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Environmental Assessment

Globe Project

Grandfather Ranger District, Pisgah National Forest
Avery, Caldwell, and Watauga Counties, North Carolina

Globe Project

Environmental Assessment

Location of Action: Grandfather Ranger District
Pisgah National Forest
Avery and Caldwell Counties, North Carolina

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CHAPTER 1 – PURPOSE AND NEED

1.1 Document Structure

The Forest Service has prepared this environmental assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses direct, indirect, and cumulative environmental consequences that are expected result from the proposed action and alternatives. The document is organized into five parts:

- *Chapter 1 – Purpose and Need:* This section includes information on the history of the proposal, the purpose of and need for the proposal, and the agency’s proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal.
- *Chapter 2 – Alternatives:* This section provides a detailed description of alternative methods for achieving the stated purpose as well as the No-action Alternative. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes project design features and a comparison of alternatives considered in detail.
- *Chapter 3 – Environmental Consequences:* This section describes the environmental consequences of implementing the proposed action and other alternatives. This analysis is organized by resource areas. For most resources, the affected environment is described first, followed by the effects of the No-action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Chapter 4 – Preparers and Public Involvement:* This section provides a list of preparers and members of the public consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide additional information to support the analyses presented in the EA.

1.1.1 Project Record

This EA incorporates by reference (40 CFR 1502.21) the project record. The project record contains specialist reports and other technical documentation used. The specialist reports provide additional detailed analysis. This EA incorporates by reference the Nantahala and Pisgah Management Indicator Species (MIS) Report. This report along with Monitoring and Evaluation Reports for the National Forests in North Carolina contains the most current information about forest population trends for MIS species.

1.2 Project Location

The area analyzed is within the 5,338 acre Upper Mulberry and 5,887 acre Upper Johns River Forest Plan Analysis Areas (AAs) about 2 miles southwest of Blowing Rock, North Carolina and 11 miles northwest of Lenoir, North Carolina. Specifically the proposal is located within Compartments 12, 13, 14, 33, 35, 37, 38, and 39 and within Avery, Caldwell, and Watauga Counties; however, the harvesting and road-related activities are within Caldwell County (see Vicinity Map at the end of the document). The combined 11,225 acre AAs contains

Compartments 11-15, 30, 33-35, and 37-39.

The proposal is within MAs (Management Areas) 3B and 4A. MA 3B emphasizes providing a sustainable timber supply by regulating the growth and removal, and regeneration of trees through time (Forest Plan, page III-71). This MA also provides the habitat needs of wildlife such as wild turkey, deer, and other species of small mammals. MA 4A permits timber management modified to emphasize visual quality and wildlife habitat (Forest Plan, page III-77).

This EA tiers to the Final Environmental Impact Statement (FEIS) for the Forest Plan

1.3 Proposed Action

The proposed action is to create early successional habitat for wildlife by harvesting trees that would create two-aged stands on a total of about 230 acres in units ranging from a few acres to 40 acres. Maps of this alternative are located at the end of the EA.

The following table summarizes harvest-related information for the Proposed Action:

Table 1-1: Globe Proposed Action

Stand	Acres	MA	Treatment ¹	Harvest Method
12-5/12-12	25	3B	Two-age	Cable
13-7/13-19	10	3B	Two-age	Tractor
13-10	7	3B	Two-age	Tractor
13-18	10	3B	Two-age	Tractor
13-11/13-21/14-12	30	3B	Two-age	Cable
14-1a	10	3B	Two-age	Cable
14-1b	10	3B	Two-age	Cable
14-9	10	3B	Two-age	Tractor
Total MA 3B	112			
33-11	40	4A	Two-age	Cable
35-11	11	4A	Two-age	Cable
35-1/35-11/35-23	8	4A	Two-age	Cable
37-5a	4	4A	Two-age	Tractor
37-5b	3	4A	Two-age	Tractor
37-9	8	4A	Two-age	Tractor
38-7	12	4A	Two-age	Cable/Tractor
38-10	8	4A	Two-age	Tractor
39-4/39-13	15	4A	Two-age	Cable
39-15	10	4A	Two-age	Tractor
Total MA 4A	119			
Total Harvest	231			

1 – All treatments would retain 15-20 ft² of basal area per acre (see also Section 2.4, Chapter 2)

In addition, the Proposed Action would:

- Use and maintain the existing road system. As part of road maintenance, daylight approximately two miles of Frankum Creek Road (FSR 188) by harvesting merchantable timber within 15 feet of both sides of the vegetative edge of the road. This action is for road maintenance reasons due to higher maintenance level assigned to this road and not for wildlife reasons.

- Develop approximately 1.5 miles of new temporary road to access stands 13-18, 14-9, 14-12/13-11/13-21, 33-11, 35-11/35-23/35-1, 37-5a, 37-5b, 37-9, 38-7, 39-4/39-13, and 14-1. Following harvest activities, temporary roads, skid roads, and log landings would be appropriately shaped, waterbarred, disked and seeded with an erosion-control seed mix. All new temporary roads would be permanently closed and any new stream crossings on these roads are considered temporary and would be removed.
- Improve about 0.8 miles of existing old woods roads to access stands 13-7/13-19 and 14-12/13-11/13-21. Following harvest activities, these roads would be placed on the Forest's Transportation System as authorized roads, stabilized (i.e. shaped, waterbarred, and seeded with an erosion-control seed mix) and closed for administrative use only.
- Create about 12 acres of permanent grass and forb habitat.
- Three years following harvest, regenerated stands would be checked for overcrowding and/or desired species composition. If needed, herbicides (Glyphosate and Triclopyr) and/or manual thinning methods would be used to achieve desired stocking and composition.
- Use herbicides (Glyphosate and Triclopyr) to control/manage non-native invasive plants along Forest Service Roads (FSRs) and log landings (about 5 acres).
- Plant individuals or groups of old variety apple trees in log landings.
- Designate 311 acres (total) of small patch old growth communities in compartments 12 (50 acres), 13 (50 acres), 14 (50 acres), 35 (108 acres), and 37 (53 acres).
- Re-install a gate on the Thunderhole Road just before China Creek that was damaged and seed roadbed with a wildflower and wildlife food mix (about 3 acres). The gate is proposed to reduce impacts to wildlife, recreation, aquatic resources, and water quality.

1.4 Purpose and Need for Action

The purposes of this proposal are to:

1. Improve habitat conditions for species such as eastern wild turkey, ruffed grouse, and white-tailed deer by dispersing early successional habitat (ESH) across the landscape. This also serves as foraging habitat for black bear. Periodically creating a regulated amount of 0-10 year age class in MAs 3B and 4A (Forest Plan, page III-31) accomplishes this.
2. Add to the designated network of old growth communities across the landscape that serves as permanent reservoirs of biological diversity (Forest Plan, pages III-26 and III-27).
3. Control/manage pest populations with pesticides (Glyphosate and Triclopyr herbicide) (Forest Plan, page III-52); specifically, to reduce infestations of non-native invasive plants.

In relation to the purpose and need, the following current conditions exist:

1. To meet Forest Plan direction (desired future condition), the early successional habitat (0-10 year age-class) should be from 5-15% in MA 3B (Forest Plan, page III-31) and not to exceed 10% in MA 4A (Forest Plan, page III-31). Currently there is less than 1% early successional habitat in the project area (compartments that have proposed regeneration units)—there is 1% 0-10 year age class in the Upper Mulberry AA and 0% in the Upper Johns River AA. The following figure displays information on the 0-10 year age class in the two AAs and the Forest Plan standards:

Figure 1-1: Acres of Minimum and Maximum Desired 0-10 Year Age-class by Management Area in the Two AAs



2. To meet Forest Plan direction, the permanent grass and forb habitat within the MAs should be at least 0.5 percent (Forest Plan, page III-23) with a desired level of three percent (Forest Plan, pages III-74 and III-84). Currently there is no permanent grass and forb habitat on National Forest System NFS lands (NFS) within the AAs.
3. To meet Forest Plan direction, old growth across the forest is to have a network of small, medium, and large sized old growth communities (Forest Plan, page III-26). Currently Compartments 33, 38, and 39 contain small patches of designated old growth communities, while Compartments 12, 13, 14, 35, and 37 do not. The Upper Johns River watershed contains a portion of the designated Large Patch 24 which satisfies the medium patch requirement for this watershed, and a portion of Large Patch 30 is located within the Upper Mulberry watershed which meets the medium patch requirement for this watershed. Large Patches 24 and 30 are the only large patches within the AA of the project and have been evaluated and designated as large patch old growth communities.
4. To meet Forest Plan direction, integrated pest management is to be the strategy used in managing pest populations to achieve resource objectives (Forest Plan, page III-52). Currently, about five acres of non-native invasive species have been identified in the AA and include princess tree, tree-of-heaven, Japanese plume grass, and others.
5. To meet Forest Plan direction, it is necessary to manage roads, trails and other travelways consistent with Management Area direction (Forest Plan, page III-46). Currently, sections of the Frankum Creek Road and the Thunderole Road are contributing sediment to streams due to a lack of sunlight able to dry the Frankum Creek Road and removal of a gate on the Thunderhole Road which allows vehicles to travel the road, especially during wet seasons.

1.5 Public Involvement

The proposal was listed in the January, April, July, and October 2006 editions of the Schedule of Proposed Actions (SOPA). The proposal was provided to members of the public, government agencies, and private organizations by mailing a scoping package to over 100 members of the public who had previously requested to receive such information and a 30 day scoping period ran from January 18, 2006, thru February 20, 2006, when a legal notice was published in *The McDowell News*, the Grandfather Ranger District's newspaper of record as per 36 CFR 215.5(b)(2)(i). Information on the proposal was also provided in other formats: a press release

was provided to *The Blowing Rocket* on January 19, 2006, inviting comments on the proposal; a request for public comment on the proposal was placed in the January 23, 2006, edition of *The Watauga Democrat*; the January 26, 2006, edition of *The Watauga Mountain Times*; and the February 16, 2006, edition of *The High Country News*; and information on the proposal was posted online at www.themountaintimes.com on January 26, 2006. On April 13, 2006, several members of local and regional environmental organizations met with Forest Service employees to discuss the proposal.

Pursuant to 36 CFR 215.2 and 215.5(b)(1)(iv), a 30-day Notice and Comment period was initiated on July 12, 2006, when a legal notice was published in *The McDowell News* informing members of the public the EA was available for review. On August 1, 2006, a press release was issued stating the Forest Service would host an open-house meeting in Blowing Rock, North Carolina on August 9, 2006, to discuss aspects of the proposal. On August 2, 2006, District Ranger Joy Malone mailed a notice to the Grandfather Ranger District's mailing list stating she would consider comments from the end of the 30-day Notice and Comment period thru August 18, 2006, (see also Forest Service Handbook 1509.12, Section 11.5). Following the 30-day Notice and Comment period, the additional comment period, and up to issuance of the November 2006 EA, 1,282 total comments were submitted on the proposal.

On August 9, 2006, Forest Service officials hosted a public information meeting at the Blowing Rock, North Carolina town hall—244 members of the public signed in at the meeting.

In August and September 2006, Forest Service staff also provided briefings to Blowing Rock town officials, Watauga County officials, and several staff of North Carolina's congressional delegation.

On September 6, 2006, a press release was made available to local media informing the public that the Forest Service [d]ecided to develop an additional alternative for the project. *The additional alternative will be designed to respond to issues raised about the scenic quality of the Thunderhole portion of the project area potentially visible from Blowing Rock.*

Based on review of comments received, the Grandfather Ranger District prepared another EA with a new preferred alternative (Section 2.4, Chapter 2) and made it available for a second 30-day Notice and Comment period that began on December 1, 2006, and ended on January 3, 2007, when a legal notice was placed in *The McDowell News*. Pursuant to 36 CFR 215.6(a)(2), this Notice and Comment period ran more than 30 days since the 30th day ended on a weekend and the next business day did not occur until January 3rd (January 1st was a federal holiday and January 2nd was a federal closure in response to President Ford's death).

Two open house meetings were hosted by members of the Forest Service; one on December 4, 2006, in Collettsville, NC, and the other on December 7, 2006, in Blowing Rock, NC—35 people signed in at the open houses. The Globe project received over 1,800 comments on the proposal. Appendix H of this decision notice discloses information on comments received and the Agency's responses.

On February 8, 2007, Forest Service representatives met in the field with representatives of environmental organizations and a member of the public (invited by the organizations) to discuss old growth characteristics in and near stands 38-7 and 33-11.

1.6 Issues

Issues are defined as a point of discussion, debate, or dispute about environmental effects. Issues are used to develop alternatives, mitigation measures, or analyze environmental effects.

1.6.1 Significant Issues

1.6.1.1 Significant Issue #1: Diversity of Wildlife Habitat *The proposal may not develop enough early successional and grass forb wildlife habitat*

1.6.1.2 Significant Issue #2: Scenic Resources *Harvest related activities may impact scenic resources*

1.6.2 Non-significant Issues

1.6.2.1 Water Quality and Aquatic Resources – *Reconstructing roads and harvest-related activities may impact aquatic threatened, endangered, sensitive, Forest Concern, and Management Indicator Species*

1.6.2.2 Non-native Invasive Plants – *Management activities may increase infestation of non-native invasive plants*

1.6.2.3 Botanical Resource – *Harvest related activities may have adverse impacts to botanical threatened, endangered, sensitive, Forest Concern, and Management Indicator Species*

1.6.2.4 Wildlife Resource – *Harvest related activities may impact wildlife threatened, endangered, sensitive, Forest Concern, and Management Indicator Species*

1.6.2.5 Cultural Resources – *Harvest related activities may impact cultural sites*

1.6.2.6 Soil Resource – *Harvest related activities may impact soils*

1.6.2.7 Non-timber Related Economics – *Harvest related activities may have adverse effects to non-timber related markets (see also Appendix E)*

1.6.2.8 Herbicide Use – *Herbicide use may impact wildlife, aquatic, botanical resources and humans*

1.6.2.9 Dispersed Recreation – *Harvest related activities may impact dispersed recreationists*

1.6.2.10 Old Growth – *Harvest related activities may impact old growth resources*

1.6.2.11 Other Areas of Concern – *Harvest activities may adversely affect park lands, prime farmlands, wetlands, wild and scenic rivers, ecologically critical areas, or local law or requirements imposed for the protection of the environment.*

CHAPTER 2 – ALTERNATIVES

2.1 Range of Alternatives

The range of alternatives developed and analyzed by the interdisciplinary team (IDT) was driven by the purpose and need underlying the proposal (Chapter 1, Section 1.3), and by the significant issues responding to the proposal. An alternative should (1) reasonably respond to the purpose and need, and (2) address one or more significant issue. The only exception is the No Action Alternative, which is required by regulation [40 CFR 1502.14(d)].

The IDT considered six alternatives. Following internal review, three alternatives were considered in detail and three were eliminated from consideration.

2.2 Alternatives Considered in Detail

Four alternatives were considered in detail by the IDT; Alternative A – No Action, Alternative B – Proposed Action, Alternative C, and Alternative D – Preferred. The action alternatives fulfill the specific purpose and need for these actions. Project design features for activities in each action alternative are also described in this chapter.

2.2.1 Alternative A – No Action

Under this alternative the actions the proposed actions (Chapter 1, Section 1.3) would not occur. This alternative serves as the environmental baseline for analysis of effects.

2.2.2 Alternative B – Proposed Action

A complete description of the Proposed Action can be found in Chapter 1, Section 1.3 above.

2.2.3 Alternative C

Alternative C was developed to address Significant Issue 1 (Section 1.7.1, Chapter 1). It proposes the same actions as Alternative B (Chapter 1, Section 1.3) with one exception; it would daylight about 15 feet either side of the Thunderhole Road FSR 4071 to improve brushy wildlife habitat.

The following table summarizes harvest-related information for Alternative C:

Table 2-1: Alternative C

Stand	AC	MA	Treatment ¹	Harvest Method
12-5/12-12	25	3B	Two-age	Cable
13-7/13-19	10	3B	Two-age	Tractor
13-10	7	3B	Two-age	Tractor
13-18	10	3B	Two-age	Tractor
13-11/13-21/14-12	30	3B	Two-age	Cable
14-1a	10	3B	Two-age	Cable
14-1b	10	3B	Two-age	Cable
14-9	10	3B	Two-age	Tractor
Total MA 3B	112			
33-11	40	4A	Two-age	Cable

Stand	AC	MA	Treatment ¹	Harvest Method
35-11	11	4A	Two-age	Cable
35-1/35-11/35-23	8	4A	Two-age	Cable
37-5a	4	4A	Two-age	Tractor
37-5b	3	4A	Two-age	Tractor
37-9	8	4A	Two-age	Tractor
38-7	12	4A	Two-age	Cable/Tractor
38-10	8	4A	Two-age	Tractor
39-4/39-13	15	4A	Two-age	Cable
39-15	10	4A	Two-age	Tractor
Total MA 4A	119			
Total Harvest	231			

1 – All treatments would retain 15-20 ft² of basal area per acre (see also Section 2.4 below)

In addition, Alternative C would:

- Use and maintain the existing road system. As part of road maintenance, daylight approximately two miles of Frankum Creek Road (FSR 188) by harvesting merchantable timber within 15 feet of both sides of the vegetative edge of the road. This action is for road maintenance reasons due to higher maintenance level assigned to this road and not for wildlife reasons.
- Develop approximately 1.5 miles of new temporary road to access stands 13-18, 14-9, 14-12/13-11/13-21, 33-11, 35-11/35-23/35-1, 37-5a, 37-5b, 37-9, 38-7, 39-4/39-13, and 14-1. Following harvest activities, temporary roads, skid roads, and log landings would be appropriately shaped, waterbarred, disked and seeded with an erosion-control seed mix. All new temporary roads would be permanently closed and any new stream crossings on these roads are considered temporary and would be removed.
- Improve about 0.8 miles of existing old woods roads to access stands 13-7/13-19 and 14-12/13-11/13-21. Following harvest activities, these roads would be placed on the Forest's Transportation System as authorized roads, stabilized (i.e. shaped, waterbarred, and seeded with an erosion-control seed mix) and closed for administrative use only.
- Create about 15 acres of permanent grass and forb habitat.
- Three years following harvest, regenerated stands would be checked for overcrowding and/or desired species composition. If needed, herbicides (Glyphosate and Triclopyr) and/or manual thinning methods would be used to achieve desired stocking and composition.
- Use herbicides (Glyphosate and Triclopyr) to control/manage non-native invasive plants along Forest Service Roads (FSRs) and log landings (about 5 acres).
- Plant individuals or groups of old variety apple trees in log landings.
- Designate 311 acres (total) of small patch old growth communities in compartments 12 (50 acres), 13 (50 acres), 14 (50 acres), 35 (108 acres), and 37 (53 acres).
- Daylight about 15 feet of both sides of the vegetative edge of the Thunderhole Road (FSR 4071) to develop additional wildlife habitat (about 2.4 miles or nine acres).
- Re-install a gate on the Thunderhole Road just before China Creek and seed with a wildlife and wild flower mix (about 3 acres). The gate is proposed to reduce impacts to wildlife, recreation, aquatic resources, and water quality.

2.2.4 Alternative D – Preferred

Alternative D was developed to respond to Significant Issue 2 (Section 1.7.1, Chapter 1). Alternative D proposes fewer acres of two-age harvest, retains 30 square feet of basal area per acre in MA 4A stands, does not daylight along the Thunderhole Road, and reduces the amount of permanent grass/forb habitat from the Proposed Action. A summary chart comparing the actions by alternative is located below in Section 2.5. The following table summarizes harvest-related information for Alternative D:

Table 2-2: Alternative D

Stand	AC	MA	Treatment ¹	Harvest Method
12-5/12-12	25	3B	Two-age	Cable
13-7/13-19	10	3B	Two-age	Tractor
13-10	7	3B	Two-age	Tractor
13-18	10	3B	Two-age	Tractor
13-11/13-21/14-12	30	3B	Two-age	Cable
14-1a	10	3B	Two-age	Cable
14-1b	10	3B	Two-age	Cable
14-9	10	3B	Two-age	Tractor
Total MA 3B	112			
33-11	32	4A	Two-age	Cable
35-1/35-11/35-23	8	4A	Two-age	Cable
37-5a	4	4A	Two-age	Tractor
37-5b	3	4A	Two-age	Tractor
37-9	8	4A	Two-age	Tractor
38-7	12	4A	Two-age	Cable/Tractor
38-10	8	4A	Two-age	Tractor
39-4/39-13	15	4A	Two-age	Cable
39-15	10	4A	Two-age	Tractor
Total MA 4A	100			
Total Harvest	212			

1 – Treatments would retain 15-20 ft² of basal area per acre in MA 3B stands (Frankum Creek area) and 30 ft² in MA 4A stands (Thunderhole Creek area)

In addition, Alternative D would:

- Use and maintain the existing road system. As part of road maintenance, daylight approximately two miles of Frankum Creek Road (FSR 188) by harvesting merchantable timber within 15 feet of both sides of the vegetative edge of the road. This action is for road maintenance reasons due to higher maintenance level assigned to this road and not for wildlife reasons.
- Develop approximately 1.5 miles of new temporary road to access stands 13-18, 14-9, 14-12/13-11/13-21, 33-11, 35-11/35-23/35-1, 37-5a, 37-5b, 37-9, 38-7, 39-4/39-13, and 14-1. Following harvest activities, temporary roads, skid roads, and log landings would be appropriately shaped, waterbarred, disked and seeded with an erosion-control seed mix. All new temporary roads would be permanently closed and any new stream crossings on these roads are considered temporary and would be removed.
- Improve about 0.8 miles of existing old woods roads to access stands 13-7/13-19 and 14-12/13-11/13-21. Following harvest activities, these roads would be placed on the Forest's

Transportation System as authorized roads, stabilized (i.e. shaped, waterbarred, and seeded with an erosion-control seed mix) and closed for administrative use only.

- Create about 12 acres of permanent grass and forb habitat.
- Three years following harvest, regenerated stands would be checked for overcrowding and/or desired species composition. If needed, herbicides (Glyphosate and Triclopyr) and/or manual thinning methods would be used to achieve desired stocking and composition.
- Use herbicides (Glyphosate and Triclopyr) to control/manage non-native invasive plants along Forest Service Roads (FSRs) and log landings (about 5 acres).
- Plant individuals or groups of old variety apple trees in log landings.
- Designate 311 acres (total) of small patch old growth communities in compartments 12 (50 acres), 13 (50 acres), 14 (50 acres), 35 (108 acres), and 37 (53 acres).
- Daylight approximately two miles of Frankum Creek Road (FSR 188) by harvesting merchantable timber within 15 feet of both sides of the vegetative edge of the road – action is for road maintenance reasons due to higher maintenance level assigned to this road and not for wildlife reasons.
- Re-install a gate on the Thunderhole Road just before China Creek that was damaged and seed with a wildlife and wild flower mix (about 3 acres). The gate is proposed to reduce impacts to wildlife, recreation, aquatic resources, and water quality.
- Re-install a gate at the entrance to Thunderhole Road which would be seasonally closed for wildlife, non-motorized recreation, and road maintenance (January 1 – August 31).

2.3 Alternatives Considered but Eliminated from Detailed Study _____

As per 40 CFR 1502.14(a), the following alternatives were considered but eliminated from detailed study:

2.3.1 Alternative 1 – Watershed Restoration without Harvesting

This alternative would install the gate on Thunderhole Road and use herbicides to control/manage non-native invasive plants but would not propose timber harvesting.

This alternative was eliminated from detailed study because without harvesting, the purpose and need cannot be achieved—harvesting is necessary to improve habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer and black bear by dispersing early successional habitat across the landscape.

2.3.2 Alternative 2 –No Herbicide Use including Triclopyr

This alternative proposed to use manual methods and not herbicides for controlling competing vegetation and non-native invasive plants.

This alternative was dropped from detailed study because manual methods for treating competing vegetation for site preparation and managing non-native invasive plant species are not as effective as herbicide use to meet desired objectives. Part of the purpose and need is to control/manage pest populations and the Forest Plan provides a standard for herbicide use to do this (Section 1.3, Chapter 1 above and Forest Plan, page III-52). Use of herbicides would be pursuant to product labels; Material Safety Data Sheets (MSDSs); pesticide risk assessments; the *Vegetation Management in the Appalachian Mountains* (VMAM) FEIS; design features disclosed in Appendix F; and Forest Plan standards and guidelines including *Requirements For*

Vegetation Management In The Appalachian Mountains listed in Appendix I of the Forest Plan (pages I-10 – I-14). Portions of this alternative are also met with Alternative A.

Herbicide use (primarily Glyphosate) is necessary to more efficiently and effectively treat non-native invasive plants. Manual methods are less effective at treating non-native invasives as many species resprout once cut and removing entire root masses requires extensive labor and cost (see also Section 3.4, Chapter 3 for additional disclosures on herbicide use). According to a risk assessment (http://www.fs.fed.us/foresthealth/pesticide/risk_assessments/04a03_glyphosate.pdf), Glyphosate is readily metabolized by soil bacteria.

