp. 75 and 79).

The proposed 0.3 mile of road reconstruction and 1.8 miles of road construction on existing corridors would improve drainage (runoff) and decrease the potential for sedimentation. The initial, short-term effects of soil disturbance from grading, recontouring and culvert placement would be offset by the long-term improvements resulting from management of these road segments. Road maintenance, such as limestone surfacing application at perennial or intermittent stream crossings, parking area improvements, improving drainage, reducing or re-directing runoff and stabilizing soils in or near riparian zones in Alternative 1 are expected to have long-term positive effects on water quality in the project area. These activities are expected to maintain or improve aquatic habitat for aquatic species and other species that rely on these water sources. Except for the 4.25 acres of pit expansion in Alternative 1, no loss in forested habitat is anticipated from the proposed activities in Alternative 1.

The ANF LRMP includes standards and guidelines directed at maintaining water quality and controlling sedimentation in perennial waterways, intermittent streams, springs and seeps (USDA-FS 2007c, pp. 74–79). Implementation of ANF LRMP standards and guidelines will ensure that proposed activities do not adversely impact aquatic species or their habitat. As a result, there are no adverse direct or indirect effects anticipated on aquatic species or their habitat under Alternative 1.

Approximately 80 percent of the wildlife CE analysis area is NFS lands. Effects to aquatic habitats from proposed and future Forest Service activities are minimized with the implementation of ANF LRMP

standards and guidelines (USDA-FS 2007c, pp. 74 – 79). Private OGD is regulated by Pennsylvania laws and BMPs. On NFS lands, resource administrators and specialists recommend and implement conservation measures that would minimize effects to aquatic habitats. Streams would also be protected with implementation of Pennsylvania BMPs for OGD and timber harvesting on private lands. .

Mourning warbler

The mourning warbler is an indicator of early structural habitat, which it uses for foraging, reproduction and concealment or cover. Young forest habitat is important to many game species and a number of species with viability concerns. Currently, the project area contains 496 acres (9 percent) of early structural habitat in the 0-20 year age class. Although surveys conducted in 2006 and 2008 by district personnel failed to document this species within the project area, volunteer efforts associated with the Pennsylvania Breeding Bird Atlas Project have documented this species in each of the four breeding bird survey blocks that are located in the project area. With this information, the project area is considered to be suitable occupied breeding habitat for this species.

Approximately 541 acres of proposed even-aged regeneration harvests in Alternative 1 would create early structural habitat on 10 percent of the project area, by the first decade (2018). In Alternative 2, habitat would remain similar to the present condition with existing early structural stands increasing in age over the first decade. The CE analysis area currently contains approximately 1,298 acres (9 percent) of early structural habitat in the 0-20 year age class. Presently, there are no other approved or on-going federal activities in the CE analysis area which include even-aged regeneration harvests, which would create early structural habitat. Based on the future projections, approximately 14 percent of the CE analysis area would be in an early structural forest (0-20 years old) condition by 2028 under Alternative 1. Alternative 2 would result in 10 percent of the CE analysis area containing early structural habitat. Habitat for the mourning warbler is expected to increase across the CE analysis area under either alternative.

Additional Species with Viability Concerns

The NFMA requires national forests to preserve and enhance the diversity of plant and animal communities to meet multiple use objectives based on the suitability and capability of the land. Migratory birds were considered in the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-208) and included as part of the species viability evaluation. Migratory birds that occur on the ANF and were determined to have viability concerns were analyzed as part of the species viability process. The rationale and process for determining the status and listing of species and the forest-wide effects of management are located in the ANF LRMP FEIS (USDA-FS 2007a, pp. 3-205–208) and appendix E of the ANF LRMP FEIS (USDA-FS 2007f).

During ANF LRMP FEIS analysis, a total of 78 species were identified with potential viability concerns for the ANF. Eleven (11) of these species are protected but not included on the threatened and endangered or RFSS list for the ANF. Because their viability on the ANF was questioned, ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 84-89) were developed and will be implemented to protect these species and their habitat. With the exception of the Henslow's sparrow, the 10 remaining species with viability concerns have suitable habitat within the project area. The list of seven birds, two reptiles and two amphibians and their status in the project area can be found in the project wildlife report (project file).

Black-throated Blue Warbler, Red-shouldered Hawk, Raven, Great Blue Heron and Swainson Thrush

With the exception of the Swainson thrush, all of these species have been documented in the project area. These species use a combination of mature hardwoods or hardwoods mixed with conifer near riparian areas. There is one inventoried wetland in the project area, according to the NWI. ANF LRMP standards and guidelines will protect wetlands and other water resources by reducing or avoiding impacts. In addition, at least 77 percent of the project area would remain mature or over-mature forests by 2028 in Alternative 1; therefore, suitable habitat would remain for all of these species. The conifer component (12 percent of the project area) consists of a mixture of understory, midstory and overstory is expected to remain relatively intact regardless of the alternative selected.