According to another risk assessment

(http://www.fs.fed.us/foresthealth/pesticide/risk_assessments/0303_triclopyr.pdf), Triclopyr is not considered soil active (mobile). Triclopyr is necessary to ensure practical/cost efficient site preparation treatments (see Veg Mgt FEIS IV-65—IV-66). As stated on page IV-66 of the FEIS: *Manual cutting tools are highly selective and can be used year round on all land types, but repeated treatments, either annually or even more frequently, may be necessary to adequately control woody vegetation.* Other herbicides such as Glyphosate are less effective at reducing woody plants. Herbicides, including Triclopyr are necessary to ensure practical/cost efficient site preparation, release, and control/management of non-native invasive plants.

2.3.3 Alternative 3 – Daylight 150 feet either side of the Frankum Creek Road for Wildlife Habitat

This alternative proposed to daylight merchantable timber along 150 feet either of the vegetative edge of the Frankum Creek road to improve more wildlife habitat than the proposed action.

This alternative was eliminated from detailed study because a 300 foot wide and two mile long corridor along this road would open it up too much, causing `adverse impacts to the scenery. Alternative C was developed to provide some daylighting along the Thunderhole Road for wildlife habitat improvement (15 feet either side) that would not cause adverse impacts to scenery.

2.3.4 Alternative 4 – Stands 33-11 and 38-7 Eliminated

This alternative is Alternative B – Proposed Action without Stands 33-11 and 38-7.

One of the objectives of the Globe proposal is to create a network of old growth communities across the landscape to serve as permanent reservoirs of biologic diversity as per Forest Plan standards (see Section 1.4, Chapter 1). Currently within the two AAs, there are 5,115 acres of large patch old growth communities designated in three compartments (large patches 24 and 30)—five other compartments currently do not have old growth communities designated within them. Alternatives B, C, and D propose to designate over 300 acres of small patch old growth communities within these five compartments; bringing the total designated old growth communities in the two AAs to over 5,400 acres (almost 50% of the two AAs). This alternative was eliminated from detailed study because the proposal as designed (Alternatives B, C, and D) meets Forest Plan old growth community standards. Compartments 33 and 38 already contain 757 acres of large patch designated old growth communities and designating additional old growth communities within them is not necessary to meet Forest Plan standards (see also Section 3.11, Chapter 3 and Appendix C). The Globe proposal designates the necessary acres of small patch old growth communities to meet Forest Plan standards and does not propose harvesting in

numerous areas that future analyses and decisions could determine to set aside as old growth communities.

Stand 33-11 is identified in the CISC database as having a stand age of 68 years. While stand 33-11 does contain areas of old trees, these do not comprise the majority of the stand, and the stand also contains areas that were harvested in the past. The stand itself is not large enough to qualify for selection as a small old growth patch, even if one were required in this compartment for the Forest-wide design. Stand 38-7 is identified in the CISC database as having a stand age of 91 years. Stand 38-7 is adjacent to Forest Plan designated large patch old growth (as well as stands averaging ≤ 20 years of age and stands averaging 60-100 years of age) and does not exhibit old growth character within it. There were concerns expressed by members of the public that harvesting stand 38-7 would create “edge effects” that could harm the adjacent designated large patch old growth. However, the Forest Plan old growth design of large, medium, and small patches does not call for buffering the patches. The design presumes the patch sizes are adequate unto themselves, without further additions, and the surrounding forest is to be managed for the multiple uses appropriate for the management area. The Forest Plan and its FEIS adequately analyzed potential impacts to old growth communities.

The Forest Service has reviewed Stands 33-11 and 38-7 in the field and believe Stand 38-7 does not meet old growth habitat as described in the Forest Plan and believe Stand 33-11 has small areas of mature habitat within it moving towards old growth characteristics as described in the Forest Plan, but the number of single and multiple tree-falls is lacking to warrant designation. The stand in its entirety does not exhibit these characteristics.

2.3.5 Alternative 5 – Create a National Scenic Area (NSA)

This alternative was proposed by members of the public and would designate the 20,175 acre Grandfather NSA. New road construction and cutting and/or selling of trees within the NSA would be prohibited (except for insect and disease control, firewood collection, and maintenance of existing wildlife fields).

This alternative was eliminated from detailed study because designating an NSA is outside the scope of the project’s purpose and need (Section 1.4, Chapter 1); is not identified in the Forest Plan; and designation of a new National Scenic Area would require Congressional action. The area in question is within National Forest System (NFS) lands designated by the Forest Plan as suitable for harvesting and harvesting is part of the treatments proposed to meet the project’s objectives (Section 1.4.1, Chapter 1). Changing the management area emphasis away from wildlife/scenery (MA 4A) and timber harvesting (MA 3B) would require amending the Nantahala/Pisgah Land Management Plan. This Forest Plan was last significantly amended in 1994 and is not scheduled for revision until 2009 at the earliest.

There are currently six NSAs on NFS lands in the United States: Columbia River Gorge NSA in Oregon/Washington; Mt. Pleasant NSA in Virginia; Coosa Bald NSA in Georgia, East Mohave NSA in Arizona; St. Helena Island NSA in Michigan; and Santa Rosa Mountains NSA in California. Each NSA was designated to meet specific objectives for protecting the scenic, cultural, historic, recreational, and/or natural resources in that specific area.

2.4 Project Design Features and Monitoring Common to Action Alternatives

The action alternatives share these project design features and would become mandatory if the responsible official selects an action alternative for implementation. Additional project design features are in Sections 3.7.3.2, 3.7.3.3, and 3.7.3.4, Chapter 3; Appendix A; and Appendix F.

1. Marking guidelines would include priority residual tree species of; white oak, red oak, hickory, black oak, and chestnut oak, where they occur. In addition, two 12 inch diameter or larger diameter black gum species would be left as residuals within every 10 acres, where they occur. (Purpose is for wildlife habitat and vegetation diversity).
2. Stand 37-5b exhibits a large boulder complex with evidence of woodrat nesting use between the existing woods road within the stand and State Road 1367¹. Any harvesting would exclude this area and trees immediately surrounding this boulder complex would be left during harvest and any subsequent release work planned. (Purpose is for habitat protection of a Forest Concern wildlife species).
3. To reduce the possibility of spreading non-native invasive plants, known populations of *Miscanthus sinensis*, *Paulownia tomentosa*, *Celastrus orbiculatas*, and *Ailanthus altissima* should be treated prior to disturbance activities. *Miscanthus sinensis* was found along Forest Service Roads. All known populations total less than one acre. Control of *Miscanthus sinensis*, *Paulownia tomentosa*, and *Ailanthus altissima* is most easily and effectively done by herbicide (Glyphosate). (Purpose is to reduce spread of non-native invasive plant species).
4. Temporary crossings of ephemeral streams would include temporary bridges or armoring with stone or brush.
5. Native plants would be used in permanent wildlife improvement and roadside erosion control. (Purpose is to reduce spread of non-native invasive plant species).
6. Exclude a 150-foot area near station 8+50 on the Frankum Creek Road from daylighting to provide protection to the *Calystegia catesbeiana ssp. sericata* (Catesby's false bindweed) population. (Purpose is for habitat protection of a Forest Concern botanical species).

The following project design features were developed to ensure scenic resources meet Forest Plan standards during project implementation.

7. Maintain an un-cut 100 foot buffer from edge of state road—Stands 35-1/35-23;37-5b; 37-9;
8. Maintain average 30 rba/ac minimum in harvest area—all stands in MA 4A;
9. Locate unit boundary one tree height below ridge—Stand 33-11;
10. Burn or lop & scatter slash to within 2 feet of ground for 100 feet beyond edge of road or trail—Stands 37-5a;38-7;
11. Feather upper unit boundary over a 100 foot distance—Stands 33-11; 37-9; 39-4/39-13; 39-15;
12. Maintain uncut vegetative screen at least one tree height below road—Stands 33-11; 39-4/39-13;

¹ Under Alternative C, trees providing shade to a small, rocky slope exhibiting rock shrew habitat along the Thunderhole Road 4071 would be excluded from daylighting

13. Screen log landings from view, and restore as close to original contour as practical—Stands 33-11; 35-1/35-23; 37-5a; 37-5b; 37-9; 38-7; 39-4/39-13; 39-15;
14. To extent practical, burn or lop & scatter slash to within 4 feet of ground for 150 feet below cable landings or utilize for firewood gathering—Stand 33-11;
15. For 50 feet beyond state road, restore temporary roads and bladed skid trails to original contour, and plant native shrubs at entrance to mask disturbance—Stand 37-9.

Monitoring

1. National objectives include reducing impacts from invasive species and improving the effectiveness of treating selected invasive species on the Nation's forests and grasslands. Survey area would be established to monitor control efforts. Survey areas would be established before control treatment, checked during treatment, and within nine months after treatment. A post-treatment evaluation report would be completed and filed in the project file. Purpose is to monitor effectiveness of treatments.
2. Forest Service Landscape Architect will meet with District personnel to discuss tree marking specifications, and landing/cable corridor layout. Purpose is to review leave tree density and road, landing, and cable corridor screening.
3. Forest Service Landscape Architect will meet on site with sale administrator during harvest of stands 33-11, 35-1, & 35-23. Purpose is to review leave tree density, screening buffers, and slash treatment.
4. Forest Service Landscape Architect will conduct photo monitoring from analyzed viewpoints immediately after harvest, and 1, 2, & 5 growing seasons after harvest. Purpose is to insure compliance with assigned Visual Quality Objectives (VQO), and to develop a remediation plan if VQO's are not met.

2.5 Summary Comparison of Actions by Alternative

The following table summarizes management activities within each of the alternatives:

Table 2-2: Management Activities by Alternative

Activity	Alternative			
	A	B	C	D
Two-age harvest (acres)	0	231	231	212
Site prepare and subsequent release, if needed (acres)	0	231	231	212
Control/manage non-native invasive plants with herbicide along Forest Service Roads (FSRs) and log landings (acres)	0	5	5	5
Designate small patch old growth communities (acres)	0	311	311	311
Temporary roads developed. Following harvesting, they would be disked, seeded, and permanently closed (miles)	0	1.5	1.5	1.5
Improve old woods roads accessed. Following harvesting, they would be disked and seeded, closed, then placed on the transportation system (miles)	0	0.8	0.8	0.8
Stream crossings (temporary—to be removed following harvest-related activities)				
Bridges (number)	0	2	2	2
Culverts (number)	0	3	3	3
Daylight Thunderhole Road (creates ESH) (acres)	0	0	9	0
Daylight Frankum Creek Road for road maintenance purposes (acres)	0	5	5	5
Disc and seed unsurfaced temporary roads, skid roads, and log	No	Yes	Yes	Yes

Activity	Alternative			
	A	B	C	D
landings (Y/N)				
Permanent grass/forb habitat created (acres)	0	12	15	12
Plant persimmon and/or native crab apple trees in log landings (Y/N)	No	Yes	Yes	Yes
Re-install a gate on the Thunderhole Road just before China Creek that was damaged and seed with a wildlife and wild flower mix (about 3 acres) (Y/N)	No	Yes	Yes	Yes
Re-install a gate at the entrance to Thunderhole Road which would be seasonally closed for wildlife, non-motorized recreation, and road maintenance (January 1 – August 31) (Y/N)	No	No	No	Yes

CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES

The following table displays past, present, and reasonably foreseeable future actions within and near the Globe AA that would be accounted for in cumulative effects as appropriate by resource analysis (parameters for actions were determined by resource specialists for each activity):

Table 3-1: Past, Present, and Reasonably Foreseeable Future Actions within and near the Globe AAs

Activity	Description
Wildfire/Rx Burning	Globe Mountain (wildfire – 1996, 40 acres)
	Thunderhole (wildfire – 1999, 100 acres)
	Rocky Knob (Rx burn – 2005, 50 acres slash down & 150 acres burn)
	Boyd Gap (Rx burn – 2006, 160 acres)
Timber	Frankum Creek (2001, 49 acres of regeneration)
	Frankum Creek (1991 - 1995, 220 acres)
	Thunderhole (1988 - 1992, 163 acres)
	Hugo/Boyd Gap (1991, 26 acres)
	Frankum Creek SPB Salvage (1989, 13 acres)
	Globe Mtn. (1987, 29 acres)
	<40 year old harvests
	Old House Gap (2007-2010, 136 acres of regeneration) Timber Stand Improvement (115 acres in 1997 & 1998)
Hemlock Woolly Adelgid	Soil injection with Imidacloprid ¹ and insect release with predator beetles (2005+)
Road Maintenance	George's Creek Road (FSR 4111 – stabilize, seed, mulch)
	Thunderhole Road (FSR 4071 – recondition and regate)
Watershed Improvement	Snyder Trespass (unauthorized access damaging water quality)
	Little Rocky Knob (close off access from private land creating mud holes)
	Upper Johns River tributary restoration
Private Lands	Extensive landscaping shrub/tree development using herbicides
	Residential development along US 321 (Backbone Ridge development) and near Thunderhole Creek (River Ridge development)
	Large scale harvesting (USFS is unaware of any foreseeable large scale harvesting on private lands proposed in the AA)
Special Uses	None
Wildlife Habitat Improvement	None

3.1 Hydrology and Aquatic Habitat

This analysis addresses activity area waters and aquatic AA waters. Activity area waters are defined as those within or directly adjacent to any proposed activity. The aquatic AA encompasses activity area waters and downstream reaches that could be impacted by project activities. The aquatic AA is larger than the activity areas. Additional analysis on aquatic habitat is disclosed in Appendix A, [Biological Evaluation (BE)]; Section 3.8 [Management

¹ Imidacloprid is a systemic, chloro-nicotinyl insecticide with soil, seed and foliar uses for the control of sucking insects including rice hoppers, aphids, thrips, whiteflies, termites, turf insects, soil insects and some beetles. It is most commonly used on rice, cereal, maize, potatoes, vegetables, sugar beets, fruit, cotton, hops and turf, and is especially systemic when used as a seed or soil treatment. The chemical works by interfering with the transmission of stimuli in the insect nervous system. Specifically, it causes a blockage in a type of neuronal pathway (nicotinic) that is more abundant in insects than in warm-blooded animals (making the chemical selectively more toxic to insects than warm-blooded animals). This blockage leads to the accumulation of acetylcholine, an important neurotransmitter, resulting in the insect's paralysis, and eventually death. It is effective on contact and via stomach action. (<http://extoxnet.orst.edu/pips/imidaclo.htm>)

Indicator Species (MIS)], and; Section 3.9 [Threatened, Endangered, Sensitive (TES), and Forest Concern (FC) Species] of this document. Additional information on aquatic resources can be found in the BE and the aquatic resource report, which is part of the official project record.

3.1.1 Existing Condition

Existing data for aquatic resources within the aquatic AA is used to the extent it is relevant to the project proposal. This data exists in two forms: 1) general inventory and monitoring of Forest aquatic resources, and 2) data provided by cooperating resource agencies from aquatic resources on or flowing through the Forest. Both of these sources are accurate back to approximately 1980 and are used regularly in project analyses. Data collected prior to 1980 is used as a historical reference. Project-specific surveys are conducted to obtain data where none exists.

Table 3-1A: Forest Plan Watershed 60 (Johns River)

Stream Name (UT denotes an un-named tributary)	Compartment- Stand	Miles in Activity Areas	Miles in Aquatic Analysis Area
Thunderhole Creek			3.52
UT1	37-5a	0.01	0.34
	37-5b	0.006	
UT2	33-11	0.25	0.56
UT3			0.15
UT4			0.19
UT5	37-9	0.06	0.76
UT6			0.23
UT7			0.19
UT8	37-9	0.14	0.14
John River			0.57
UT1			0.59
China Creek	38-7	0.3	0.3
Georges Creek	14-1a	0.17	1.34
	14-1b	0.19	
UT1			0.39
UT2			0.25
Friddle Creek			1.33
Frankum Creek	13-7/13-19	0.23	2.65
	13-18	0.36	
UT1			1.3
UT2			0.25
Total		1.716	14.69

Habitat suitable for supporting fish populations exists within the aquatic AAs within Georges Creek (below activity area), Frankum Creek (adjacent to stands 13-11, &13-21, and 14-12), Thunderhole Creek, and China Creek (adjacent to stand 38-7). In the remaining aquatic AA streams, there is limited habitat suitable for fish due to small stream size and restricted flow regimes. All Activity area waters provide habitat for aquatic macroinvertebrates.

Brook trout were documented from several streams within the aquatic AA during 1991 surveys of the upper Johns River area. Brook trout are not native to Atlantic slope streams, and it was

assumed, at the time, that these populations were remnants of historic stocking efforts to introduce the species to the area (they are a highly sought-after game fish). Within the upper Johns River area, it is likely that several key habitat requirements, particularly substrate composition and water temperature, limit the viability of brook trout within this part of the upper Johns River watershed.

3.1.2 Effects Analysis

Effects are disclosed below for: 1) direct and indirect effects of access on aquatic resources; 2) direct and indirect effects of timber harvesting and wildlife habitat enhancement on aquatic resources; 3) direct and indirect effects of herbicide use on aquatic resources; and 4) cumulative effects to aquatic resources. Other proposed activities are not discussed because there would be no effect on aquatic resources.

3.1.2.1 Direct and Indirect Effects of Access on Aquatic Resources

This discussion assumes that all Forest Service timber sale contract clauses, North Carolina Best Management Practices (BMPs), and any other required management practices relating to water quality would be implemented successfully. Should a protective requirement in a contract clause or a BMP fail during project implementation, immediate corrective action would be taken to reduce impacts to aquatic resources.

Alternative A

Implementation of this alternative would perpetuate the existing condition described above. Aquatic habitat quality, quantity, and populations would continue in their natural, dynamic patterns. There would be no direct or indirect impacts upon aquatic resources.

Alternatives B, C, & D

Direct Effects: Access to stands 13-11, 13-21, & 14-12 would involve one bridge over Frankum Creek along approximately 0.5 miles of an existing old woods road. Access to stands 13-7 & 13-19 would involve approximately 2,800 feet of new temporary road and one bridge across Frankum Creek. Access to stand 37-9 would involve approximately 600 feet of temporary road with no stream crossings. Access to stands 35-1, 35-11, & 35-23 would require a temporary road off of State Road (SR) 1367 and no stream crossings. Access to stand 38-7 would require approximately 1,200 feet of temporary road with no new stream crossings. These alternatives involve constructing approximately 1.5 miles of temporary road, as well as the development of skid trails and log landings.

Two bridges are required as part of the access plan for this project (see description above). Each of these bridges would impact approximately 20 linear feet of stream bank on each side of Frankum Creek, for a total of approximately 40 linear feet. These direct impacts come from the removal of streamside vegetation, which provides cover and nutrients for aquatic organisms. Because the percentage of riparian vegetation removed is so small and erosion control would be implemented, the impacts to aquatic resources would be minimal and likely undetectable. Additionally, these impacts would cease with site stabilization and rehabilitation. Sediment control measures such as the use of silt fences and straw bales would be implemented at the site to avoid off site movement of soil at the crossings. These control measures trap sediments on-site and prevent most of the disturbed soil material from moving.

Riparian areas have been identified as 100 feet on either side of perennial channels and 30 feet on either side of intermittent channels. No activity, including the placement of log landings and skid trails, would occur in this area, except at the stream crossings described above. As a result, no measurable direct adverse impacts to riparian areas are expected to occur. The impacted area would be approximately 0.09 acres of the total 41.6 acres of riparian area in the Globe activity areas (0.22% of the area).

The road drainage on all temporary roads within the activity areas would be designed so water flows off the roaded area and enters into vegetation rather than directly into activity area streams. Following harvest activities, disking and seeding of all unsurfaced temporary roads, skid roads, and log landings would occur to reduce potential for erosion or sedimentation.

Indirect Effects: There is a possibility that some off-site movement of soil into activity area waters could occur from the installation of the two bridges over Frankum Creek. Turbidity and sediment loading can cause mortality by injuring and stressing individuals or smothering eggs and juveniles. Available habitat, including the interstitial space within substrate used as spawning and rearing areas, may be covered with sediments. Episodic fluctuations in turbidity may occur after soil disturbance ends because sediments deposited within the stream bed may be re-suspended during high flow events (Swank *et al.* 2001).

In general, habitat loss resulting from sedimentation leads to a shift in the aquatic insect community that favors more tolerant species. Larger, more mobile aquatic species, such as fish are able to temporarily escape the effects of sedimentation by leaving the disturbed area. Over time, community structure shifts back as habitat conditions improve, after vegetation has reestablished and sediments are flushed through the system by storm events. Implementation of contract clauses and erosion control precautions described above would minimize sediment effects (including temporary ones) and accelerate site rehabilitation. Given that it is unlikely that aquatic habitats would be measurably affected, it is unlikely that aquatic organisms would experience indirect effects of the proposed activities.

It is unlikely that habitat complexity would be impacted or lost, based on the small amount of proposed disturbance. Culverts eliminate an average of 25 linear feet of stream bed from its natural state, while bridges disturb, but do not eliminate, an average of 20 feet of bank along each side of the stream. The amount of habitat effects by the two proposed bridges over Frankum Creek is disclosed above.

Skid trails and the temporary road construction may also cross ephemeral streams or spring seeps that feed activity area streams. If heavy rains occur while these ephemeral crossings are exposed, bare soil can be transported down slope to intermittent and ephemeral stream channels. Temporary stream crossings would be used across ephemeral channels to avoid the potential for sedimentation of down slope aquatic resources. These crossings could include the use of temporary bridges (e.g. simple log stringers or pre-fabricated decking), culverts, or channel armor (e.g. stone or brush).

3.1.2.2 Effects of Timber Harvest on Aquatic Resources, Water Quality, and Riparian Areas

Alternative A

The existing condition of aquatic resources as described above would be maintained under this alternative. Natural fluctuations in population stability, and habitat quality and quantity would continue.

Alternatives B, C, & D

The transport of large woody debris (LWD), an integral component of aquatic habitat diversity, to stream channels is a function of riparian vegetation structure and composition. The Forest Plan does not allow vegetation management within riparian zones for perennial streams unless it is specifically for the enhancement of riparian values (Forest Plan, page III-181). This standard was designed to allow vegetation along streams to become old and decadent and to serve as a long-term source of LWD to stream channels.

North Carolina Forest Practices Guidelines (NC-FPGs) and Forest Plan standards (BMPs) would be implemented during harvest activities. Applications of Forest Plan standards are intended to meet performance standards of the state regulations. Visible sediment derived from timber harvesting, defined by state regulations, should not occur unless there is a failure of one or more of the applied erosion control practices. Should any practice fail to meet existing regulations, additional practices or the reapplication of existing measures would be implemented.

According to the NC Forestry BMP Implementation Survey (2000- thru 2003), implementation of BMPs are critical in protecting water quality. For example, monitoring of the English White Pine project (located on the Pisgah Ranger District) BMP structures were in place during a two inch rain event in the summer of 2007. Straw bales, mulching, and seeding had been installed two weeks prior to the event. The stream adjacent to the activity area at the stream crossing was flowing clear and was void of sediment from the associated activities.

There is no plan to harvest within any 100-foot riparian area of perennial streams within the activity areas. According to Volume 1 of the Final Environmental Impact Statement for the Forest Plan, *Under these conditions, no increase in water temperature is anticipated under any of the alternatives. Since riparian-area treatment is not expected under any alternatives, availability of woody debris would be positively influenced if there was no harvest anywhere within the riparian zone on each streambank* (page IV-36).

The only cutting within the riparian areas would be associated with stream crossings discussed above. There is the possibility that as trees are cut, they would cross a stream channel or spring. While LWD in and adjacent to stream channels is desirable for aquatic habitat diversity, it needs to be of an appropriate scale—there is the possibility that leaving large tree boles in small stream channels and across springs could result in flow obstruction. This can lead to accelerated bank scouring and failure, and subsequently, sedimentation of local and downstream channels. To avoid the potential for this habitat loss, trees accidentally felled across stream channels or springs would be removed. "Drag lanes" should not be designated for the removal of these trees to avoid severe bank disturbance. Rather, trees should be removed individually from where they fell. It is unlikely that pulling individual trees across would result in permanent stream bank damage. Any damage done to the stream banks would most likely be temporary (less than one year), as there is an abundance of herbaceous vegetation along the banks that would quickly recolonize bare soil.

Water quality should not be adversely affected as long as Forest Plan standards and NC-FPGs are followed, and timber sale contract clauses are implemented. Stream temperatures would not be affected because adequate shade would be maintained along perennial and intermittent streams. Implementation of the NC-FPGs has protected streams during similar activities in the past and long-term adverse impacts were not apparent (Lorie Stroup, personal observation of BMP effectiveness on the English White Pine Project).

3.1.2.3 Direct and Indirect Effects of Herbicide Use on Aquatic Resources

Alternative A

The existing condition of aquatic resources has been described above. Natural fluctuations in population stability, and habitat quality and quantity would continue. It should be noted that the encroachment of exotic invasive species throughout the riparian areas of the aquatic resources within the area would likely occur as a result of non-treatment, including burning and the use of herbicides (personal communication with USFS Botanist, David Danley 2005).

Alternatives B, C, & D

Herbicide use is proposed in each of the action alternatives for the Globe project. In accordance with the Vegetation Management Final Environmental Impact Statement (VMAM-FEIS), herbicide spraying would not occur within 30 horizontal feet of water unless the herbicide has been approved for aquatic applications.

The herbicide Triclopyr (ester formulation) has the potential to cause direct mortality to aquatic organisms at a concentration of 0.74 parts per million (ppm). The amine formulation of Triclopyr can be lethal at concentrations of 91 ppm (VMAM-FEIS). Concentrations of Glyphosate at 24 ppm can be lethal to some aquatic organisms (VMAM-FEIS). Sublethal effects, such as lethargy or hypersensitivity, have been observed in fish at concentrations of 0.1 mg/L – 0.43 mg/L. No adverse effects have been observed in fish or aquatic invertebrates from exposure to Imazapic concentrations up to 100 mg/L. Field applications of herbicides where stream buffers have been maintained have resulted in concentrations of these herbicides in streams below the lethal concentration – generally concentrations \leq 0.0072 ppm in the adjacent streams (Durkin, 2003a; Durkin, 2003b; and Durkin and Follansbee, 2004). Furthermore, these herbicides degrade into nontoxic compounds in approximately 65 days (VMAM-FEIS). The 30-foot buffers would prevent the estimated environmental concentrations (EEC) of Glyphosate or Triclopyr from reaching the LD₅₀ (Lethal Dose at which 50% of the organisms suffer mortality) for any aquatic species (VMAM-FEIS), because the herbicides would not enter the streams in any measurable quantity. These concentrations are too low to produce the lethal or sublethal effects described above.

Project area streams would be protected by a 30-foot buffer (minimum) which would prevent the accumulation and transport of lethal doses of these herbicides to streams in the AAs. No pulling of non-native invasive plants would occur on stream banks to further prevent erosion. See also Section 3.4, Herbicides below.

The following table summarizes potential effects to aquatic resources by alternative:

Table 3-2: Summary of Potential Effects to Aquatic Resources by Alternative

Issue Element	Alternative A	Alternatives B, C, & D
Effects on water quality (associated with the amount of soil disturbance that may cause sediment to enter the area streams)	No effect. Slight risk of degradation from erosion issues associated with FSR 451	Turbidity and sediment loading may increase slightly during culvert installation and bridge construction. Should diminish downstream and cease with site rehabilitation.
Effects of sediment on aquatic habitat and	No effect. Existing habitat and population	May temporarily negatively affect aquatic habitat due to the removal of riparian

Issue Element	Alternative A	Alternatives B, C, & D
populations	trends continue.	vegetation within Frankum Creek (during bridge installation) but would cease with site rehabilitation.
Effects to riparian areas	No effect. Remain in present state. Aquatic habitat would improve, as riparian areas grow older.	Remain in present state except at two stream crossings. There would be a loss of 0.09 acres of riparian vegetation at these crossings. Aquatic habitat would improve, as riparian areas grow older, increasing large woody debris in streams.
Effects of herbicide on aquatic resources	No effect. No treatment may increase the risk of the replacement of native riparian vegetation with exotics.	No impact as spraying would not occur within 30 horizontal feet of streams.
Effects of timber harvest and wildlife habitat enhancement Work on aquatic resources	No effect. Existing condition would continue.	No impact to aquatic resources as no wildlife enhancement activities would occur inside the 100 foot riparian area of activity or analysis area streams

3.1.2.4 Cumulative Effects to Aquatic Resources

Cumulative effects on aquatic species and habitat are the integration of any direct or indirect effects into the existing condition—and include past, present, and future actions, including those not occurring on NFS lands. Most often, cumulative effects are seen as either a degradation or improvement of an already impacted situation, but they can also be the first step in the degradation or improvement process. Cumulative effects on aquatic habitats and populations from management activities can be positive or negative, depending on the nature of the proposed actions and site-specific conditions.

Alternatives A, B, C, & D

Based on the project's design features included in this analysis, there are no other effects to the AA's aquatic resources that would overlap with the direct and indirect effects of this proposal to cause cumulative effects.

Existing roads within the Globe AAs are, in many cases on-going contributors to adverse impacts to aquatic resources. Undersized culverts and degraded stream crossings have caused constant sources of problems for aquatic resources including unstable stream banks and channelization.

There are places within riparian areas of this project area where it is evident that timber was harvested in the past (historic projects pre-dating the LRMP, and in some cases, Forest Service ownership). As these areas continue to grow older, conditions should improve as large woody debris input into the streams in the AAs returns to a more natural state.

Monitoring of prescribed burning projects on the Pisgah National Forest indicates that no measurable impacts to aquatic resources occur from prescribed fire (Lorie Stroup, personal observation on numerous prescribed burns across the National Forests in North Carolina). Because of high soil moisture, riparian areas generally do not burn at all, and, riparian vegetation is unaffected. Therefore, past burns in the watershed do not contribute to the cumulative effects on aquatic resources.

Two tropical storms moved through the project and analysis areas during September of 2004 during an eight day period. These storms released up to 14 inches of rain within 48 hours each time. Many streams within the Catawba River drainage were heavily impacted by the storm events. These impacts include loss of riparian vegetation, scouring of sediments and banks and large scale landslides. Streams within the Globe activity areas were affected by the storm events.

As observed in other watersheds across the Pisgah National Forest, these large storms (100 year floods or greater) often act as a “restart mechanism” for cumulative effects. Substrates in the upper reaches of Frankum, Friddle, Georges, China, and Thunderhole Creeks have been “cleaned”, creating habitat for aquatic organisms which rely on interstitial space (the space between substrate particles). Interstitial space is especially important for trout species which spawn over clean substrates that allow for oxygen to reach the eggs and juveniles.

Ongoing actions that are contributing adversely to cumulative impacts on aquatic resources include the run-off and erosion associated with FSR 4110, 4111, and 4071. These roads had several slides and inadequate culverts that were contributing sediments to the Globe aquatic AA—these areas have been repaired and are no longer contributing sediment to area waters.

Hemlock wooly adelgid (HWA) treatments (release of predator beetles and soil injection) have occurred within the Globe AAs under separate NEPA analysis. Hemlocks are an important riparian species, supplying streams with large woody debris, shade (which affects stream temperature), and streambank stability. The treatment of hemlocks within the area would benefit aquatic resources throughout the area and therefore not contribute to adverse cumulative effects within the project area. More information on HWA treatment and expected impacts to NFS lands is available at: http://www.cs.unca.edu/nfsnc/nepa/hwa_ea.pdf.

Activities on adjacent private lands have potential to affect aquatic habitat within watersheds associated with the Globe Project. These include the Snyder Trespass (partially on USFS lands), Little Rocky Knob Watershed Restoration Project, and two proposed sub-divisions (on private lands). The Snyder Trespass and Little Rocky Knob Watershed Restoration will address illegal development and OHV use and associated damage on both USFS and private lands. These projects have the potential to improve water quality and aquatic habitat. There are also proposals for two subdivisions within the analysis area on private lands. There will be expected impacts to aquatic resources from these developments; however, there are no reasonable projections of soil disturbance available at this time.

There could be a minimal amount of sediment entering Frankum Creek during bridge installation, but it would not cause long-term and/or cumulative impacts to the resource. This would add to the existing condition of Frankum Creek, but is not expected to be measurable or to permanently affect aquatic habitat or populations.

3.2 Wildlife

3.2.1 Existing Condition

The wildlife biological analysis area (AA) is the Upper Mulberry and Upper John’s River Forest Plan AAs (about 11,225 total acres). See also Appendix A, BE; Section 3.8 (MIS); Section 3.9 (TES & FC); Appendix G, Roads Analysis (Table G-2, open road density discussion); and the

wildlife resource report, project record. The following tables display forest type and habitat, and age-class information:

Table 3-3: Existing Forest Types within the Globe AA

Species/Forest Type	Acres (CISC)	% of AA
White Pine	373 ac	3%
White Pine - Hemlock	93 ac	1%
Hemlock – Hardwood	33 ac	>1%
White Pine – Cove Hardwood	341ac	3%
White Pine – Upland Hardwood	176ac	2%
Yellow pine – oak	110 ac	1%
Yellow pine (pitch, shortleaf, Table mtn)	270 ac	2%
Cove Hardwood – White Pine – Hemlock	^{2/} 818 ac	7%
Upland Hardwood – White Pine	^{2/} 762 ac	7%
Oak – Yellow Pine (scarlet and chestnut oak)	^{2/} 182 ac	2%
N. Red Oak - Hickory - Yellow Pine	^{1/} 572 ac	5%
Yellow Poplar	427 ac	4%
White Oak – N. Red Oak – Hickory	^{1/} 1,933 ac	17%
Yellow Poplar – White Oak – Red Oak	^{2/} 4,390 ac	39%
Chestnut Oak	^{1/} 445 ac	4%
Chestnut Oak - Scarlet Oak	^{1/} 165 ac	1%
Scarlet Oak	^{1/} 135 ac	1%
Total	11,225	100 %

^{1/}High level hard mast production = 3,250 acres

^{2/}Medium level hard mast production = 6,152 acres

Table 3-4: Age Class Representation

Age Class – Habitat Vegetation Component	Acres (CISC)	% of AA
0-10 age – Early Successional	45 ac	0.4%
11-20 age – Early Successional	464 ac	4%
21-50 age – Mid Successional	306 ac	3%
51-100 age – Mature Forest	9,001 ac	80%
101- 140 age – Old Forest	1,409 ac	13%
Grass/forb habitat	4 ac	0.04%
Total	11,225	100%

The wildlife AA currently provides a diversity of wildlife habitat; however some components are in short supply. For example, early successional habitat (ESH) used by turkey, deer, and grouse, and by black bear for foraging, is limited to 0.4% of the area. Some additional ESH occurs in and around adjacent commercial nurseries but the quality of the herbaceous cover there is often unsuitable for these species. Grass/forb habitat used by deer and turkey is limited to 0.04%.

Soft mast (berries and other fruits) is another habitat component used by many wildlife species. Soft mast production increases with canopy removal, whether from timber harvest, fire, or mortality from events such as southern pine beetle (SPB) infestations. A flush of soft mast may last several years until the regrowing canopy closes and sunlight is no longer available to the forest floor. A 45 acre timber sale in 2000, an SPB infestation that killed about 20 acres of pines on the ridgetops, and 150 acres of prescribed fire in 2005 currently provides soft mast production. Soft mast is also associated with certain tree species such as black gum and dogwood. Some of the adjacent private nurseries have soft-mast-producing species such as

multi-flora rose and dogwood. Project design criteria include a requirement to retain at least 2 black gums at least 12 inches in diameter per ten acres if they are present.

Some wildlife components are in good supply in the AA. These include hard mast producing forest communities (oaks and hickories) and large woody debris.

3.2.2 Effects Analysis

3.2.2.1 Alternative A – Direct, Indirect, and Cumulative Effects on Wildlife Habitat

Under this alternative, the ESH (0-10 years) would remain at about 45 acres, or 0.4% of the wildlife AA; the grass/forb openings would remain at 0.04% percent. The Forest Plan standard for early successional habitat is 5% - 15% in Management Area (MA) 3B and not to exceed 10% in MA 4A (Forest Plan, page III-31). The Forest Plan standard for grass/forb openings is 0.5% in MAs 3 and 4 (Forest Plan, pages III-23). There would be no cumulative effects with this alternative when combined with other activities listed in Table 3-1 above.

3.2.2.2 Alternatives B, C, & D – Direct and Indirect Effects

The following table discloses the forest types and age class distribution by action alternative (refer to Section 3.8.3 below for further discussion of effects to wildlife and habitat):

Table 3-4A: Forest Type and Proposed Effects by Alternative

Species/Forest Type	Acres in AA (CISC)	% of AA	Alternative B (acres harvested & regenerated)	Alternative C (acres harvested & regenerated)	Alternative D (acres harvested & regenerated)
White Pine	373 ac	3%	2		
Cove Hardwood – White Pine – Hemlock	818 ac	7%	40	40	40
Upland Hardwood – White Pine	762 ac	7%	39	42	28
White Oak – N. Red Oak – Hickory	1,933 ac	17%	58	58	58
Yellow Poplar – White Oak – Red Oak	4,390 ac	39%	82	84	74
Chestnut Oak - Scarlet Oak	165 ac	1%	15	18	15
Total	11,225	100 %	236	244	217

Table 3-4B: Age Class Representation and Proposed Changes by Alternative

Age Class – Habitat Vegetation Component	Acres (CISC)	% of AA	Alt B (ac/% chg)	Alt C (ac/% chg)	Alt D (ac/% chg)
0-10 age – Early Successional	45 ac	0.4%	+224/2%	+230/2%	+205/2%
11-20 age – Early Successional	464 ac	4%	n/a	n/a	n/a
21-50 age – Mid Successional	306 ac	3%	n/a	n/a	n/a
51-100 age – Mature Forest	9,001 ac	80%	-236/2%	-245/2%	-217/2%
101- 140 age – Old Forest	1,409 ac	13%	n/a	n/a	n/a
Grass/forb habitat	4 ac	0.04%	^{1/} +12/1%	^{1/} +15/1%	^{1/} +12/1%
Total	11,225	100%	236/>2%	245/>2%	217/<2%

^{1/} includes seeded & closed portion of Thunderhole Road

Creation of ESH and Soft Mast Production

Alternative B creates 236 additional acres; Alternative C creates 244 acres; and Alternative D creates 217 acres.

Creation of Grass/Forb Habitat

Alternative B creates 12 additional acres of grass/forb habitat; Alternative C creates 15 acres; and Alternative D creates 12 acres.

Hard Mast Production

The creation of ESH has the effect of setting back the age of the forest. Each action alternative harvests and regenerates acres of mature forest. In the case of hard mast producing forest communities – those with abundant oaks and hickories – hard mast production would be reduced until the young, regenerating trees again reach mast producing age. Hard mast production would be temporarily reduced on 224 acres in Alternative B; 232 acres in Alternative C; and 217 acres in Alternative D.

Large Woody Debris

There would be a short term increase in down wood on acres harvested: Alternative B- 236 acres; Alternative C – 244; and Alternative D – 217.

3.2.2.3 US Fish and Wildlife Service Bird Species of Concern

The US Fish & Wildlife Service (FWS) has listed bird species of conservation concern within this region (USFW Region5). Two species, the worm-eating warbler and wood thrush, were found during bird surveys to occur within the proposed timber sale boundaries. The wood thrush was recorded within Stand 35-23 & 13-18 while the worm-eating warbler was recorded within Stand 13-18.

The FWS listed the both the wood thrush and worm-eating warbler as not a priority species for conservation need due to high populations recorded within the region. Partners-in-Flight identified these as species to be considered for dropping from the concern list and not of local conservation interest.

Worm-eating Warbler

The Worm-eating warbler is often found in steep areas with a thick rhododendron and laurel shrub layer. The canopy trees they favor are oak, hickory, white pine and hemlock, according to the Audubon Society. There are approximately 8,780 acres of this preferred habitat in the wildlife AA and the species was recorded within a stand of yellow poplar-white oak-red oak forest type. This forest type in particular covers 39% of the AAs. Alternative B would regenerate 194 acres or 2.2% of the warbler's habitat; Alternative C would regenerate 202 acres or 2.3% of the warbler's habitat; while Alternative D would regenerate 175 acres or 1.9% of the warbler's habitat. Therefore, the majority of habitat within these AAs considered important for this species (about 98%) would not be affected by any of the action alternatives.

Wood Thrush

The Wood Thrush is found in moist cove forests where deciduous shrubs and saplings occur. The AAs exhibit 6,009 acres of the preferred forest type for the thrush. Alternative B would regenerate 122 acres or 2% of the thrush's habitat; Alternative C would regenerate 124 acres or 2% of the thrush's habitat; while Alternative D would regenerate 114 acres or 1.8% of the thrush's habitat. Therefore, the majority of habitat within these AAs that is considered important for this species (about 98%) would not be affected by any of the action alternatives.

Recent research by Vitz (2006) found both worm-eating warbler and wood thrush were utilizing the interior of clearcuts from 10-22 acres in size during post-breeding. This research tested several widely held theories regarding the mature forest or forest interior bird guilds that resulted in their conclusion that a mosaic of successional stages holds the greatest promise for this bird guild—even some early successional habitat appears to be beneficial.

3.3 Non-native Invasive Plants

Existing Condition

Surveys for invasive species were conducted (2006) within the activity areas and around roads to the activity areas. Eleven species on the Regional Forester’s invasive non-native plant species are known within the AA (see table below). The invasive plants *Microstegium vinineum*, *Lonicera japonica*, and *Allium vineale* are well established in parts of the AA and control by any currently known method is impractical because of the size of the AA. However, these species were not identified within activity areas and thus are not expected to become established where harvest or temporary road construction occurs.

While *Lespedeza cuneata*, *Lolium arundinaceum*, and *Coronilla varia* may be invasive in Coastal Plain, Piedmont regions and rare natural areas (i.e. serpentine glades), they are not expected to be a concern in this proposal and/or the AA as they are not known to be invasive within natural forested communities within the mountains. The following table displays non-native invasive plant species in the activity areas:

Table 3-5: Non-native Invasive Species Summary

Species	Common Name	Location in Activity Areas	Proposed Treatments
<i>Ailanthus altissima</i>	Tree of heaven	FSRs 188, 4111	Control
<i>Rosa multiflora</i>	Multi-flora rose	FSRs Alluvial Forest along Georges Creek, Franklum Creek, FS roads 188, 4111, 4071	No effective control method known.
<i>Celastrus orbiculatas</i>	Oriental bittersweet	FSRs	Control
<i>Lespedeza cuneata</i>	Sericea	Wildlife Fields, roadsides	This species does not display invasive tendencies. No treatment proposed.
<i>Paulownia tomentosa</i>	Princess tree	FSRs 188, 4111, 4071	Control
<i>Lolium arundinaceum</i>	Tall fescue	Wildlife Fields	This species does not display invasive tendencies. No treatment proposed
<i>Lonicera japonica</i>	Japanese honeysuckle	Alluvial Forest along Georges Creek, Franklum Creek, FS roads 188, 4111, 4071	No effective control method known. No treatment proposed
<i>Microstegium vinineum</i>	Japanese stilt grass	Mostly in Alluvial Forests and coves. Very well established bottoms.	No effective control method known. No treatment proposed
<i>Miscanthus sinensis</i>	Plume grass	FSRs	Control
<i>Allium vineale</i>	Field garlic	Wildlife Fields	This species does not display

Species	Common Name	Location in Activity Areas	Proposed Treatments
			invasive tendencies. No treatment proposed
<i>Coronilla varia</i>	Crown vetch	Found only along system roads	This species does not display invasive tendencies. No treatment proposed

1 –Treatment is for all action alternatives

3.3.1 Alternative A – Direct, Indirect, and Cumulative Effects

Under this alternative no actions are proposed. There would be no potential increase in non-native invasive plant species as a result of ground disturbing actions. However, there would also be no control measures implemented to reduce the continued spread of these species. It is expected that non-native invasive plant species would continue to increase with or without planned activities. There are no other known foreseeable actions in the activity areas that could affect spread or control/management of non-native invasive plants.

3.3.2 Alternatives B, C, and D – Direct and Indirect Effects

The action alternatives all propose ground disturbing actions which could increase the potential for establishment of non-native invasive plants. The following table displays a summary of potential effects to natural communities from non-native invasives based on the action alternatives:

Table 3-6: Non-native Invasive Species Effect Summary by Natural Community

Natural Community	Associated Species	Potential Creation of Invasive Habitat for Alts B, C, & D
Acidic Cove Forest	<i>Celastrus orbiculatas Rosa multiflora,</i>	Up to 64 acres. Of which, 59 acres would be potential habitat 8 years after harvest and 5 acres (new wildlife fields) would be permanent habitat
Rich Cove Forest	<i>Celastrus orbiculatas Rosa multiflora, Celastrus orbiculatas Rosa multiflora, Lespedeza cuneata, Paulownia tomentosa, Lonicera japonica, Microstegium vinineum, Miscanthus sinensis, Paulownia tomentosa,</i>	None. The proposal does not affect this community
Pine Oak Heath/ Chestnut Oak Forest	<i>Paulownia tomentosa, Ailanthus altissima</i>	Up to 167 acres. Of which, 157 acres would be potential habitat 8 years after harvest and 10 acres (wildlife fields) would be permanent habitat
Montane Oak Hickory	<i>Ailanthus altissima, Celastrus orbiculatas Rosa multiflora, Lespedeza cuneata, Paulownia tomentosa, Lonicera japonica, Microstegium vinineum,</i>	None. The proposal does not affect this community

Natural Community	Associated Species	Potential Creation of Invasive Habitat for Alts B, C, & D
	<i>Miscanthus sinensis</i> , <i>Paulownia tomentosa</i> ,	
Alluvial Forest	<i>Celastrus orbiculatas</i> <i>Rosa multiflora</i> , <i>Lespedeza cuneata</i> , <i>Paulownia tomentosa</i> , <i>Lonicera japonica</i> , <i>Microstegium vinineum</i> , <i>Miscanthus sinensis</i> , <i>Paulownia tomentosa</i> , <i>Ailanthus altissima</i>	None. The proposal does not affect this community
Water Fall Spray Zones & wet rocks	none	None. The proposal does not affect this community

The other way in which non-native plants may persist in the area is by continual disturbance. For example, a maintained road shoulder or wildlife field often has persistent weedy and non-native plant species. These areas are often maintained in an early successional state for wildlife or human benefit. Therefore, it is expected that this proposal could slightly increase the persistence of non-native vegetation in the analysis area. To reduce this affect, native plants would be utilized in wildlife improvement and roadside erosion control plantings; as well as controlling/managing non-native plants with herbicides. It is recognized that erosion control and wildlife food production are the primary goals of seeding areas and some non-native plant species may be highly beneficial to accomplish these goals. However, a presidential executive order [Executive Order 11987, Title 3- The President] recognizes the need to reduce the impact of non-native species by reducing the amount in which non-native plant species are planted on federal property. All the goals of erosion control, wildlife food production and encouragement of native plant species may be met by planting native plant species or a suitable mixture of native and non-persistent non-native plant species.

3.3.3 Alternatives B, C, and D – Cumulative Effects

The cumulative effect Alternatives B, C, and D would have on non-native invasive plants can be ascertained by comparison to Forest-wide condition and trend of non-native invasive plants. Suitable habitat for most non-native invasive plant species can be defined as areas with ground disturbing activities such as road construction, recent timber regeneration (0-10 years) areas, and wildlife field construction (MIS Report, pages 784-785). Therefore, the proposal would generate non-native invasive suitable habitat as follows: Alternative B – 231 acres of regeneration, 2.3 miles of temporary/existing woods roads, and 12 acres of permanent grass/forb habitat; Alternative C – 231 acres of regeneration, 2.3 miles of temporary/existing woods roads, and 15 acres of permanent grass/forb habitat; and Alternative D, 212 acres of regeneration, 2.3 miles of temporary/existing woods roads, and 12 acres of permanent grass/forb habitat. Forest-wide suitable habitat for non-native invasive plants is 2,684 miles of road and 22,874 acres in 0-10 age class across the Forest (MIS Report, pages 781-784). Thus, the cumulative effect or increase of non-native invasive habitat would be <1% for all action alternatives due to project design.

3.4 Herbicides

3.4.1 Alternative A – Direct, Indirect, and Cumulative Effects

Under this alternative, there would be no adverse direct, indirect, or cumulative effects to wildlife, water quality, and humans as related to herbicide use as none would be applied. The existing condition would remain the same; invasive and non-native invasive plant species would likely continue to spread in the AAs. Herbicide use within the landscaping shrub/tree business would continue in the AAs. There are no other known foreseeable actions in the activity areas that could affect resources in the AAs due to herbicide use.

3.4.2 Alternatives B, C, & D – Direct, Indirect, and Cumulative Effects

The following table displays expected maximum acreages of herbicide treatment (Glyphosate and Triclopyr) that may occur:

Table 3-7: Maximum Acres of Pesticides Applied Manually by Alternative¹

Herbicide	Alternative A	Alternative B	Alternative C	Alternative D
Triclopyr/Glyphosate (ac) ²	0	253	265	234

1 – Not all acreage is treated, i.e. buffers along streams and “non-target” species would not be treated. Herbicides are applied manually and would not be applied aerially (see also Appendix F). Herbicides are primarily applied to stems during release and to foliage on non-native invasives.

2 – Acres include treatment for site preparation, non-native invasive species, daylighting, and wildlife fields

Use of herbicides is not expected to have measurable adverse effects on wildlife, water quality, and humans due to proper application as per Material Safety Data Sheets (MSDSs); product labels; risk assessments; fact sheets; mitigation measures contained in the *Vegetation Management in the Appalachian Mountains* (VMAM) FEIS, issued in July 1989; design features disclosed in Appendix F; and standards and guidelines from the Forest Plan including *Requirements For Vegetation Management In The Appalachian Mountains* listed in Appendix I of the Forest Plan (pages I-10 – I-14). If used improperly, herbicides pose some risk to wildlife, water quality, and humans; however, any herbicides applied would be done according to the labeling information, at the lowest rate effective at meeting project objectives in accordance with guidelines for protecting the environment, and manually (not aerially). This risk is further reduced by requiring the applicator to be trained in safety precautions, proper use, and handling of herbicides. Other factors reducing risk are the low level of active ingredient per acre and placement of notice signs in areas where herbicides have been applied. The signs include information on the herbicide used, when it was applied, and who to contact for additional information.