The hemlock woolly adelgid poses a threat to the hemlock component; thus it may have a long-term threat to some of these species, which utilize the mixed hardwood and conifer component. In the short term, suitable habitat is expected to remain for these species. The planting of white pine seedlings will also supplement the conifer component in the project area. Private oil and gas developers are encouraged to follow ANF LRMP standards and guidelines, which protect these species and their habitat. No known red-shouldered hawk and raven stick nests are currently active in the project area. If a nest is discovered during implementation, ANF LRMP standards and guidelines will be implemented to protect the nest site.

Two great blue heron sightings have been documented on Tionesta Creek just outside the project area; however, no rookeries have been documented in the project area. The project area is considered to provide foraging habitat for the heron. There are no proposed commercial timber harvests adjacent to or along the hillside of Tionesta Creek in Alternative 1. Riparian areas that contain wetlands and intermittent or perennial streams will be protected with implementation of ANF LRMP standards and guidelines; therefore, no adverse effects to water quality and aquatic and riparian habitats are anticipated in Alternative 1. Mature forest would remain on at least 77 percent of the project area through 2028 in Alternative 1. Large diameter trees and snags would remain on slopes above streams and be available as potential rookery sites. In the event a rookery is discovered, ANF LRMP standards and guidelines will be implemented to protect the rookery.

Henslow sparrow

Since there are no grasslands of substantial size within the project area or CE analysis area, there would be no effects to this species or its habitat from either alternative. There has been no documented occurrence of this species within the project or CE analysis area.

Golden-winged warbler

This species utilizes seedling and sapling habitat (0-20 years old), which is expected to increase in the project area due to proposed vegetation management activities in Alternatives 1. By 2018, this habitat would be present on approximately 10 percent of the project area in Alternative 1. Shrub components within mature forest and along riparian areas are also retained with implementation of ANF LRMP standards and guidelines. There have been no documented occurrences of the golden-winged warbler within the project area.

Jefferson salamander, four-toed salamander and eastern box turtle

The Jefferson salamander and four-toed salamander occur in mature hardwood and mixed hardwood and conifer forest habitat in or near vernal pools and ponds. They can also occur in or near any water resource, but favor vernal pools. The eastern box turtle typically uses forested riparian habitat. Each of these species occurs in or near a variety of aquatic habitats that are protected by ANF LRMP standards and guidelines (USDA-FS 2007c, pp. 74–79 and 87). The Jefferson salamander has been documented on Logan Run during amphibian surveys conducted in 2008. Surface-disturbing activities will be prohibited within 100 feet of this occurrence (USDA-FS 2007c, p. 87). If additional individuals or species are discovered, ANF LRMP standards and guidelines (USDA-FS 2007c, p. 87) will be implemented to protect their home range and habitat integrity.

Coal skink

This species typically occupies dry oak forest habitat, but can be found in other dry mature hardwood sites containing inclusions of surface rock and rubble. The project area contains surface boulders, rocks and rubble, and these habitat features are found in several of the proposed treatment areas. This species has not been documented in the project area, but unique features, such as rock outcrops and boulder fields, will be avoided and protected from disturbance through the implementation of ANF LRMP standards and guidelines and project design features. Additional ANF LRMP standards and guidelines regarding the protection of this species and its habitat are located in the ANF LRMP (USDA-FS 2007c, p. 87).

Migratory Bird Treaty Act

The action alternative would be consistent with the Migratory Bird Treaty Act and the provisions of the memorandum of understanding between the US Fish and Wildlife Service and the Forest Service to integrate conservation measures for migratory birds into comprehensive land management and project planning. The action alternative balances the long-term benefits to migratory birds against the short-term adverse effects and minimizes “take” by retaining snags and the integrity of nesting sites and with other conservation measures.

Clean Air Act

The action alternative will be consistent with the conformity provisions of the Federal Clean Air Act. Implementation of all activities will be consistent with state and federal laws and Forest Service regulations and handbooks regarding management of prescribed fire. ANF LRMP standards and guidelines, resource protections, Pennsylvania BMPs and following a burning plan during project implementation ensure that implementation of the action alternative would have no adverse direct or indirect effects to air quality. When prescribed burns are conducted on the ANF, the Forest Service uses the best available smoke management techniques and technology to alleviate nuisance or human health impacts of smoke in local communities and smoke sensitive areas.

Clean Water Act

The action alternative is consistent with the provisions of the Federal Clean Water Act. All proposed activities are consistent with state and federal laws and Forest Service regulations and handbooks regarding vegetation management and transportation activities.

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Maps

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