Herbicide with the active ingredients Glyphosate and Triclopyr are not considered soil active (mobile). In addition, with the provision of riparian buffer strips on stream zones, the risk of herbicide spills or movement into stream zones is further reduced. Due to project design, effects of the treatment would be limited to individual trees/plants and the immediate area near them and is not expected to adversely affect private residences downstream. All applicable mitigation measures contained in the VMAM FEIS and Forest Plan standards and guidelines would be followed. A complete discussion of the effects of herbicides is contained in the VMAM FEIS, to which this analysis tiers to. Current pesticide information for Glyphosate and Triclopyr may be found at: <http://www.fs.fed.us/foresthealth/pesticide/risk.shtml>

Impacts of herbicide use to wildlife, water quality, and humans are expected to be low due to proper handling and application. The use of herbicides would have no measurable impact on water quality because according to the VMAM FEIS: *No herbicide is aerially applied within 200 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, or perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations. Buffers are clearly marked before treatment so applicators can easily see and avoid them* (Veg. Mgt. FEIS, page II-67). There would be no adverse effects (direct, indirect, or cumulative) of the usage of herbicides associated with the action alternatives if no spills occur within riparian areas—no herbicide would be applied within at least 30 feet of riparian areas. According to the Veg. Mgt. FEIS: *The greatest hazards to surface and ground water quality arise from a possible accident or mishandling of concentrates during transportation, storage, mixing, and loading, equipment cleaning, and container disposal phases of the herbicide use cycle.* Herbicides would be mixed at the pesticide storage building at the Grandfather Ranger District Work Center and not in the field, and applicators do not carry concentrated amounts of herbicide in the field. There are no other known foreseeable applications of herbicides on NFS lands in the Globe area that could affect herbicide use with this proposal—the last measurable herbicide use on NFS lands in the Globe area was about 10-15 years ago in Compartments 11, 12, 13, 14, 35, and 39. The Forest Service is unaware of any large-scale quantities of herbicide being applied on adjacent non-NFS lands within the watershed that could cause adverse cumulative effects. Individual home owners are expected to use herbicides on their properties; however, determining measurable amounts, formulations, locations, frequency, and timing of their use would be speculative. Additional project design features are listed in Appendix F below.

3.5 Soil Resources

The following is an analysis of the soils that would be impacted by logging or temporary road construction activities in the activity areas. The following table lists the soil map units found by stand number:

Table 3-8: Primary Soil Map Units by Stand by Alternative

Primary Soil Map Unit Name (Series)	Stands ¹	Avg. Slope Percent ²	Alternative A (acres)	Alternatives B & C (acres) ³	Alternative D (acres) ³
Chestnut Gravelly Loam (F)	14-9, 13-18, 13-10; 14-1a; 14-1b; 12-5 & 12-12; 35-11; 35-1, 35-11, & 35-23; 37-9; 37-5a; 37-5b; and 33-11	50-80	0	117	98
Chestnut & Edneyville (D&E)	13-11, 13-21, & 14-12; 13-7 & 13-19; 12-5 & 12-12; 35-1, 35-11, & 35-23; 37-9; 38-7; 38-10;	15-50	0	87	87

Primary Soil Map Unit Name (Series)	Stands ¹	Avg. Slope Percent ²	Alternative A (acres)	Alternatives B & C (acres) ³	Alternative D (acres) ³
	39-4 & 39-13; 39-15; and 33-11				
Evard & Saluda (D&E)	14-9; and 13-11, 13-21, & 14-12	15-50	0	27	27
Total Acres			0	231	212

1 – Portions of soil map units make up each stand. 149 acres would be harvested by cable logging systems (stands 13-11, 13-21, & 14-12; 14-1a; 14-1b; 12-5 & 12-12; 35-1, 35-11, & 35-23; 37-9; 38-10; 39-15; and 33-11). The remaining 82 acres would be harvested by tractor logging systems.

2 – Average slope percent ranges are for soil map units from NRCS data and are not necessarily the average slope within the stand (A = 0% - 2%, B = 2% - 8%, C = 8% - 15%, D = 15% - 30%, E = 30% - 50%, and F = 50% - 95%)

3 – Requires 1.5 miles of temporary road construction in Alternatives B, C, and D to access stands 13-18, 14-9, (14-12, 13-11, 13-21), 33-11, 35-11, (35-11, 35-23, 35-1), 37-5a, 37-5b, 37-9, 38-7, (39-4, 39-13), and 14-1. Existing unclassified roads (0.8 miles) would be used to access stands (13-7, 13-19), and (14-12, 13-11, 13-21). (Existing unclassified roads were previously used for timber harvest and would require minimal clearing and shaping for current use.)

The following table displays characteristics of each soil map unit:

Table 3-9: Comparison of Soil Map Units

Map Unit Name	Characteristics
Chestnut	The Chestnut series consists of moderately deep, well drained soils on gently sloping to very steep ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum that is affected by soil creep in the upper part, and weathered from felsic or mafic igneous or high-grade metamorphic rocks such as granite, hornblende gneiss, granodiorite, biotite gneiss, and high-grade metagraywacke. Well drained; moderately rapid permeability. Runoff class is low on gentle slopes, medium on strong or moderately steep slopes, and high on steeper slopes. Runoff is much lower where forest cover is intact. Most of the soil is in forest. Common trees are scarlet oak, chestnut oak, white oak, black oak, hickory, eastern white pine, Virginia pine, and pitch pine. Yellow poplar and northern red oak are common in the northern portions of MLRA 130. The understory species are dominantly rhododendron, mountain laurel, flowering dogwood, sourwood, chestnut sprouts, and buffalo nut.
Edneyville	The Edneyville series consists of very deep, well drained soils on gently sloping to very steep ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum that is affected by soil creep in the upper part, and is weathered from felsic or mafic igneous or high-grade metamorphic rocks such as granite, hornblende gneiss, granodiorite, biotite gneiss, and high-grade metagraywacke. Well drained, permeability is moderate in the subsoil and moderately rapid in the underlying material. Runoff class is low on gentle slopes, medium on strong or moderately steep slopes, and high on steeper slopes. Runoff is much lower where forest litter has little or no disturbance. Forested to oak, hickory, and pine. Understory of native grasses, wild grape, rhododendron, mountain laurel, and dogwood.
Evard	The Evard series consists of very deep, well drained, moderately permeable soils on ridges and side slopes of the Blue Ridge (MLRA 130). They formed in residuum affected by soil creep in the upper part and weathered from felsic to mafic, igneous and high-grade metamorphic rocks. Well drained; permeability is moderate in the subsoil and moderately rapid in the underlying material. Runoff class is low on gentle slopes, medium on strong or moderately steep slopes, and high on steeper slopes. Runoff is much lower where forest litter has little or no disturbance. Most of the soil is in forest. Common trees are chestnut oak, white oak, scarlet oak, black oak, and hickory with some eastern white pine, Virginia pine, pitch pine, and shortleaf pine. The understory includes flowering dogwood, American chestnut sprouts, sourwood, mountain laurel, flame azalea, blueberry, and buffalo nut. Cleared areas are

Map Unit Name	Characteristics
	commonly used for pasture and hayland and occasionally burley tobacco.
Saluda	The Saluda series consists of shallow, well drained, moderately permeable soils that formed in weathered granite, gneiss, or schist. Well drained; rapid surface runoff; moderate permeability. Most areas are in forest of oaks, hickory, white pine, hemlock, and yellow poplar with an understory of rhododendron, laurel, and dogwood.

3.5.1 Alternative A – Direct, Indirect, and Cumulative Effects

There would be no adverse effects to soils with this alternative because no activities are proposed.

3.5.2 Alternatives B, C, & D – Direct, Indirect, and Cumulative Effects

3.5.2.1 Direct and Indirect Effects

Any effects to soils with these alternatives would be negligible because the majority of the soil types where harvesting is proposed (88%) are moderately to very deep and well drained (reducing potential for compaction); would not be taken out of production through permanent road construction; and would have project design features (Section 2.4, Chapter 2) and Forest Plan standards (BMPs) applied to further reduce potential for compaction and long-term damage. The remaining 12% of the harvesting is proposed on soil map series that are shallow and well drained. There would be some minor, short-term erosion with the construction of 1.5 miles of temporary road and the improvement of 0.8 miles of unauthorized roads. However, the effects would be short-term and limited in their extent when applied to the total area of operation—the temporary roads would be disked and seeded following harvest activities. Alternatives B and C propose to harvest 149 acres with cable logging systems (partial suspension of logs) and 82 acres of harvest with ground based logging equipment (skidders or caterpillars); only about 2% of the two AAs. Alternative D proposes to harvest 130 acres with cable logging systems and 82 acres of harvest with ground based logging equipment. Cable logging systems afford higher protection to soils than ground based systems, but adverse effects to soils are not expected to occur for the reasons stated above. Alternative D would have fewer potential impacts to soils than Alternatives B or C because it proposes 19 fewer acres of harvest.

3.5.2.2 Cumulative Effects

Actions listed in Table 3-1 above are not expected to cause adverse cumulative effects to soils because the proposal was developed to meet Forest Plan standards (BMPs), reducing potential for adverse effects. In addition, onsite reviews and evaluations have not identified large-scale or severe adverse effects to soil resources in the AAs—specific areas that have experienced small-scale erosion due to past management or the 2004 tropical storms are proposed to be addressed with this proposal or are being addressed under separate storm-related recovery projects. There are no other known projects in the Globe AAs that could cause adverse cumulative effects on soil resources when combined with potential effects of the Globe proposal.

3.6 Cultural Resources

3.6.1 Alternative A – Direct, Indirect, and Cumulative Effects

There are no expected adverse direct, indirect, or cumulative effects to cultural resources with this alternative because no ground disturbing activities are proposed.

3.6.2 Alternatives B, C, & D – Direct, Indirect, and Cumulative Effects

A total of fourteen archeological sites (31CW374-31CW387) were recorded during survey for the proposal. One site (31CW384) remains unevaluated and will be avoided by ground disturbing activities. Thirteen sites (31CW374-383, 31CW385-387) are rated Class III and are not considered potentially eligible for inclusion in the National Register of Historic Places (NRHP). However, site 31CW377 is a historic cemetery and must be avoided by ground disturbing activities. Previously recorded unevaluated sites 31CW72, 31CW79, 31CW113, and 31CW372 are located outside of proposed cutting areas and will not be impacted by the proposal. See also response to Comment B above.

3.7 Scenery Resources

3.7.1 Existing Condition

The Globe proposal is located on the Pisgah National Forest, Grandfather Ranger District, west of US 321 between Lenoir and Blowing Rock, NC. Areas along US 321 and in Blowing Rock are intensely developed urban landscapes. Areas seen from secondary State roads, Forest Service roads in Pisgah National Forest, and interspersed private lands are rural or forested landscapes.

The characteristic landscape in the Frankum Creek area is that of a mixed hardwood-conifer forest, with interspersed rural residential and light agricultural development on private lands, and evidence of past timber management on NFS lands. Most of the Frankum Creek area is only accessible from a closed Forest Service road which receives some incidental use from mountain bikers, horseback riders, and hunters.

The Thunderhole Creek area is visible from State roads, an open Forest Service road, businesses, and residential developments in and around Blowing Rock, NC. National Forest System (NFS) lands in the viewshed show evidence of past timber management which pre-dates the current Forest Plan (1994). However, existing clear-cuts are 13-15 years old and have regenerated to a point where they have a predominately natural-appearing canopy cover, with color and texture similar to the adjacent forest. In Middleground views, these old harvests are primarily identified by a faint shadow-line at the upper unit boundary. Private lands in the viewshed are highly modified with dense residential development on steep slopes and ridge-tops; these structures and associated road systems dominate the landscape from many viewpoints, and contrast greatly with the surrounding forested landscapes.

Scenic attractions of local and national importance are in the surrounding area. The Blue Ridge Parkway passes to the west and north of the project area on its way through Blowing Rock; but offers no views of the project area. Grandfather Mountain is located eight miles to the west, though no evidence of proposed activities would be visible from there either. The “Blowing Rock”, a privately owned scenic observation area, is one mile east of the project area and does offer views of proposed activities in the Thunderhole Creek drainage.

3.7.2 Scenery Analysis

Management areas (MA) in the Analysis Areas include 3B, 4A, 4C, & 18. All proposed activities are located within MA 3B and MA 4A.

Management Area 3B has an assigned Visual Quality Objective (VQO) of Modification in all Distance Zones and Sensitivity Levels; except areas seen from the Blue Ridge Parkway, where a Partial Retention VQO must be met in Foreground and Middleground. Management Area 4A has an assigned VQO of Retention in Foreground Sensitivity Level 1, and Partial Retention in all other Sensitivity Levels and Distance Zones.

To meet Partial Retention VQO, activities must repeat form, line, color, and texture of the surrounding landscape to such an extent that activities are perceived as a visually subordinate feature in the characteristic landscape. Partial Retention VQO must be met within two growing seasons. Under Modification VQO, activities may be dominant, but must borrow elements of form, line, color, and texture so it appears as a natural occurrence within the characteristic landscape. Modification VQO must be met within three growing seasons.

Foreground Distance Zone is the area visible within ½ mile, Middleground is seen between ½ and 5 miles, Background extends from 5 miles to the horizon.

Sensitivity Level 1 areas are primary travel routes, water bodies, and use areas where at least 1/4 of users have a major concern for scenic quality, or they are areas of National or Regional significance such as a scenic byway. Sensitivity Level 2 or 3 areas are primary or secondary routes, water bodies, or use areas where less than 1/4 of users have a major concern for scenic quality; these would include secondary state roads or NFS roads.

Secondary State roads, Forest Service roads, and Forest Service trails in the project area are classified as Sensitivity Level 2 or 3. Major highways and other primary viewing areas in Blowing Rock are Sensitivity Level 1; as are the Blue Ridge Parkway, Grandfather Mountain, and The “Blowing Rock” observation area. Views from private roads and residences are not analyzed as potential viewpoints, but state roads in residential areas are considered.

Based on Sensitivity Levels and viewing distances, the assigned VQO for the Frankum Creek area is Modification, while the Thunderhole Creek area is managed for Partial Retention. Under the current Forest Plan, NFS lands seen from Blowing Rock are managed for the same level of scenic quality as lands seen from the Blue Ridge Parkway, Grandfather Mountain, the Appalachian Trail, Roan Mountain, and other such scenic areas.

Computer analysis and leaf-off field surveys were used to identify viewpoints and determine visibility of proposed management activities. All travel corridors, water bodies and use areas in and around the project area were considered for potential viewpoints. Some of these locations were found to have views of the project area, and were subject to detailed analysis using digital imagery, GIS and/or 3D computer simulations. Other viewpoints were considered, but preliminary analysis determined no proposed activities would be visible from these locations; Grandfather Mountain and the Blue Ridge Parkway fall into this category.

Some of the views would be seen as the observer is moving (in a vehicle, walking, horseback, bicycle, etc.), others are from stationary vistas. Views may be partially filtered or screened by foreground vegetation, others are open and unobstructed. The degree of potential impact varies with these and several other factors, such as distance from viewer and viewer position; as well as the slope, size, shape, and type of proposed harvest, road, log landing, etc. All of these factors are considered when determining what activities would meet assigned VQO's, and what scenery

design features should be incorporated. The following list identifies viewpoint locations considered in the analysis.

Initial leaf-off field surveys were done in March of 2006; additional surveys were conducted in June 2007 to determine accuracy of computer simulations, and to obtain leaf-on photographs for use in a photo-simulation of “The Blowing Rock” view. Photo-simulations provide viewers a more understandable simulation, and show actual impacts of existing modifications in the surrounding landscape. The photo-simulation of Alternative D, Viewpoint 2 is included as Figure 3-15.

In early spring and summer of 2007, examples of existing two-age timber harvest in various stages of regeneration were photographed at distances similar to viewpoints analyzed in the Globe Project. The resulting photo essay of scenery impact monitoring was used in a comparative analysis with currently proposed activities, and is available on request.

3.7.2.1 Viewpoints

- 1 - US Highway 321 from SR 1370 to town of Blowing Rock (Simulation VP1)
- 2 - The “Blowing Rock” observation area (Simulation VP2)
- 3 - Canyons Restaurant (Simulation VP3)
- 4 - Laurel Park, town of Blowing Rock (Simulation VP4)
- 5 - Mayview Park, town of Blowing Rock (Simulation VP5)
- 6 - Globe Road (SR 1367) and Thunderhole Road (FSR 4071)
- 7 - China Creek Trail (FSTR 250) and Thunderhole Falls Trail (FSTR 253)
- 8 - State Road (SR) 1368, FSTR 251, FSR 188 & FSR 4111 in the Mulberry area

3.7.2.2 Other Viewpoints Considered (no proposed activities visible):

- Blue Ridge Parkway (from Grandmother Mt. to Blowing Rock)
- Grandfather Mountain
- SR 1369 & SR 1370
- NC Highway 90
- Johns River
- Little Parkway Scenic Byway (US 221)

3.7.3 Effects by Alternative

3.7.3.1 General Discussion Relative to All Action Alternatives - Direct & Indirect Effects

Proposed timber management activities utilize two-age harvest techniques. When viewed in the Middleground, two-age timber harvest areas may appear to be more sparsely vegetated or have fewer trees than adjacent un-cut stands, but do not create a distinct opening as with clear-cut harvests used in the past. (Clear-cut timber harvest methods often resulted in large openings with hard shadow lines along the edge; they were/are noticeable because of contrasts in vegetation height, form, line, color, and texture. In a Southern Appalachian hardwood forest, clear-cut harvests remain noticeable to the average viewer for about 10-15 years after harvest. However, no clear-cut treatments are proposed in this project.)

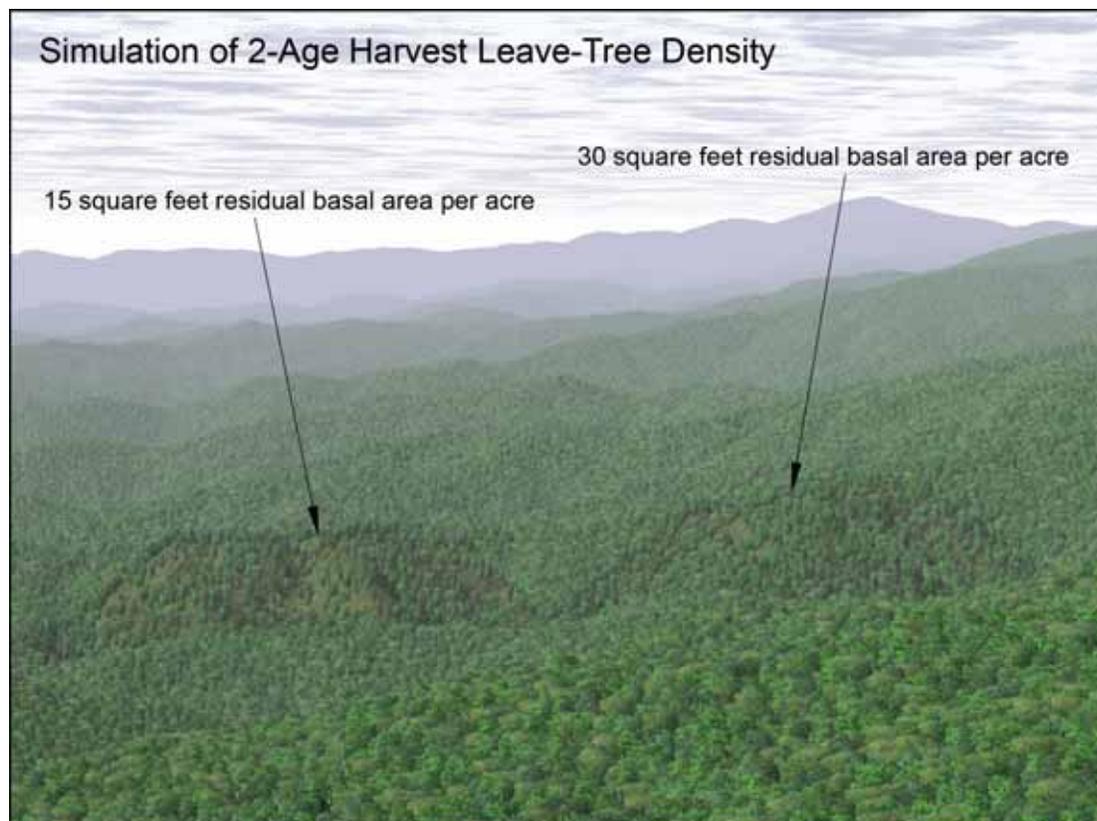
The higher leave-tree density of a two-age harvest method reduces textural and color contrasts between treated areas and adjacent forest, while edge-feathering eliminates shadow-lines along

unit boundaries. In leaf-on-season, Middleground views of two-age treatments may allow varying degrees of visible ground beneath the remaining overstory trees, and in certain lighting conditions shadows beneath residual trees may make the stand appear darker and have a more coarse texture than the adjacent forest. Within 2-3 growing seasons, crowns of residual overstory trees expand to create a denser canopy, and understory vegetation grows to obscure views of ground exposed during harvest. In leaf-off season, two-age treatment areas are almost indistinguishable from adjacent un-cut stands; however roads, log landings, and logging debris may be more noticeable.

Along specific boundaries of two-age treatment areas, leave-tree density is transitioned (or feathered) from the desired density to adjacent un-cut stands. This technique eliminates a hard shadow-line along upper unit boundaries, and helps blend treatment areas into the adjacent forest canopy.

These and other design features effectively soften visual impacts of timber harvest, and allow assigned VQO's to be met. To the average viewer, a two-age treatment with 15-20 square feet of residual basal area per acre (sq ft rba/ac) may be noticeable for 6-8 years after harvest; while a 30+ sq ft rba/ac treatment may only be noticeable for 3-5 years. Figure 3-1 displays a simulation of a two-age treatment with 15 sq ft rba/ac and a two-age treatment with 30 sq ft rba/ac.; these are hypothetical examples used to demonstrate effects of varying leave-tree density. (Simulations of Globe Project proposed treatments are shown in Figures 3-3 to 3-12, and photo examples of two-age treatments from the Stateline Project in Madison County are shown in Figures 3-13, and 3-14.).

Figure 3-1: Simulation of 2-age Harvest Leave-Tree Density



In addition to increased leave-tree densities and edge feathering, other scenery design features used in these proposals are to retain un-cut areas between roads and treatments; maintain screening vegetation below visible log landings and roads; burn or spread accumulated logging debris; and re-grade & plant visible portions of temporary roads to original contour.

For all action alternatives, the following tables identify stand number, associated treatment type, Management Area, assigned VQO, visibility from analyzed viewpoints, and project design features utilized for each treatment area. As indicated in the “Seen From VP” column, multiple treatment areas may be visible from certain viewpoints; this “cumulative effect” is taken into consideration when determining necessary design features. Proposed wildlife treatments and non-commercial silvicultural treatments are not listed in the tables. These activities, such as wildlife openings, food plots, and daylighting roads would create minimal impacts to scenic resources, and would meet assigned VQO’s as proposed.

Implementation of specified scenery design features will reduce contrasts with the surrounding forest, and soften visual impacts to the degree where effects are acceptable within the definition of the assigned Visual Quality Objectives for all actions proposed in Alternatives B, C, & D.

3.7.3.2 Alternative A (No Action) – Direct & Indirect Effects

No effects to scenery, all VQO’s would be met.

3.7.3.3 Alternative B (Proposed Action) – Direct & Indirect Effects

This alternative proposes eighteen (18) two-age harvest units with 15-20 sq ft rba/ac, and a variety of wildlife and other non-commercial treatments.

All commercially harvested units would be tractor or skyline logged. Approximately 1.5 miles of temporary road would be constructed, and 0.8 miles of unauthorized roads would be accessed, disked, and seeded. Design features utilized to meet assigned VQO’s for these roads are listed in the table below.

This alternative also proposes to daylight approximately 5 acres along Frankum Creek Road (FSR 188) by harvesting certain canopy trees within 15 feet on each side of road. Daylighting will have no effect on scenery; all assigned VQO’s associated with these activity areas would be met.

With implementation of specified design features, effects of all proposed treatments will meet assigned Visual Quality Objectives for the Management Areas; even where multiple treatment areas are visible. Where two-age treatments are visible, the tree canopy would appear thinner than the surrounding forest for a short period of time (about one growing season).

Table 3.10: Alternatives B Scenery Analysis

Stand	Treatment	Harvest Method	MA	VQO	Seen From VP	Scenery Design Features
12-5/12-12	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
13-7/13-19	Two-age (15-20 rba/ac)	Tractor	3B	M	8	None needed
13-10	Two-age (15-20 rba/ac)	Tractor	3B	M	1, 8	None needed
13-18	Two-age (15-20 rba/ac)	Tractor	3B	M	8	None needed
13-11/13-21/14-12	Two-age (15-20 rba/ac)	Cable	3B	M	1, 8	3
14-1a	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
14-1b	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
14-9	Two-age (15-20 rba/ac)	Tractor	3B	M	8	9, 10

Stand	Treatment	Harvest Method	MA	VQO	Seen From VP	Scenery Design Features
33-11	Two-age (15-20 rba/ac)	Cable	4A	PR	2-7	2, 3, 5, 6, 7, 11
35-11	Two-age (15-20 rba/ac)	Cable	4A	PR	6	1, 7, 8, 12
35-1/35-23	Two-age (15-20 rba/ac)	Cable	4A	PR	2, 3, 6	1, 2, 7, 12
37-5a	Two-age (15-20 rba/ac)	Tractor	4A	PR	6	4, 7, 8, 13
37-5b	Two-age (15-20 rba/ac)	Tractor	4A	PR	6	1, 7, 8, 12
37-9	Two-age (15-20 rba/ac)	Tractor	4A	PR	2, 3, 6	1, 5, 7, 8, 12
38-7	Two-age (15-20 rba/ac)	Cable/Tractor	4A	PR	6, 7	4, 7, 8, 13
38-10	Two-age (15-20 rba/ac)	Tractor	4A	PR	5, 6	None needed
39-4/39-13	Two-age (15-20 rba/ac)	Cable	4A	PR	2, 5-7	5, 6, 7, 8
39-15	Two-age (15-20 rba/ac)	Tractor	4A	PR	2-7	5, 7, 8

1. Maintain an un-cut 100 foot buffer from edge of state road.
2. Maintain average 30 sq ft rba/ac minimum in harvest area.
3. Locate unit boundary one tree height below ridge.
4. Burn or lop & scatter slash to within 2 feet of ground for 100 feet beyond edge of road or trail.
5. Feather upper unit boundary over a 100 foot distance.
6. Maintain uncut vegetative screen at least one tree height below road.
7. Screen log landings from view, and restore as close to original contour as practical.
8. Maintain average 25 sq ft rba/ac minimum in harvest area.
9. Openings along road not to exceed 500 linear feet.
10. Burn or lop & scatter slash to within 4 feet of ground for 50 feet beyond edge of road.
11. To extent practical, burn or lop & scatter slash to within 4 feet of ground for 150 feet below cable landings or utilize for firewood gathering.
12. For 50 feet beyond state road, restore temporary roads and bladed skid trails to original contour, and plant native shrubs at entrance to mask disturbance.
13. Transition harvest density (feather) in 100 foot buffer from edge of FS road.

3.7.3.4 Alternative C – Direct & Indirect Effects

This alternative proposes eighteen (18) two-age harvest units with an average of 15-20 sq ft rba/ac, and a variety of wildlife and other non-commercial treatments.

All commercially harvested units would be tractor or skyline logged. Approximately 1.5 miles of temporary road would be constructed, and 0.8 miles of unauthorized roads would be accessed, disked, and seeded. Design features utilized to meet assigned VQO's for these roads are listed in the table below.

This alternative also proposes to daylight approximately 5 acres along Frankum Creek Road (FSR 188), and 9 acres along Thunderhole Road (FSR 4071) by harvesting certain canopy trees within 15 feet on each side of road. Daylighting will have no effect on scenery; all assigned VQO's associated with these activity areas would be met.

With implementation of specified design features, effects of all proposed treatments will meet assigned Visual Quality Objectives for the Management Areas; even where multiple treatment areas are visible. Where two-age treatments are visible, the tree canopy would appear thinner than the surrounding forest for a short period of time (about one growing season).

Table 3.11: Alternatives C Scenery Analysis

Stand	Treatment	Harvest Method	MA	VQO	Seen From VP	Scenery Design Features
12-5/12-12	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
13-7/13-19	Two-age (15-20 rba/ac)	Tractor	3B	M	8	None needed
13-10	Two-age (15-20 rba/ac)	Tractor	3B	M	1, 8	None needed

Stand	Treatment	Harvest Method	MA	VQO	Seen From VP	Scenery Design Features
13-18	Two-age (15-20 rba/ac)	Tractor	3B	M	8	None needed
13-11/13-21/14-12	Two-age (15-20 rba/ac)	Cable	3B	M	1, 8	3
14-1a	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
14-1b	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
14-9	Two-age (15-20 rba/ac)	Tractor	3B	M	8	9, 10
33-11	Two-age (15-20 rba/ac)	Cable	4A	PR	2-7	2, 3, 5, 6, 7, 11
35-11	Two-age (15-20 rba/ac)	Cable	4A	PR	6	1, 7, 8, 12
35-1/35-23	Two-age (15-20 rba/ac)	Cable	4A	PR	2, 3, 6	1, 2, 7, 12
37-5a	Two-age (15-20 rba/ac)	Tractor	4A	PR	6	4, 7, 8, 13
37-5b	Two-age (15-20 rba/ac)	Tractor	4A	PR	6	1, 7, 8, 12
37-9	Two-age (15-20 rba/ac)	Tractor	4A	PR	2, 3, 6	1, 5, 7, 8, 12
38-7	Two-age (15-20 rba/ac)	Cable/Tractor	4A	PR	6, 7	4, 7, 8, 13
38-10	Two-age (15-20 rba/ac)	Tractor	4A	PR	5, 6	None needed
39-4/39-13	Two-age (15-20 rba/ac)	Cable	4A	PR	2, 5-7	5, 6, 7, 8
39-15	Two-age (15-20 rba/ac)	Tractor	4A	PR	2-7	5, 7, 8

1. Maintain an un-cut 100 foot buffer from edge of state road.
2. Maintain average 30 sq ft rba/ac minimum in harvest area.
3. Locate unit boundary one tree height below ridge.
4. Burn or lop & scatter slash to within 2 feet of ground for 100 feet beyond edge of road or trail.
5. Feather upper unit boundary over a 100 foot distance.
6. Maintain uncut vegetative screen at least one tree height below road.
7. Screen log landings from view, and restore as close to original contour as practical.
8. Maintain average 25 sq ft rba/ac minimum in harvest area.
9. Openings along road not to exceed 500 linear feet.
10. Burn or lop & scatter slash to within 4 feet of ground for 50 feet beyond edge of road.
11. To extent practical, burn or lop & scatter slash to within 4 feet of ground for 150 feet below cable landings or utilize for firewood gathering.
12. For 50 feet beyond state road, restore temporary roads and bladed skid trails to original contour, and plant native shrubs at entrance to mask disturbance.
13. Transition harvest density (feather) in 100 foot buffer from edge of FS road.

3.7.3.5 Alternative D – Direct & Indirect Effects

This alternative proposes eight (8) two-age harvest units with an average of 15-20 sq ft rba/ac in the Frankum Creek area, nine (9) two-age harvest units with an average of 30 sq ft rba/ac minimum in the Thunderhole Creek area, and a variety of wildlife and other non-commercial treatments throughout the project area.

All commercially harvested units would be tractor or skyline logged. Approximately 1.5 miles of temporary road would be constructed, and 0.8 miles of unauthorized roads would be accessed, disked, and seeded. Design features utilized to meet assigned VQO's for these roads are listed in the table below.

This alternative also proposes to daylight approximately 5 acres along Frankum Creek Road (FSR 188) by harvesting certain canopy trees within 15 feet on each side of road. Daylighting will have no effect on scenery; all assigned VQO's associated with these activity areas would be met.

With implementation of specified design features, effects of all proposed treatments will meet assigned Visual Quality Objectives for the Management Areas; even where multiple treatment areas are visible. Where two-age treatments are visible, the tree canopy would appear thinner than the surrounding forest for a short period of time (about one growing season). These effects

would be less noticeable than in Alternatives B or C due to a higher RBA and fewer acres harvested.

Table 3.12: Alternative D Scenery Analysis

Stand	Treatment	Harvest Method	MA	VQO	Seen From VP	Scenery Design Features
12-5/12-12	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
13-7/13-19	Two-age (15-20 rba/ac)	Tractor	3B	M	8	None needed
13-10	Two-age (15-20 rba/ac)	Tractor	3B	M	1, 8	None needed
13-18	Two-age (15-20 rba/ac)	Tractor	3B	M	8	None needed
13-11/13-21/14-12	Two-age (15-20 rba/ac)	Cable	3B	M	1, 8	3
14-1a	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
14-1b	Two-age (15-20 rba/ac)	Cable	3B	M	8	None needed
14-9	Two-age (15-20 rba/ac)	Tractor	3B	M	8	9, 10
33-11	Two-age (30+ rba/ac)	Cable	4A	PR	2-7	2, 3, 5, 6, 7, 11
35-1/35-23	Two-age (30+ rba/ac)	Cable	4A	PR	2, 3, 6	1, 2, 7, 12
37-5a	Two-age (30+ rba/ac)	Tractor	4A	PR	6	2, 4, 7, 13
37-5b	Two-age (30+ rba/ac)	Tractor	4A	PR	6	1, 2, 7, 12
37-9	Two-age (30+ rba/ac)	Tractor	4A	PR	2, 3, 6	1, 2, 5, 7, 12
38-7	Two-age (30+ rba/ac)	Cable/Tractor	4A	PR	6, 7	2, 4, 7, 13
38-10	Two-age (30+ rba/ac)	Tractor	4A	PR	5, 6	None needed
39-4/39-13	Two-age (30+ rba/ac)	Cable	4A	PR	2, 5-7	2, 5, 6, 7
39-15	Two-age (30+ rba/ac)	Tractor	4A	PR	2-7	2, 5, 7

1. Maintain an un-cut 100 foot buffer from edge of state road.
2. Maintain average 30 sq ft rba/ac minimum in harvest area.
3. Locate unit boundary one tree height below ridge.
4. Burn or lop & scatter slash to within 2 feet of ground for 100 feet beyond edge of road or trail.
5. Feather upper unit boundary over a 100 foot distance.
6. Maintain uncut vegetative screen at least one tree height below road.
7. Screen log landings from view, and restore as close to original contour as practical.
8. Maintain average 25 sq ft rba/ac minimum in harvest area.
9. Openings along road not to exceed 500 linear feet.
10. Burn or lop & scatter slash to within 4 feet of ground for 50 feet beyond edge of road.
11. To extent practical, burn or lop & scatter slash to within 4 feet of ground for 150 feet below cable landings or utilize for firewood gathering.
12. For 50 feet beyond state road, restore temporary roads and bladed skid trails to original contour, and plant native shrubs at entrance to mask disturbance.
13. Transition harvest density (feather) in 100 foot buffer from edge of FS road.

3.7.3.6 Cumulative Effects

Past timber harvests, clearings, roads, structures, and other landscape modifications are visible on private and NFS lands from most analyzed viewpoints. The degree to which these modifications impact scenic quality varies greatly with the type, scale, and contrast with the surrounding natural landscape. Treatments proposed in the Globe Project would create small openings, or the canopy may appear thinner. In leaf-off season, roads and log landings will be visible from some viewpoints. However, scenery design features were incorporated with consideration for cumulative effects of proposed, existing and foreseeable future landscape modifications.

Potential future scenery impacts in the Globe area include two residential developments proposed in Caldwell County; both of which will be visible from Blowing Rock. These

developments are called: River Ridge, a 50+ lot proposal off Globe Road; and Backbone Ridge, a 300+ lot proposal off Old John's River Road.

These developments will be visible from analyzed viewpoints at The "Blowing Rock" observation area; Canyons Restaurant; Laurel Park neighborhood; Mayview Park neighborhood; and Globe Road. From these locations, River Ridge subdivision will be visible low in the drainage below The "Blowing Rock" observation area; while Backbone Ridge subdivision will encompass the high ridge west of Globe Project area. National Forest System lands in the project area will be "sandwiched" between these two developments. After construction of private roads, clubhouses, swimming pools, and 350+ houses, views from Blowing Rock will be permanently altered. Residential development at River Ridge and Backbone Ridge will create a mosaic of colors and patterns, interrupting the almost continuous forest cover currently seen. These developments will greatly contrast with form, line, color, and texture of the surrounding forest, will dominate the scenic landscape, and will compete with background views of Grandfather Mountain, Table Rock, and Hawk's Bill.

When a landscape contains a great variety of forms, lines, colors, textures, and resulting patterns, introduction of human alteration is less noticeable. The Forest Service Scenery Management System refers to this effect as Visual Absorption Capability (VAC). The more visual variety a landscape contains, the greater its ability to visually absorb human modification. When applied to NFS land management, VAC indicates a landscape's ability to accept human alteration without loss of landscape character. The Forest Service has no control over scenic impacts on private lands, but principals of VAC can be applied when considering landscape character with proposed future actions, i.e. residential development.

After implementation, Globe Project treatment areas would "green-up" and begin to blend with the adjacent forest. Within five growing seasons, scenery impacts from two-age harvest areas would not be discernable to most viewers. Over time, forest management activities would become indistinguishable from surrounding forest, while the VAC of the landscape increases as private lands in the Blowing Rock viewshed become more highly developed. Timber management activities on NFS lands are more likely to appear "subordinate" within a highly modified landscape, and would meet assigned VQO's even where visible alongside proposed future development.

On NFS lands near Little Rocky Knob, there is a proposal for watershed restoration and erosion control to correct damage associated with ATV trespass. These activities would not be visible from any viewpoints analyzed for the Globe Project, and would have no cumulative effects to scenery.

With implementation of specified scenery design features and consideration of the viewshed Visual Absorption Capability, all Alternatives would meet assigned VQO's for cumulative effects; even where proposed activities would be seen in conjunction with existing landscape modifications and foreseeable future actions.

Figure 3-3: Simulation of Alternative B, C, & D, Viewpoint 1

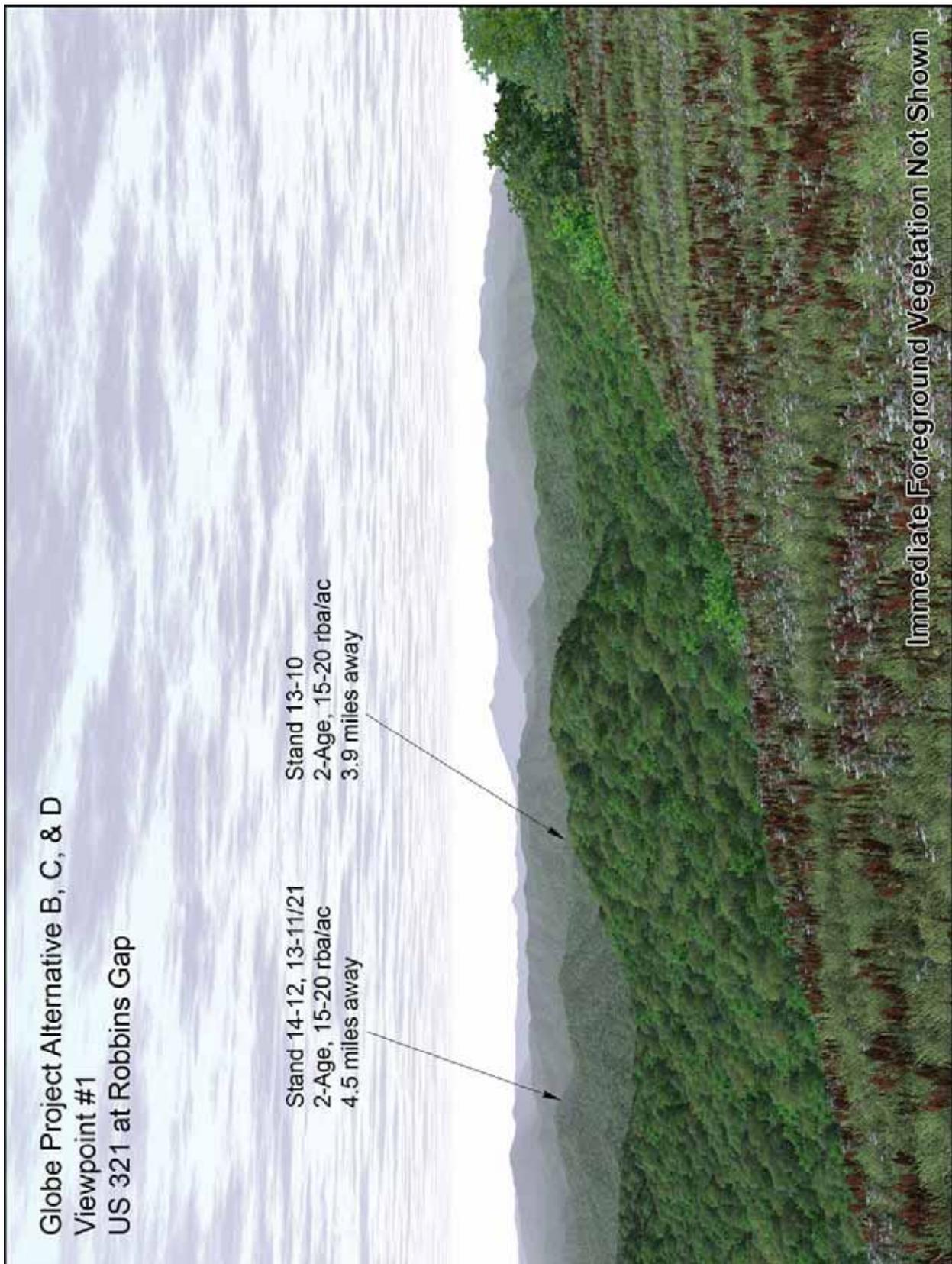


Figure 3-4: Simulation of Alternative B, C, & D, Viewpoint 2 South

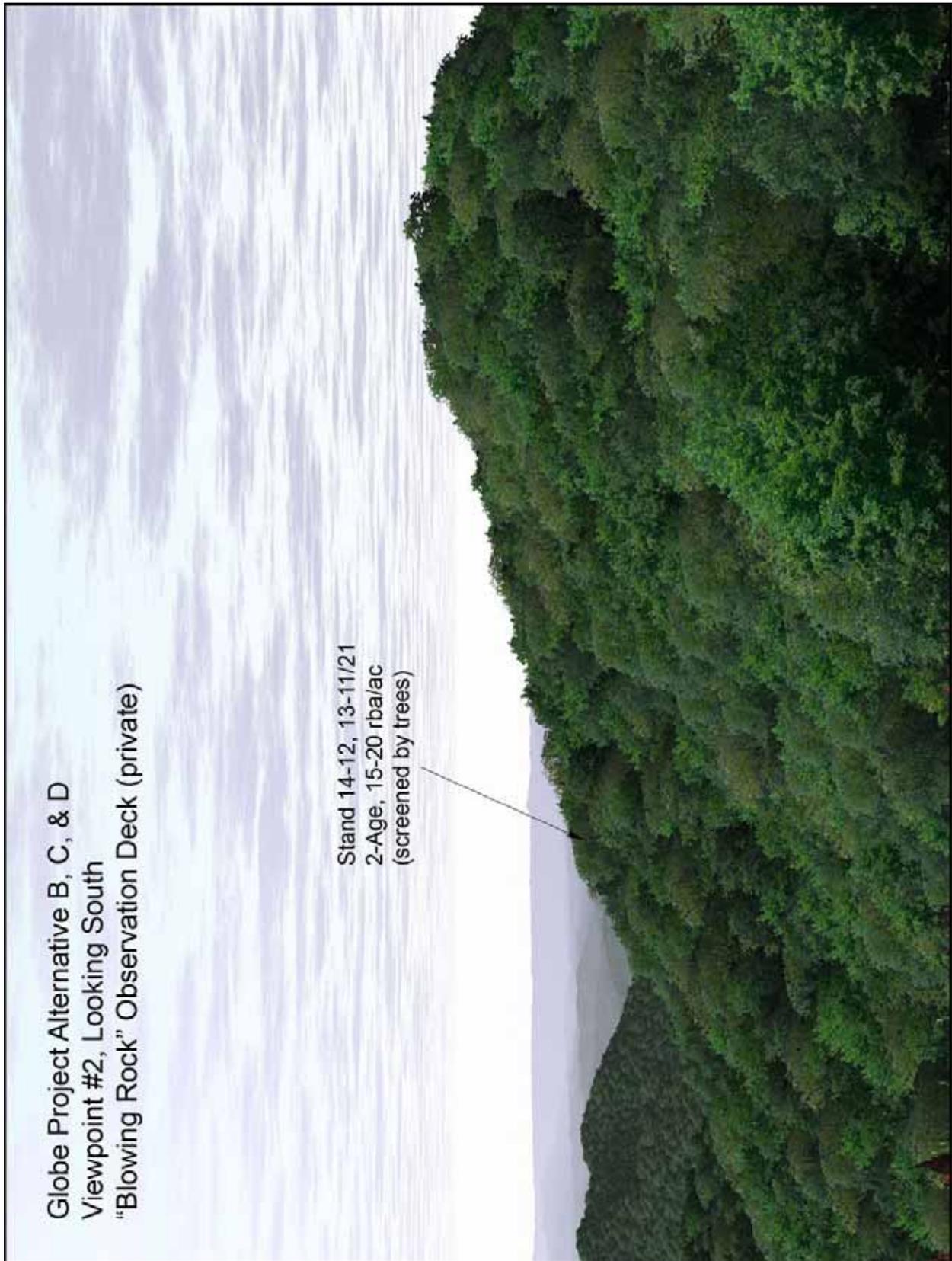


Figure 3-5: Simulation of Alternative B & C, Viewpoint 2 North

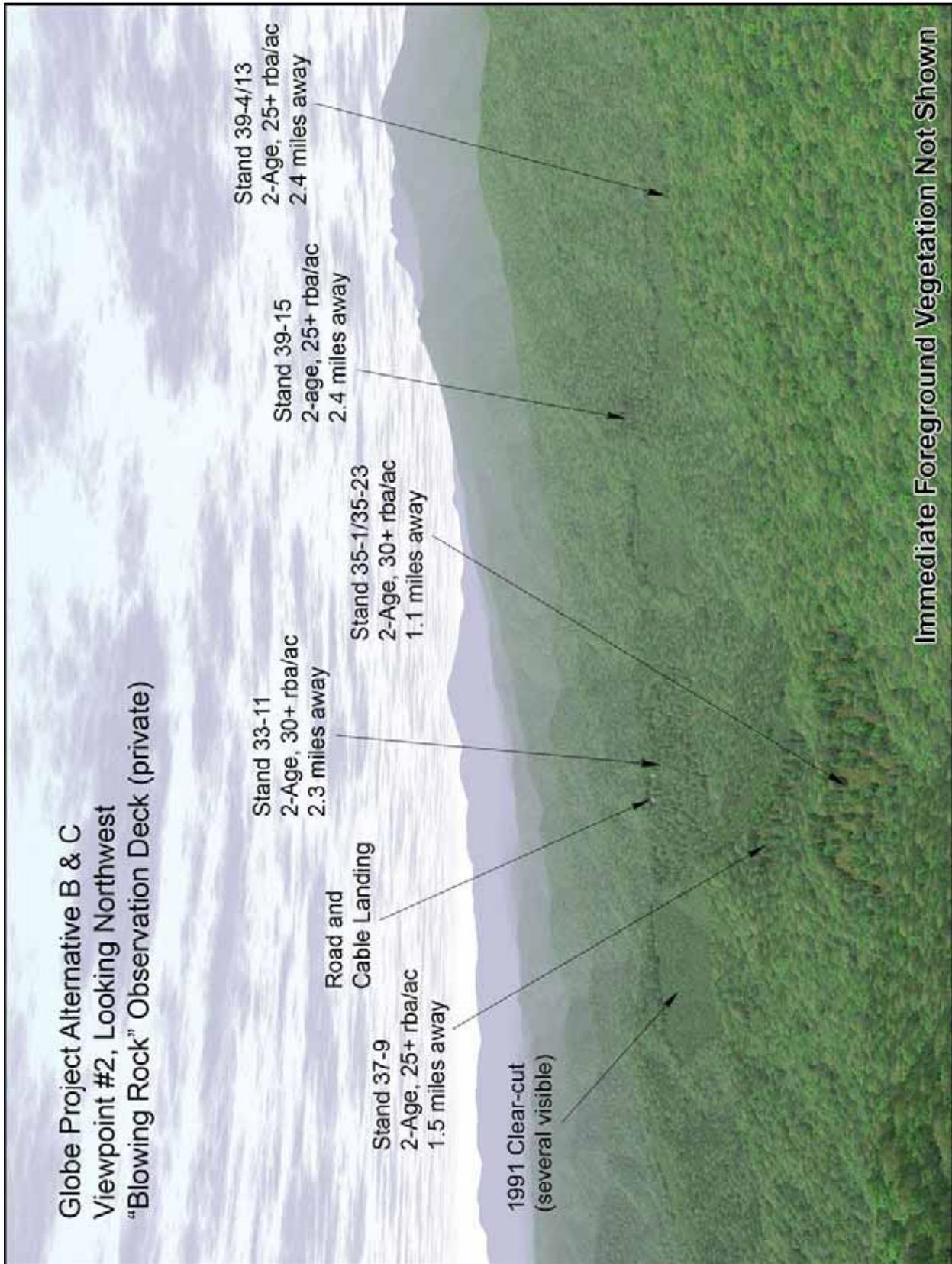


Figure 3-6: Simulation of Alternative D, Viewpoint 2 North

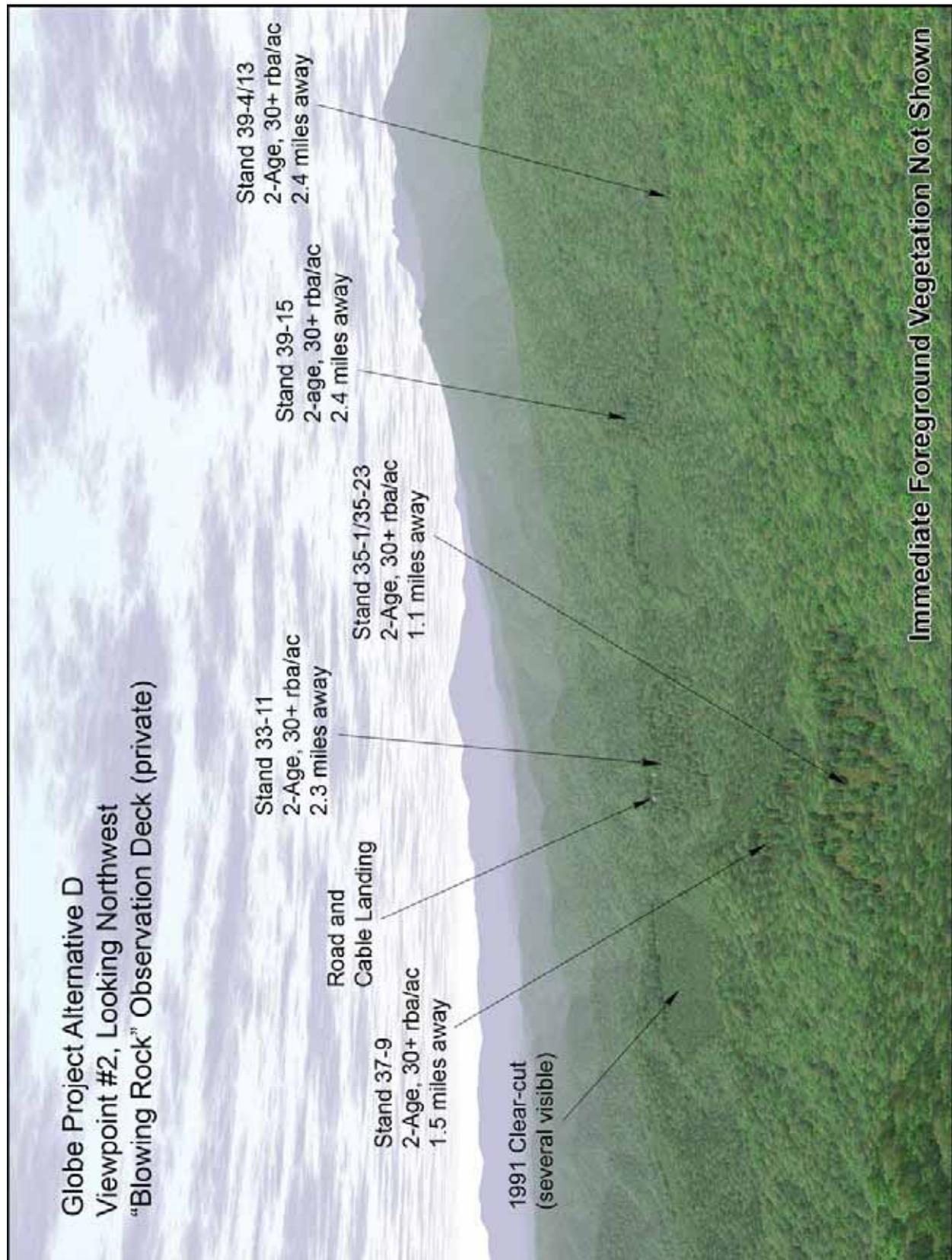


Figure 3-7: Simulation of Alternative B & C, Viewpoint 3

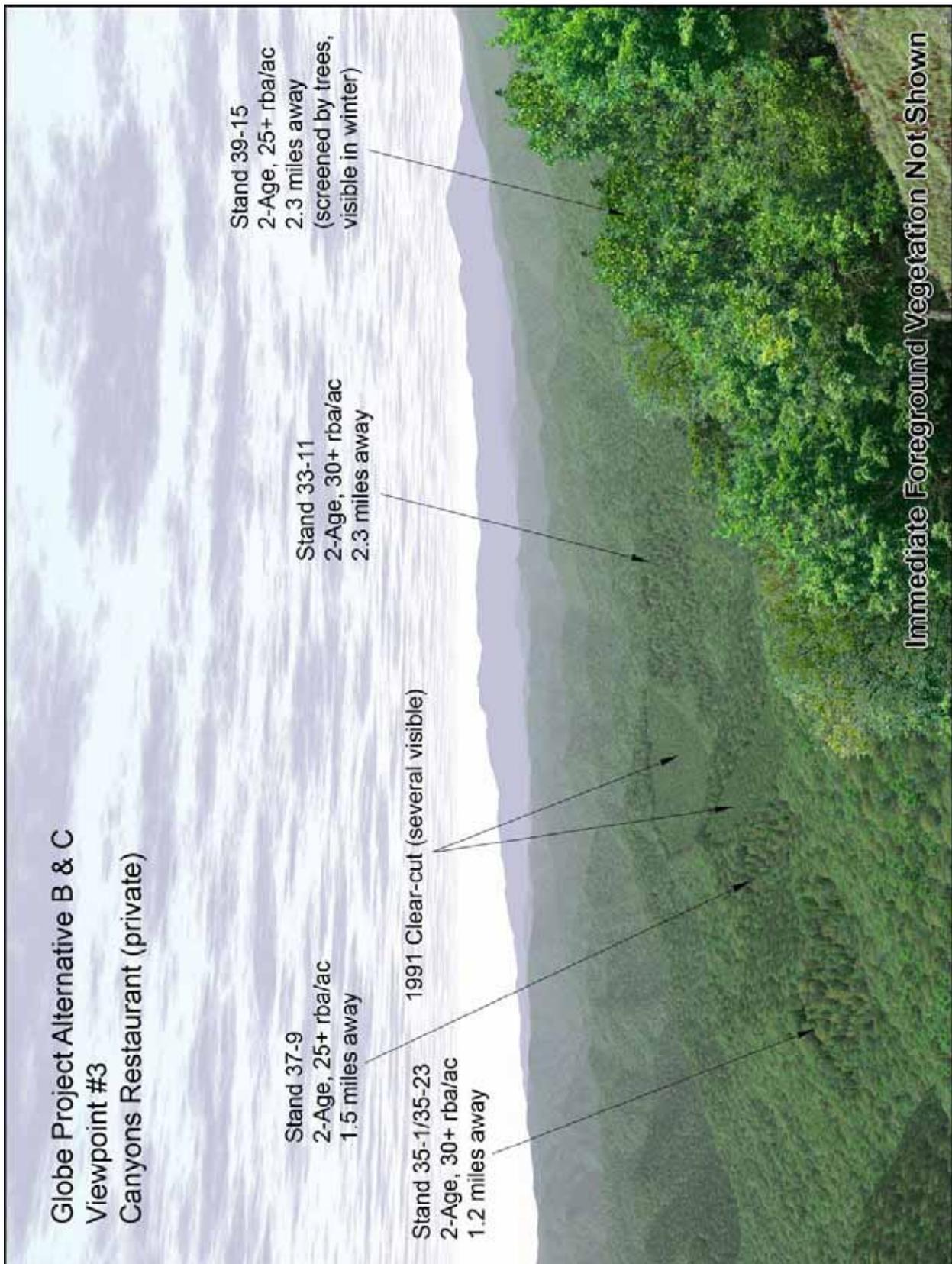


Figure 3-8: Simulation of Alternative D, Viewpoint 3

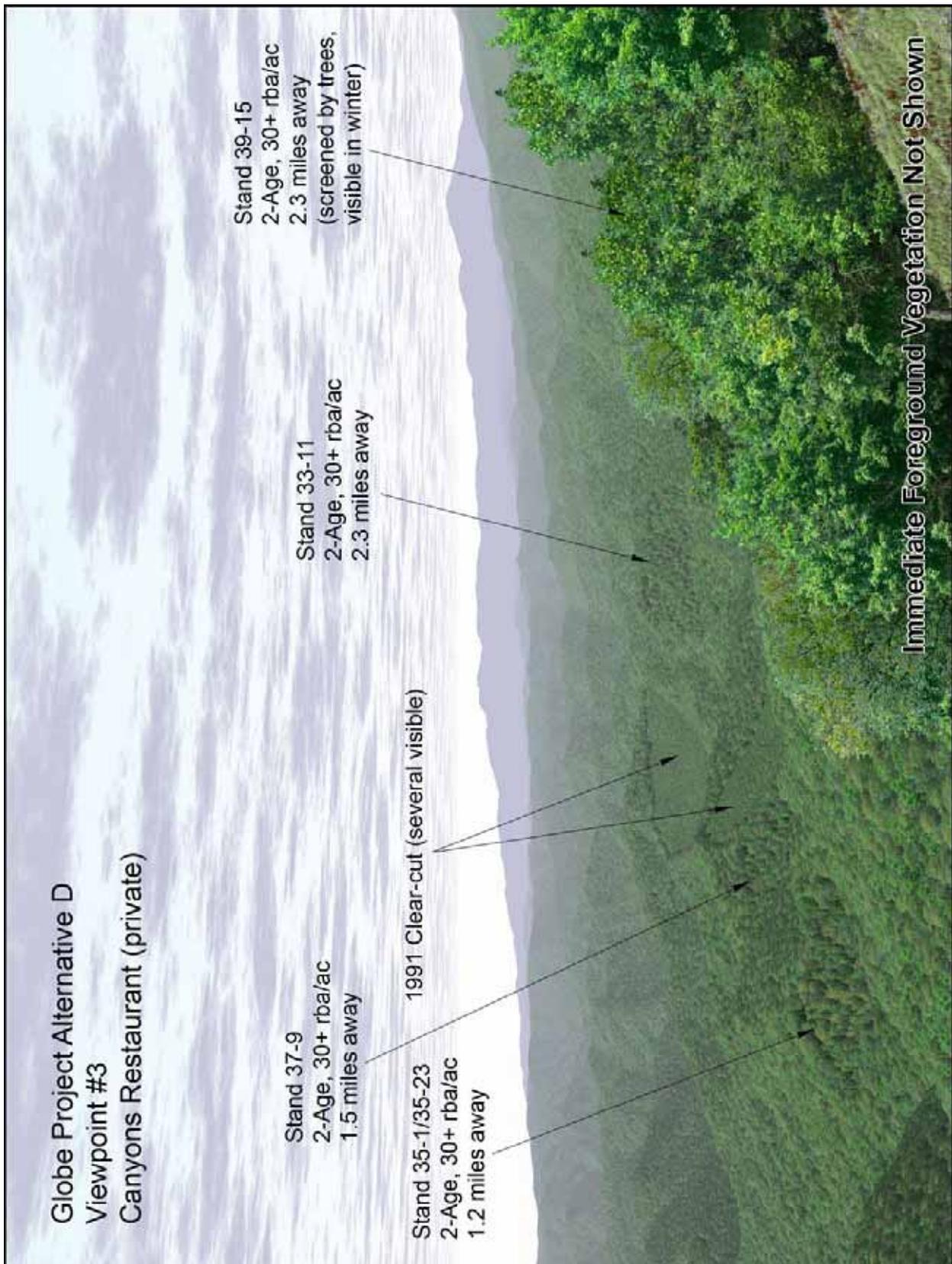


Figure 3-9: Simulation of Alternative B & C, Viewpoint 4

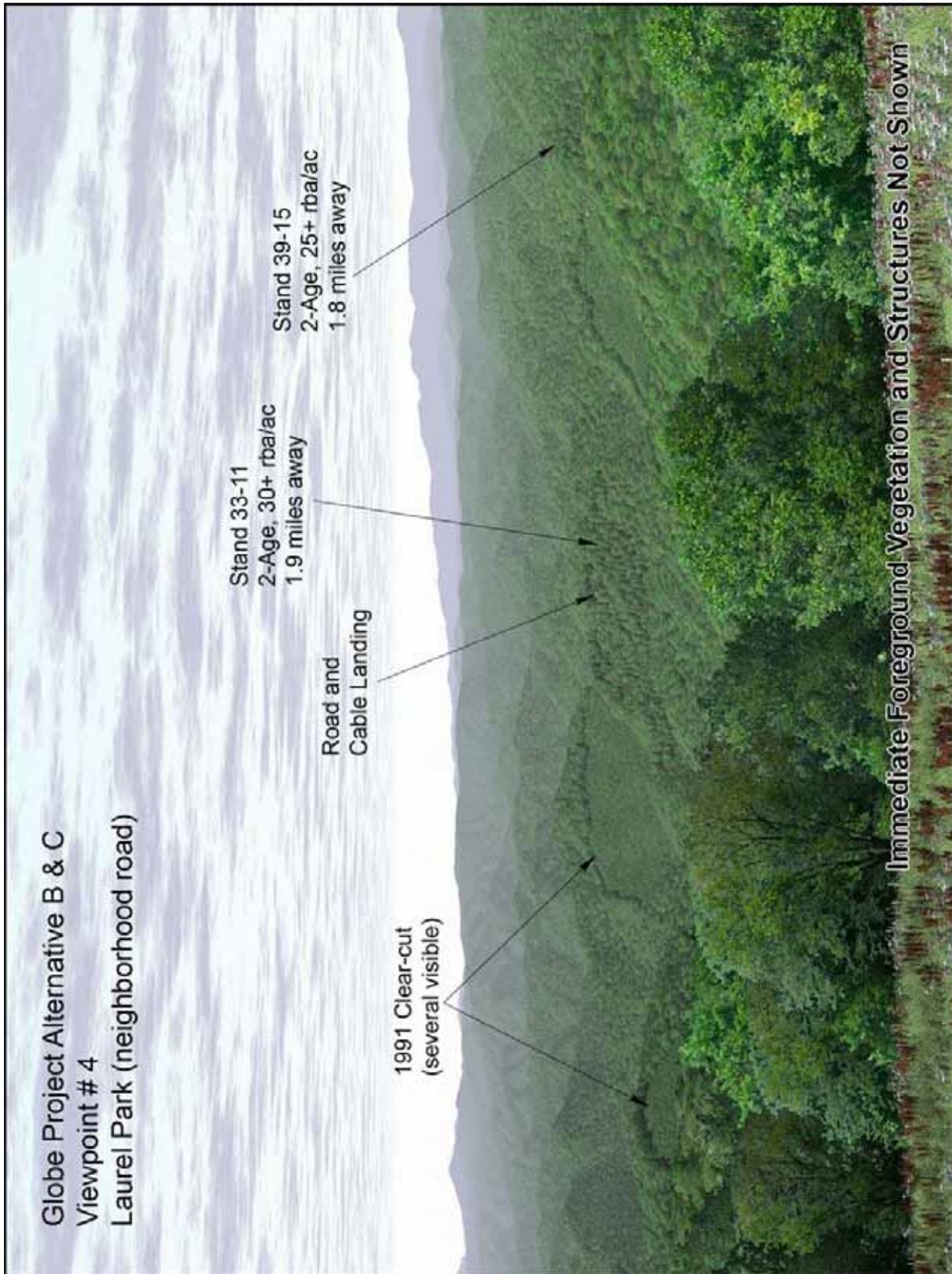


Figure 3-10: Simulation of Alternative D, Viewpoint 4

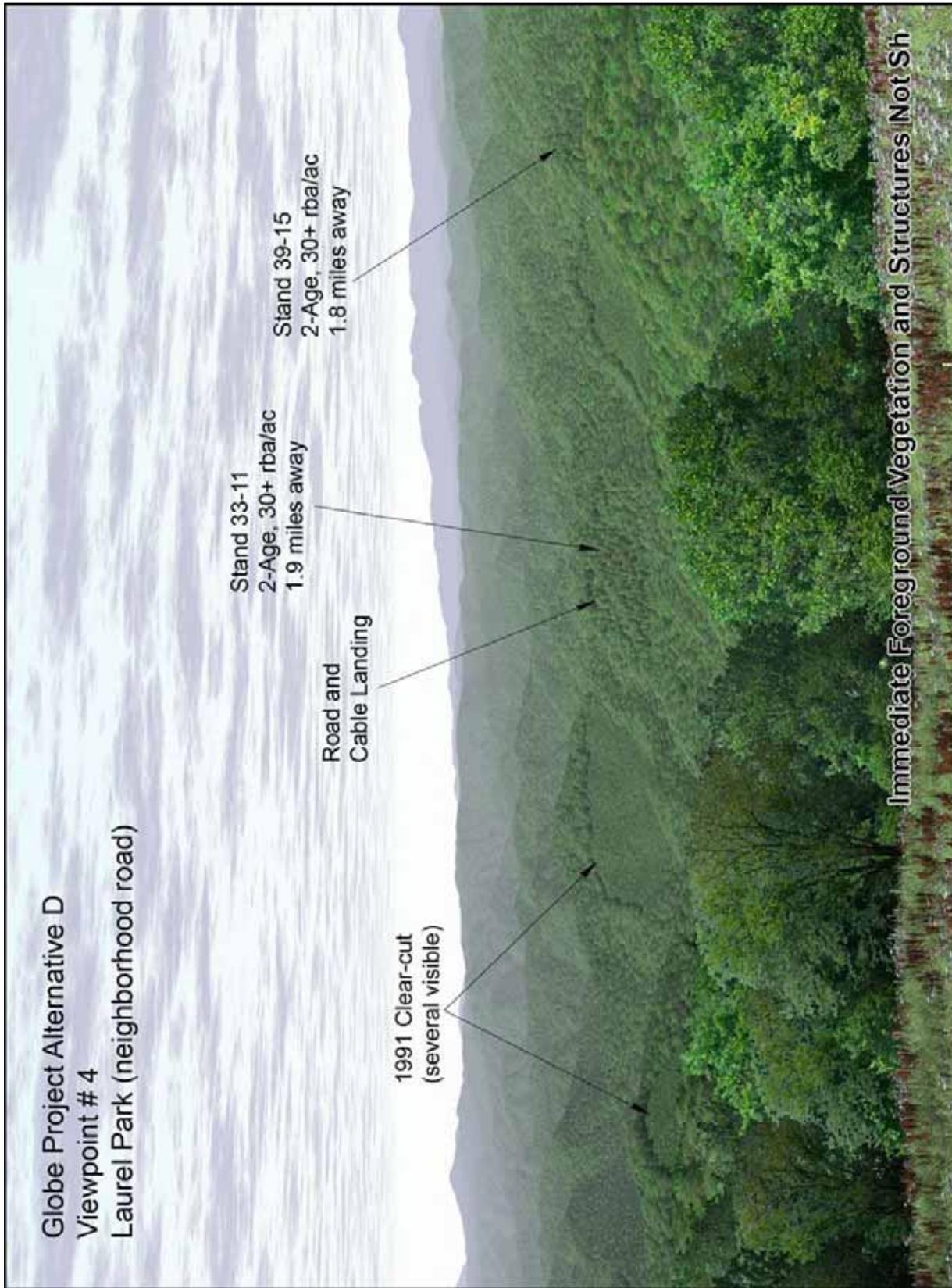


Figure 3-11: Simulation of Alternative B & C, Viewpoint 5

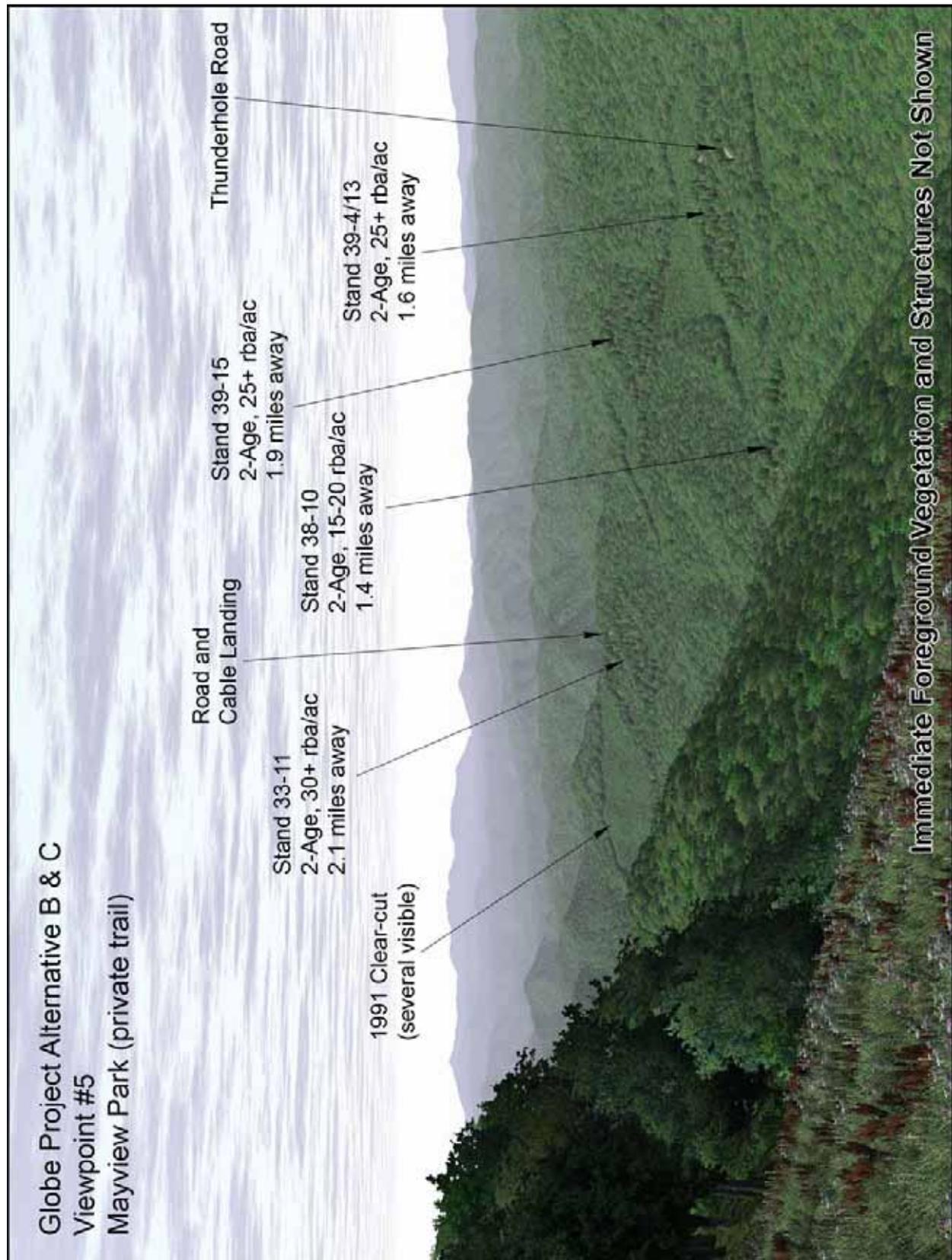


Figure 3-12: Simulation of Alternative D, Viewpoint 5

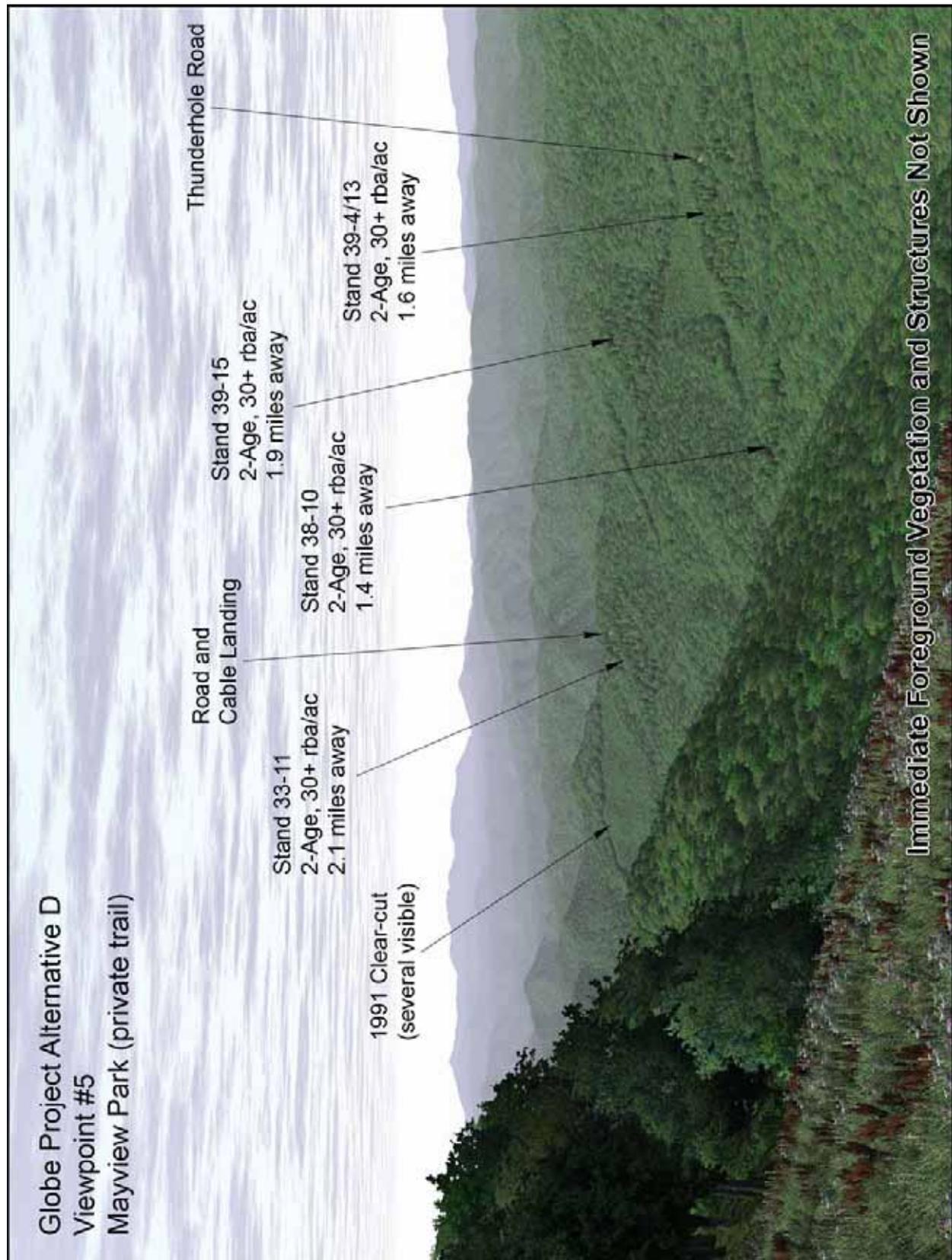


Figure 3-13: Photo Example of 15-20 sq ft rba/ac Two-Age Treatment from Stateline Project in Madison County

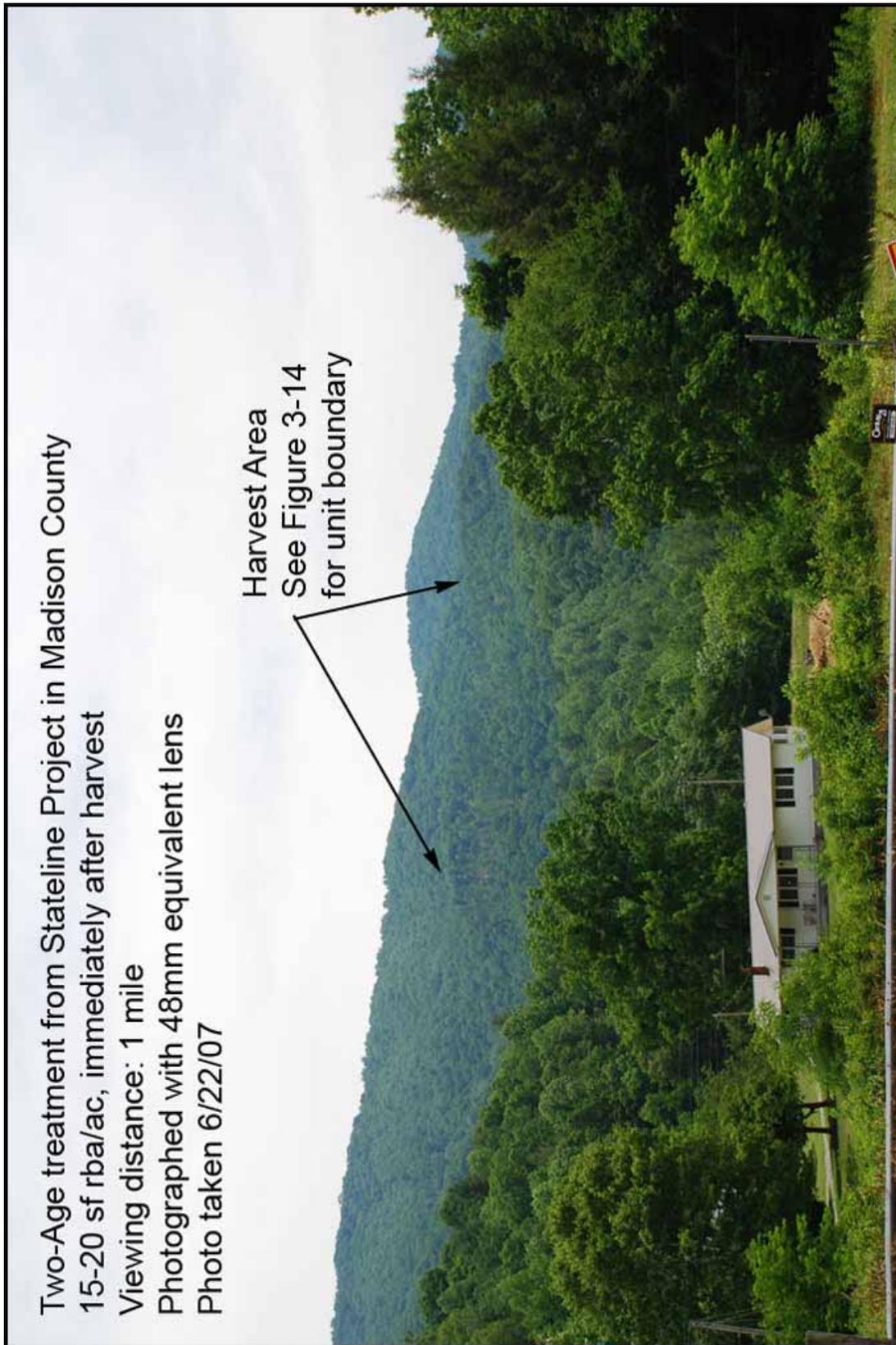


Figure 3-14: Photo Example of 15-20 sq ft rba/ac Two-Age Treatment from Stateline Project in Madison County

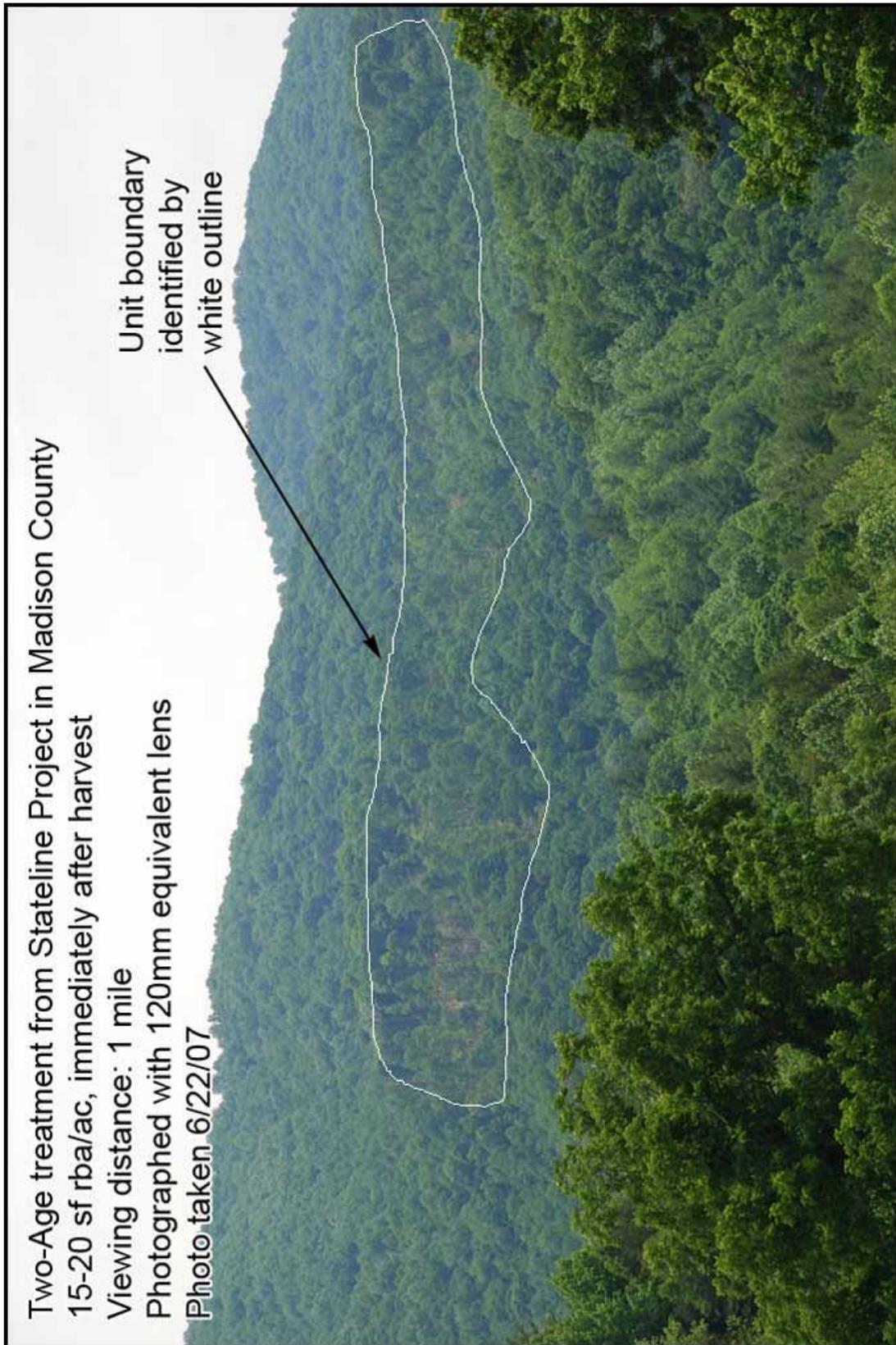
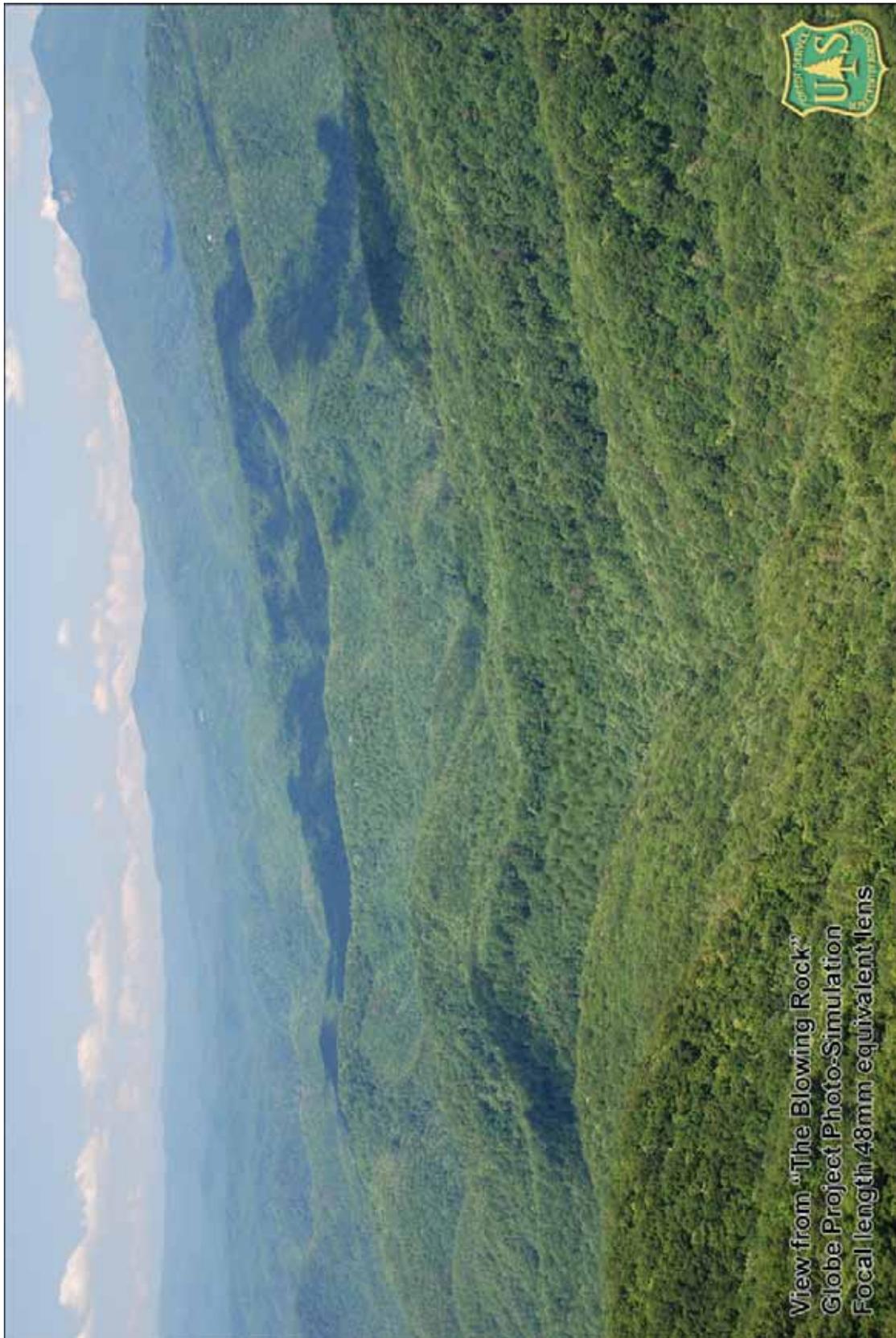


Figure 3-15: Photo-simulation of Alternative D, Viewpoint 2, as seen from "The Blowing Rock" observation deck



3.8 Management Indicator Species

3.8.1 Introduction

An assessment of habitat changes linked to management indicator species (MIS) and habitat components is documented in this section based on the species list that became effective Forest-wide on October 1, 2005. The assessment provides a checkpoint of project level activities, the anticipated change in habitat used by MIS, and the likely contribution to Forest-wide trends. Additional information on MIS, as well as other species, is located in the wildlife, aquatics, and botanical resource reports located in the project record.

3.8.2 Process

The Forest-wide list of MIS was considered as it relates to the AAs. Only those MIS that occur or have habitat within the AAs and may be affected by any of the alternatives were carried through a site-specific analysis. The documentation below shows which MIS were and were not analyzed along with the reasons.

Consistent with the Forest Plan and its associated FEIS (Volumes I and II), the effects analyses focus on changes to MIS habitat. These project-level effects are then put into context with the Forest-wide trends for populations and habitats.

To process and document the information efficiently, a series of tables are used as follows:

- 1) **Table 3-13:** This table displays biological communities and associated MIS, and reasons species were, or were not selected for analysis in the project. The source of these tables is Amendment 17 to the Nantahala and Pisgah Land and Resource Management Plan effective October 1, 2005, and the associated environmental assessment (EA) and project record.
- 2) **Table 3-14:** This table displays the habitat components and associated MIS, and reasons species were, or were not selected for analysis in the project.
- 3) **Table 3-15:** This table displays by MIS the Forest-wide population trend along with the associated biological community or habitat component. The information in this table is taken from the MIS Report for the Nantahala and Pisgah National Forests.
- 4) **Table 3-16:** This table compares effects (expressed as changes in habitat) by alternative to the Forest-wide estimates of habitats for each biological community and habitat component considered in the project-level analyses. This table explains how effects to communities and habitats affect Forest-wide population trends for the species considered.

Table 3-13: Biological Communities, Associated MIS, and why Species were Chosen or Eliminated from Analysis

Biological Community	MIS	Analyzed Further/ Evaluation Criteria*
Fir dominated high elevation forests	Fraser fir	No/1
Northern hardwood forests	Ramps	No/1
Carolina hemlock bluff forests	Carolina hemlock	No/1
Rich Cove forests	Ginseng	No/1
Xeric yellow pine forests	Pine warbler	No/1
Reservoirs	Largemouth bass	No/1

Biological Community	MIS	Analyzed Further/ Evaluation Criteria*
Riparian forests	Acadian flycatcher	No/2
Coldwater streams	Wild trout (brook, brown, and rainbow); blacknose dace	Yes
Coolwater streams	Smallmouth bass	No/2
Warmwater streams	Smallmouth bass	No/1

- *1 Biological Community and its represented species do not occur within the activity areas; therefore, this biological community would not be affected by any of the alternatives. Given no effects to the community, the alternatives in this project would not cause changes to forest-wide trends or changes in population trends of species associated with this community.
- 2 Biological Community and its represented species would be protected in accordance with LRMP standards and guidelines. Populations would not be affected by management activities because the associated habitat would not be entered by the proposed activities, pursuant to forest plan direction; therefore, there would be no change to forest-wide population trends.

Table 3-14: Habitat Components Associated MIS and why Species were Chosen or Eliminated from Analysis

Habitat Components	MIS	Analyzed Further/ Evaluation Criteria*
Old Forest Communities (100+ years old)	Black bear	No/1
Early successional (0-10 years old)	Rufous-sided (eastern) towhee	Yes
Early successional (11-20)	Ruffed grouse	No/1
Soft mast producing species	Ruffed grouse	Yes
Hard mast-producing species (>40 yrs)	Black bear	Yes
Large contiguous areas with low levels of human disturbance	Black bear	No/1
Large contiguous areas of mature deciduous forest	Ovenbird**	No/1
Permanent grass/forb openings	White-tailed deer	Yes
Downed woody debris	Ruffed Grouse	Yes
Snags	Pileated woodpecker	No/2

- *1 Habitat and its represented species do not occur within the activity areas; therefore, this special habitat would not be affected by any of the alternatives. Given no effects to the habitat, the alternatives in this project would not cause changes to forest-wide trends or changes in population trends of species associated with this habitat.
- 2 Habitat and its represented species would be protected in accordance with LRMP standards and guidelines. Populations would not be affected by management activities; therefore, there would be no change to forest-wide population trends.
- ** Ovenbird was recorded within stand 35-11. This stand does not represent large, contiguous areas as it borders State Road 1367 and is within ¼ mile of continuous private lands and housing. The Nantahala and Pisgah National Forest Plan, Amendment 5, identified a patch of forest interior habitat with minimal edge within this AA—the patch was identified as patch #38. The proposed actions would not affect the habitat within this patch.

Table 3-15: MIS Estimated Population Trend and Biological Community or Habitat Component

Species	Estimated Population Trend	Biological Community and/or Habitat Component
Black Bear	Increasing	Hard mast-producing species (>40 yrs)
White Tailed Deer	Static to decreasing	Permanent grass-forb
Rufous-Sided (Eastern) Towhee	Decreasing	Early-successional (0-10)
Ruffed Grouse	Static	Downed woody debris
Wild Brook, Brown and Rainbow Trout; Blacknose Dace	Static	Coldwater streams

Table 3-16: Habitat Component, Forest-wide Estimates, and Expected Changes resulting from the Alternatives

Habitat Component	Forest-wide Estimate	Alt A	Alt B	Alt C	Alt D
Early successional (0-10 years old)	26,800 ac (yr 2000) 2,040 ac (5 yr avg)	No change	224 ac or 2% increase over next 10 years	232 ac or 2% increase over next 10 years	217 ac or 1.8% increase over next 10 years
Soft mast producing species	13,144 ac early seral (yr 2000), highest potential on 5,650 ac	No change	224 ac increase for next 15-20 years	232 ac increase for next 15-20 years	217 ac increase for next 15-20 years
Hard mast-producing species (>40 yrs)	High EI Red oak: 40,600 ac Mesic Oak/H: 283,340 ac Dry Mesic Oak/H: 21,800 ac Chestnut Oak/H: 8,600 ac Upland hwd (other): 6,900 ac	None affected	Up to 224 ac or 2.5% short term reduction with long term increase as suitable hard mast species regenerate	Up to 232 ac or 2.6% short term reduction with long term increase as suitable hard mast species regenerate	Up to 212 ac or 2.3% short term reduction with long term increase as suitable hard mast species regenerate
Permanent grass/forb openings	3,000 acres	No change	12 ac or 1% increase	15 ac or 1% increase	12 ac or 1% increase
Coldwater streams	5,060 miles	No change (restoration on John's River tributary)	Approximately 30 linear feet of stream bank would be impacted at two bridge crossings on Frankum Creek of the 12.9 miles of coldwater stream within the AAs (restoration on John's River tributary and gate protecting China Creek)	Approximately 30 linear feet of stream bank would be impacted at two bridge crossings on Frankum Creek of the 12.9 miles of coldwater stream within the AAs (restoration on John's River tributary and gate protecting China Creek)	Approximately 30 linear feet of stream bank would be impacted at two bridge crossings on Frankum Creek of the 12.9 miles of coldwater stream within the AAs (restoration on John's River tributary and gate protecting China Creek)
Downed woody debris	High accumulation small wood: 18,000; Large wood: 386,000; Low accumulation (approximately 600,000)	No change	224 ac short term increase	232 ac short term increase	217 ac short term increase

3.8.3 Effects to MIS Trends Across the Forest (Action Alternatives)

3.8.3.1 Black Bear

The black bear represents hard mast producing habitat within forests 40 years of age and greater. There are approximately 9,402 acres of hard mast producing forest communities within the AAs. Approximately 2% of hard mast producing forests would be harvested in any action alternative. The project has been designed to retain hard mast species as residual trees, where they occur. The 2% short-term reduction in hard mast producing species equates to about 0.06% of the total hard mast producing habitat across the Nantahala and Pisgah National Forests. With the increased soft mast and available large wood debris, which provide grubs and other insects, this proposed loss of hard mast would not be significant to the black bear population across the two Forests.

3.8.3.2 White-tailed Deer

White-tailed deer represents grass/forb habitat. There is a shortage of grass/forb habitat in the two AAs and the action alternatives propose to create additional grass/forb habitat. Up to three proposed timber harvest landings in each AA would be expanded and planted into two acres of grass/forb habitat. This would increase both the spacialty and quantity of grass/forb habitat across the two AAs. Alternatives C and D propose to seed the closed portion of Thunderhole Road with a wildlife and wildflower seed mix (3 ac). All action alternatives would enhance the local white-tailed deer population across the two AAs; however, the proposal would not change the overall declining population trend across the Nantahala and Pisgah National Forests.

3.8.3.3 Rufous-sided (Eastern) Towhee

Rufous-sided towhee represents early successional habitat. With the proposal to develop early successional habitat in the two AAs, the Rufous-sided (Eastern) towhee should be more prevalent over the next planning period. However, the 2005 MIS amendment concluded this species was declining range-wide and in western North Carolina. With the reduced early successional habitat across the Nantahala and Pisgah National Forests, this decline is expected to continue.

3.8.3.4 Ruffed Grouse

Ruffed grouse represents large woody debris habitat. Due to the steep terrain over much of the two AAs, there is currently a considerable number of downed trees within the Frankum, Thunderhole, and George's Creek riparian areas. The proposal would not change the woody debris available within riparian areas and would increase woody debris availability. Any timber harvest increases the amount of both stumps and remnant lengths of downed, large woody debris. The 2005 MIS amendment concluded that ruffed grouse populations were declining across the two Forests and the likely cause was declines in quality, abundance, and distribution of suitable habitat. The proposal would improve habitat conditions for the grouse, but not enough to reverse the trend across the Nantahala and Pisgah National Forest's.

3.8.3.5 Wild Trout (brook, brown and rainbow populations)

Wild trout represent the cold water habitat. It is important to note, not all 12.9 miles of cold-water streams are suitable for trout to inhabit; however, except for the most upper reaches, China, Georges, Friddle, Frankum and Thunderhole Creeks have, or historically have had trout present. These three species are sensitive to subtle changes within water quality and inhabit

coldwater streams across the Forests. Management activities most likely to impact coldwater habitat would be installation and replacement of culverts, and road improvement activities. Therefore, the number of new culverts, replacement culverts, and miles of road improvement typically serve as indicators for analysis of the effects of each alternative. There are two stream crossings on Frankum Creek that would be temporary bridge crossings. The placement of these bridges would likely impact less than 30 linear feet of stream bank at two crossings. Since the crossings are bridges, there would be no direct impacts to the stream bottom and thus the habitat for coldwater MIS. Since crossings would not cause direct disturbance to the substrate within Frankum Creek, there would be no impacts to the aquatic coldwater habitat for any MIS species. These three species are mobile species that are able to move upstream or downstream during disturbances. There would be no changes to population trends or viability across the two Forests from the implementation of any action alternatives of the Globe Project. In addition, the three temporary culverts are for road drainage and are not on live streams or where habitat is present.

3.9 Threatened, Endangered, Sensitive, and Forest Concern Species_____

Introduction

This section discloses the determination of effects the proposal may have on threatened and endangered (T&E); Regional Forester's sensitive (S); and Forest Concern (FC) aquatic, wildlife, and botanical species—see Appendix A, BE for complete disclosure of surveys, habitat, species, and effects analyses. There would be no effect to any TES or FC species under Alternative A as no actions are proposed—current conditions would be maintained.

3.9.1 Threatened and Endangered Species

The action alternatives would not affect (directly, indirectly, or cumulatively) any proposed or listed Federal threatened or endangered botanical, aquatic or wildlife species as disclosed in the biological evaluation (Appendix A). Consultation with the USDI Fish & Wildlife Service is not required.

3.9.2 Sensitive Species

3.9.2.1 Botanical Species

The action alternatives may impact individuals of Regional Forester's S species white leaf sunflower (*Helianthus glaucophyllus*) and Carolina hemlock (*Tsuga caroliniana*). These impacts would not lead towards federal listing or loss of Forest viability.

3.9.2.2 Aquatic Species

The current records for the S dragonfly species *Macromia margarita* and *Ophiogomphus edmundo* are within larger, more riverine type habitats than what is present within the aquatic activity areas. These species could be present within the aquatic AA of the Johns River which is well away from the bridge installations on Frankum Creek. Since the stream crossings are located in Frankum Creek, which is a tributary to Mulberry Creek, *Macromia margarita* and *Ophiogomphus edmundo* would not be impacted by the project proposal. According to personal communication with Sarah McRae, North Carolina Heritage Program Freshwater Ecologist, the record of *Macromia margarita* for Caldwell County is unclear but most likely is from the lower reaches of Wilson Creek or the Johns River. Based on activity area surveys and habitat preferences, there would be no impacts to *Macromia margarita* or *Ophiogomphus edmundo* as a

result from the implementation of the action alternatives. No alternative is likely to cause a trend toward federal listing or loss of viability across the Nantahala and Pisgah National Forest for either species.

3.9.2.3 Wildlife Species

All action alternatives would increase nectar species habitat for the S species Diana fritillary (*Speyeria diana*) within the newly created early successional habitat and within new grass/forb habitat. Temporary road construction would result in short-term nectar species habitat post-harvest, but because these road openings are generally narrow, the canopy closes relatively quickly therefore eliminating sunlight to the forest floor and herbaceous growth. A small amount of habitat within the riparian area (<1 ac) would be adversely affected by all action alternatives because of two proposed temporary road crossings on streams with bridge removal and erosion control seeding to follow harvest activities. The two riparian areas could have some trees removed to facilitate the crossings. As there are approximately 1,860 acres of riparian forests within these AAs, this <1 acre removal is not considered significant because it represents a temporary loss of 0.05% of the habitat. The proposed release work planned in all action alternatives, both manual and chemical, would not directly affect fritillary habitat as the work is planned on woody stems only. Alternative A would not increase the existing nectar species habitat or change in the riparian area condition across the AAs.

The action alternatives propose herbicide treatment of non-native invasive plants, including paulownia, a potential nectar species. This action is not expected to have a significant affect on the availability of nectar species across these AAs as specific trees in activity areas would be treated. Alternative A would not affect the amount of paulownia species—allowing it to continue to flourish.

All action alternatives propose to re-install the gate at the China Creek crossing. Alternatives C and D propose to seed this closed portion of Thunderhole Road post-harvest, with a wildlife and wildflower seed mix. Alternative C also proposes to daylight this closed portion of the road, therefore the amount and diversity of nectar species growth is expected to be greater than Alternatives B or D. The action alternatives proposed in this EA will not cause a trend toward federal listing or loss of viability because of the projected increase in nectar species.

Adult nectar species habitat has generally been increased by past and on-going activities on NFS lands. However, individual larvae, eggs, and nectar species may have been adversely directly impacted by past actions and current encroachments or trespasses on NFS lands. Adverse impacts to individuals and decreased habitat have occurred on private lands from large scale residential development and are expected to continue. The cumulative loss of individual larvae and eggs, along with the net increase in habitat from past and foreseeable future activities, is not likely to cause a trend toward federal listing or loss of viability because the population is secure within the planning area.

No further botanical, aquatic, or wildlife Regional Forester's sensitive species would be affected by the proposal.

3.9.3 Forest Concern Species

The following table lists the FC species that could occur within the AAs along with potential effects by species from Alternatives B, C, or D:

Table 3-17: FC Species and Potential Effects from Alternatives B, C, or D

Species	Habitat	Occurrence	Potential Effect
Aquatic FC Species			
<i>Micrasema burksi</i> (a caddisfly)	Lotic (living in) – streams	*May occur in both the activity and AAs	**May impact individuals
<i>Rhyacophila amicus</i> (a caddisfly)	Lotic –streams	*May occur in both the activity and AAs	**May impact individuals
<i>Gomphus abbreviatus</i> (Spine-crowned clubtail)	Lotic –streams and rivers	*May occur in both the activity and AAs	**May impact individuals
<i>Gomphus desertus</i> (harpoon clubtail)	Lotic –streams and rivers	*May occur in both the activity and AAs	**May impact individuals
<i>Ophiogomphus mainensis</i> (Maine snaketail)	Lotic –streams and rivers	*May occur in both the activity and AAs	**May impact individuals
<i>Baetopus trishae</i> (a mayfly)	Lotic –streams	*May occur in both the activity and AAs	**May impact individuals
<i>Habrophleidiodes</i> sp. (a mayfly)	Lotic –very small streams	*May occur in both the activity and AAs	**May impact individuals
<i>Bolotoperla rossi</i> (a stonefly)	Lotic –streams	*May occur in both the activity and AAs	**May impact individuals
Wildlife FC Species			
<i>Neotoma magister</i> (Alleghany woodrat)	Rock/boulder areas	Found within stand 37-5b	No effect following proposed habitat exclusion in stand 37-5b
<i>Coccyzus erythrophthalmus</i> (black-billed cuckoo)	Dark, tangled deciduous forests typically above 4,500 feet elevation	Not recorded within proposed activity areas	No effect due to negative survey results
<i>Sorex dispar</i> (rock shrew)	Rock/boulder areas	May occur	No effect following proposed habitat exclusion around rock slope on Thunderhole Road in Alternative C
<i>Vireo gilvus</i> (warbling vireo)	Riparian areas	Not recorded within proposed activity areas	1 ac reduction of riparian habitat; negative survey results
Botanical FC Species			
<i>Brachythecium populeum</i> (matted feather moss)	Acidic cove forests	Not known to occur in AA or activity area	No effect due to negative survey results and no habitat
<i>Calystegia catesbeiana</i> ssp. <i>sericata</i> (Blue ridge bindweed)	Open, sunny sites	Known to occur in AA but not within activity areas	No effect due to negative survey results
<i>Entodon sullivantii</i> (Sullivant's entodon)	Acidic and Rich Cove Forests	Not known to occur in AA or activity area	No effect due to negative survey results and no habitat

* The species probably occurs in a specified area in the broadest sense. Only very general habitat preferences and species distribution are used to determine if a species may occur. This does not imply their existence in an area, but that their general habitat description is found in the area, so therefore the species may occur.

** No rare species were found during project surveys in the activity areas, but they have been included because the species' habitat exists within or immediately below the crossings. Although bridge installation may impact individuals, implementation would not affect viability across the Forest.

3.10 Dispersed Recreation

3.10.1 Existing Condition

Recreational activities that take place in the project area are primarily dispersed in nature such as fishing, hunting, hiking, mountain biking, horseback riding, driving for pleasure, and camping. The unpaved Globe Road traverses the project area and is utilized for some local traffic connecting to Blowing Rock. Except for the Globe Road corridor, the project area receives light to moderate use by recreationists. Forest Service Road (FSR) 4071 is now accessible only with high-clearance vehicles and is seasonally closed to motorized traffic, although the road gate is temporarily down. Forest Service Road 4111 is closed year-round to public motorized use. Both of these roads receive some non-motorized use from hikers, hunters, mountain bikers, and horseback riders. Forest Service Road 4071 is scheduled for light maintenance due to damage from the tropical storms that flooded many parts of Western North Carolina in the fall of 2004. It would likely receive more use after the maintenance is completed.

Forest Service Trail 250 connects FSR 4071 to the edge of Blowing Rock. Mountain bikers, hikers, and some horseback riders have been using this trail. Thunderhole Creek as well as most of the creeks and tributaries in the project area are utilized for trout fishing. Mountain bikers use FSR 4071, some loop back along Thunderhole Creek on an old logging road that crosses back and forth across the creek. This route is an unauthorized trail and biking use on it is causing sedimentation in the creek. Forest Service Trail 253 is a lightly used ½ mile trail connecting to FSR 4071 that accesses a small waterfall. There has been interest expressed in the past by some members of the public for developing a more extensive trail system in the general vicinity of the project area.

3.10.2 Alternative A – Direct, Indirect, and Cumulative Effects

There would be no direct, indirect, or cumulative effects to dispersed recreational use under this alternative. Existing fishing, hunting, hiking, biking, horseback riding, camping, etc. would not be affected.

3.10.3 Alternative B – Direct, Indirect, and Cumulative Effects

Under this alternative, there would be temporary impacts to dispersed recreationists primarily noise from logging operations and log hauling. Timber sale contracts are typically for a three year period, and the operating period is March 15th – December 15th. The area of impact would shift as the logging operations are completed and move to other roads (i.e., once logging is completed along Globe Road and FS Road 4071, operation would move to another area, such as Forest Service Roads 4111 & 188).

Forest Service Roads 4071 and 4111 & 188 would have direct impacts – i.e. hauling and road improvement activities. This would result in a temporary impact on existing use and experience, especially during summer months due to periodic delays and some congestion due to logging activities.

Hunting opportunities would be improved over time as habitat is developed and improved for game species, as well as activities for non-game species (i.e., bird watching) requiring early successional habitat.

Since the primary recreation use is dispersed in nature, it is expected that impacts to recreation related tourism would be minimal and short term. The project area had harvest activities 15 years ago and there have been no known adverse impacts to tourism as a result of those activities.

The Final Supplement to the Final Environmental Impact Statement (Volume I and Appendix B of Volume II) for the Nantahala and Pisgah National Forests addresses recreational activities and economics at the Forest level. Specifically in Volume I, pages IV 60-61: *Because variation in employment among alternatives is small, the Forests can easily meet the demand for recreation of the RN2 settings* (Roaded Natural 2, Recreational Opportunity Spectrum, which is the setting for MA 4A and 4C). Page B-102 in Volume II of the Final Supplement displays employment and income values for recreation user days, particularly hunting and other dispersed recreation activities.

There are no expected adverse cumulative effects to dispersed recreation as a result of the proposal and the actions listed in Table 3-1 above. Past activities include logging in the project area, but do not contribute to the cumulative effects because they are 15 years removed from each other. Forest Service Road 4071 is scheduled for light maintenance due to the damage from the tropical storms of fall of 2004. This project is expected to be completed calendar year 2007, which would be before any activities from the Globe project would begin. While there would be some very temporary impacts with the road maintenance project (primarily noise from construction) the activities would have negligible cumulative impacts related to the Globe project.

3.10.4 Alternative C – Direct, Indirect, and Cumulative Effects

The effects of Alternative C would be same as in Alternative B, except that 15 feet on either side of FSR 4071 would be day-lighted (cleared of large overstory vegetation) to help improve moisture control on the road surface. This would alter the trail-like experience along FSR 4071 until the roadside vegetation increases in height.

3.10.5 Alternative D – Direct, Indirect, and Cumulative Effects

The effects of Alternative D would be same as Alternative B, except the basal area remaining in several of the proposed harvest units would be greater in the Thunderhole area (see Tables 2-1 and 2-2, Chapter 2). This would reduce visual impacts of some of the harvest units (as described in Section 3.7 above) but otherwise would have negligible effects on dispersed recreationists in the project area.

3.11 Old Growth Communities

The Forest Plan describes the purpose of retaining old growth communities: *[T]he desired future condition for old growth across the forest is to have a network of small, medium, and large sized old growth areas, representative of sites, elevation gradients, and landscapes found in the Southern Appalachians and on the Forests, that are well dispersed and interconnected by forested lands. Areas to be managed for old growth will be selected considering the following*

criteria: 1. Priority consideration for areas currently exhibiting high quality old growth characteristics, including areas in the initial inventory of possible old growth; 2. Areas with unique species diversity; 3. Community, soil type, aspect, and elevation; 4. Other resource concerns and management objectives (page III-26). The Forest Plan describes old growth communities as those that exhibit the following characteristics: [d]owned logs in all stages of decay; old trees; standing trees; undisturbed soils; uneven-aged structure of canopy species; single and multiple tree-fall gaps; abundant fungal component; large trees; appropriate density and basal area of canopy trees (page III-28).

Currently, there are 2,462 acres of large patch old growth communities (patch #24) designated in the Upper Johns River AA and 2,653 acres of large patch old growth communities (patch #30) designated in the Upper Mulberry AA. The 5,115 total acres of designated large patch old growth communities are within Compartments 8, 9, 10, 11, 31, 33, 38, 39, 41, and 42. Compartments 12, 13, 14, 35, and 37 would need 50, 50, 50,108, and 53 acres of small patch old growth communities designated respectively to meet Forest Plan standards for small patch old growth communities (additional analysis on old growth is disclosed in Appendix C).

3.11.1 Alternative A – Direct, Indirect, and Cumulative Effects

Under this alternative, there would be no harvesting and the existing condition of not meeting Forest Plan standards for designated small patch old growth community habitat in the five compartments would continue. Existing stands would remain intact. Past, present, and reasonably foreseeable actions listed in Table 3-1 above would not have measurable adverse cumulative effects on old growth communities in the project area because no action is proposed with this alternative that could be cumulatively added to the actions in Table 3-1.

3.11.2 Alternatives B, C, & D – Direct, Indirect, and Cumulative Effects

3.11.2.1 Direct and Indirect Effects

No designated old growth communities (as defined by the Forest Plan) or initial inventory old growth communities would be harvested under these alternatives. There may be individual trees greater than 100 years of age harvested, but old growth is a community and not an individual tree. Designating about 311 acres of small patch old growth communities averaging 125 years in age under these alternatives along with the existing large patch old growth communities in the AAs (5,115 acres in large patches #24 and #30 already designated by the Forest Plan) would ensure old growth communities are distributed throughout both the analysis and project areas.

Under these alternatives each compartment in the project area would meet Forest Plan standards for small patch old growth communities. There would be no reduction of acres in stands averaging greater than 100 years of age in the project area under any of these alternatives (see also Appendix D). The following table summarizes age-classes for Upper Mulberry and Upper Johns River AAs by alternative along with old growth disclosures:

Table 3-18: Age-Class for Upper Mulberry and Upper Johns River AAs by Alternative and Old Growth Communities Disclosures

Measurement	Alternative A (Percent existing)	Alternatives B & C (Percent after two-age harvest implementation)	Alternative D (Percent after two-age harvest implementation)
Age Class <u>Analysis Areas</u>			

Measurement	Alternative A (Percent existing)	Alternatives B & C (Percent after two-age harvest implementation)	Alternative D (Percent after two-age harvest implementation)
0-10 years old	<1%	2%	1.9%
11-20 years old	4%	4%	4%
21-50 years old	3%	3%	3%
51-100 years old	80%	78%	78.1%
101-140+ years old	13%	13%	13%
Acres of existing Forest Plan designated old growth or initial inventory old growth communities proposed for harvest	0	0	0
Acres of newly designated small patch old growth	0	311	311

3.11.2.2 Cumulative Effects

There would be no adverse cumulative effects to old growth communities as a result of the proposal as there are currently over 5,100 acres of old growth designated in the two AAs; no Forest Plan designated old growth communities or initial inventory old growth communities would be harvested; no stands averaging greater than 100 years in age would be harvested with this proposal; over 300 acres would be designated as small patch old growth communities and would not be scheduled for future harvest; and about 1,400 acres in the AAs currently average greater than 140 years and are not scheduled for harvesting with this proposal. There are changes that occur in a forest ecosystem as a result of developing 0-10 year age-classes, but adverse cumulative effects to old growth communities are not expected due to reforestation; designation of old growth communities that would not be scheduled for future harvest; no stands averaging greater than 100 years in age being harvested under this proposal; and ensuring no more than 10% of each compartment in MA 4A and no more than 15% of each compartment in MA 3B would be harvested in a 10-year period.

3.12 Air Quality

3.12.1 Alternative A – Direct, Indirect, and Cumulative Effects

The existing condition of air quality in the area would be maintained under this alternative. No additional emissions would be introduced as a result of the proposed actions.

3.12.2 Alternatives B, C, & D – Direct, Indirect, and Cumulative Effects

Emission factors from the Environmental Protection Agency (EPA) were utilized to estimate the total tons of volatile organic compounds, carbon monoxide, nitrogen oxides, and particulate matter 10 microns and smaller (PM10) from the proposed project (Table 3-19).

Table 3-19: Total Estimated Emissions (tons) from the Proposed Timber Harvesting Operation for the Globe Project

Equipment Type	Hours of Operation	Horse-power	Volatile Organic Compounds (g/hp-hr)	Carbon Monoxide (g/hp-hr)	Nitrogen Oxides (g/hp-hr)	Particulate Matter 10 microns and smaller (g/hp-hr)
Skidder/ Forwarder	420	200	84,000	714,000	579,600	33,600
Dozer	60	80	4800	40,800	33,120	1920

Equipment Type	Hours of Operation	Horse-power	Volatile Organic Compounds (g/hp-hr)	Carbon Monoxide (g/hp-hr)	Nitrogen Oxides (g/hp-hr)	Particulate Matter 10 microns and smaller (g/hp-hr)
Loader	370	168	62,160	528,360	428,904	24,864
Double Bunk Tractor-Trailer	376	310	151,528	1,806,680	466,240	11,656
Chainsaw	190	5	445,550	1,228,350	1615	9,785
Pickup Truck	676	325	285,610	3,405,350	878,800	21,970
Sum in Grams			1,033,648	7,723,540	2,388,279	103,795
Sum in Pounds			2279	17,026	5265	229
Total Tons			1.1	8.5	2.6	0.1

Typically, the Forest Service does not calculate the emissions estimated for a timber harvest since the values are so low (Table 3-19), especially when compared to the cumulative emissions within a county. The estimated volatile organic compounds, nitrogen oxides and carbon monoxide emissions are all less than one-tenth of a percent of the 2002 Caldwell County totals. Furthermore, it should be noted that the estimated emissions from the proposed project are already included in the county totals in Table 3-20 and do not represent new emissions. There is uncertainty in estimating emissions at a county resolution and surrogates are used to estimate the emissions. For example, part of the emissions estimates for the off-highway emissions category (which the timber harvest equipment is included) is based upon the amount of diesel fuel purchased in Caldwell County. It is assumed that most of the fuel purchased to accomplish the proposed project would come from Caldwell County.

Table 3-20: Estimated 2002 Emissions for Caldwell County, North Carolina Provided by the Visibility Improvement State and Tribal Association of the Southeast (VISTAS) Regional Planning Organization

Emission Category	Volatile Organic Compounds (tons)	Nitrogen Oxides (tons)	Carbon monoxide (tons)	Particulate Matter 10 microns and smaller (tons)	Sulfur dioxide (tons)	Particulate Matter 2.5 microns and smaller (tons)	Ammonia (tons)
Fuel Combustion Industrial	8.52	505.19	320.42	153.79	37.90	105.64	2.07
Fuel Combustion Other	1,911.12	169.67	4,587.69	640.21	39.85	542.41	38.46
Other Industrial Processes	249.01	8.32	15.89	155.94	1.34	85.60	0.02
Solvent Utilization	4,926.35	3.15	0.63	38.52	0.02	35.76	2.60
Storage and Transportation	115.67	0.00	0.00	1.33	0.00	0.56	0.00
Waste Disposal and Transport	134.62	66.34	1,148.47	19.78	14.79	19.78	2.37
Highway Vehicles	2,509.20	2,356.02	26,905.03	52.40	100.37	36.05	84.92
Off-highway	510.06	551.54	6,058.84	35.54	34.29	34.04	0.57
Miscellaneous	4.95	1.82	83.87	360.67	0.45	45.63	280.39
Total	10,369.50	3,662.05	39,120.84	1,458.18	229.01	905.47	411.40
Estimate Globe Project Total	1.1	2.6	8.5	0.1			

Emission Category	Volatile Organic Compounds (tons)	Nitrogen Oxides (tons)	Carbon monoxide (tons)	Particulate Matter 10 microns and smaller (tons)	Sulfur dioxide (tons)	Particulate Matter 2.5 microns and smaller (tons)	Ammonia (tons)
Percent of Total	0.01%	0.07%	0.02%	0.01%			

The Forest Service did not discuss the project with the UNIFOUR EAC (early action compact) since the emissions are extremely low in comparison to the rest of Caldwell County (Table 3-19) and the proposed project emissions are incorporated into the most recent emissions inventory assumptions. Also, the project is located outside of the UNIFOUR EAC—the Globe Project area is north of State Highway 90 and west of US 321. Therefore, no consultation was needed.

The Forest Service discussed the proposal with Mr. John Tippet who is coordinating the UNIFOUR EAC. The EPA will utilize the 2005-2007 ozone monitoring data to determine if the UNIFOUR EAC is attaining the ozone NAAQS. The Globe project area is about 13 miles from the Lenoir ozone monitor and the 4th highest 8-hour average for the 2005 monitoring season was 0.075 parts per million (ppm). The 2006 values have not been fully quality assured, but the 2006 value is probably 0.076 ppm. The 4th highest 8-hour average would need to reach 0.103 ppm in 2007 in order to exceed the NAAQS. There is a very low likelihood the 4th highest 8-hour average will reach 0.107 since the greatest 8-hour values between the years 2000 and 2005 was 0.092 ppm in 2002. One reason ozone is likely to remain low in 2007 is the Marshall coal-fired power plant (located approximately 52 miles southeast of the project area in Catawba County) has installed pollution controls which will significantly reduce nitrogen oxides. Therefore, the proposal would not jeopardize the UNIFOUR EAC from attaining the ozone NAAQS because: 1) the proposed project emissions of the nitrogen oxides are extremely low, 2) nitrogen oxide emissions are decreasing in the UNIFOUR EAC due participants implementing strategies and the pollution control devices at the Marshall coal-fired power plant, and 3) two of the three years ozone monitoring data to be used for the ozone NAAQS are below the standard.

Concern was also expressed on what impact the proposed timber harvesting may have on visibility and particulate matter, which we assume to be particulate matter 2.5 microns and smaller in size (PM_{2.5} or fine particulate matter). High concentrations of fine particulates can have an impact to people's health and reduce the enjoyment of viewing scenery. The closest monitor (about 15 miles southwest of the project area) measuring fine particle mass is found at Linville Gorge Wilderness. The Linville Gorge monitor does not meet the EPA's criteria to determine if the fine particulate matter NAAQS is being exceeded. However, the values (Table 3-20) found at Linville Gorge are probably more representative of the fine particulate mass found within the project area and Lenoir, North Carolina than the monitor located in Hickory, North Carolina. The Hickory monitor (about 30 miles southeast of the Globe area) does meet EPA monitor standards and previous monitoring results have exceeded the fine particulate NAAQS. Therefore, Catawba County has been designated as non-attainment for PM_{2.5} (<http://www.epa.gov/oar/oaqps/greenbk/qnstate.html>). It should be noted that Caldwell County is not included in the non-attainment area. The fine particle concentrations measured at Linville Gorge indicate the fine particle concentrations are probably healthy in the Lenoir area since the 24-hour averages are below 35 micrograms per cubic meter (ug/m³), and the annual average is below 15 ug/m³.

Table 3-21: Monitoring Results for Fine Particles (PM_{2.5}) for the years 2001 – 2003* (note: the Linville Gorge monitoring site does not meet ambient monitoring standards to determine if the PM_{2.5} standard is achieved)

Location	2001 24-hour (ug/m ³)	2002 24-hour (ug/m ³)	2003 24-hour (ug/m ³)	24-hour 3-year Avg	2001 Annual Avg (ug/m ³)	2002 Annual Avg (ug/m ³)	2003 Annual Avg (ug/m ³)	Annual 3- year Avg
Linville Gorge	27	24	26	25.7	9.9	9.4	8.8	9.37

*The National Ambient Air Quality Standard is violated if the average of 3-years of annual average is 15 ug/m³ or greater (multiple community oriented monitors can be averaged together), or the 3-year average of the 24-hour concentration for the 98th percentile (using the maximum population oriented monitor in an area) is the 35 ug/m³ or greater.

Examining what types of compound comprise the fine particle mass is shown in Figure 2. Sulfates compose the majority of the fine particle mass on days when the visibility is classified as good (best 20%) and poor (worst 20%). The sulfates originated as sulfur dioxide and the primary sources of sulfur dioxide are coal-fired power plants (SAMI 2002), such as the Marshall plant in Catawba County. Visibility at Linville Gorge is currently considered to have an adverse impact and the impacts are primarily from sulfates that originated at coal-fired power plants. Therefore, the air quality agencies in the southeastern United States are focusing their attention on reducing sulfur dioxide emissions from sources (especially coal-fired power plants) predicted to have an impact on Linville Gorge Wilderness.

Table 3-19 does not provide estimates of the amount of sulfur dioxide emission from the proposed timber harvest, but the emissions are believed to be very low. Therefore, the sulfur dioxide emissions from the proposed project are unlikely to contribute to unhealthy fine particulate concentrations or have a significant impact to the regional haze problem experience in the local area.

3.13 Other Areas of Concern

3.13.1 Alternative A – Direct, Indirect, and Cumulative Effects

Since no action is proposed under this alternative, there would be no direct, indirect, or cumulative effects to park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

3.13.2 Alternative B – Direct, Indirect, and Cumulative Effects

There would be no measurable direct, indirect, or cumulative effects from any of these alternatives because none of them propose actions within park lands, prime farmlands, wetlands (as per 1977 Executive Orders 11988 and 11990), wild and scenic rivers, or ecologically critical areas. It also would not violate local law or requirements imposed for the protection of the environment. There are no other known foreseeable actions in the activity areas that could adversely affect park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

CHAPTER 4 – CONSULTATION WITH AGENCIES AND OTHERS

The following individuals helped develop this environmental assessment:

4.1 ID Team Members

4.1.1 Core IDT

- Sandy Burnet - Wildlife Biologist: B.S. Biology, 22 years with USFS
- David Casey - Forester Trainee: M.S. Forestry, 3 years with USFS (since transferred to the George Washington Jefferson NF)
- Eric Crews - Landscape Architect: B.L.A., 15 years with USFS
- David Danley - Botanist: B.S. Plant Pathology & Botany, 18 years with USFS
- Michael Hutchins - IDT Leader: B.S. Forest Management, 20 years with USFS
- Bob Noel - Archaeologist: B.S. Archaeology, 18 years with USFS
- Lorie Stroup - Fisheries Biologist: B.S. Natural Resources, 10 years with USFS
- Greg Van Orsow - Project Leader: B.S. Forest Management, 6 years with USFS

4.1.2 Other Forest Service Personnel Providing Input

- Bonnie Amaral – Acting Grandfather District Ranger
- Scott Ashcraft – Zone Archaeologist, Grandfather & Pisgah Ranger Districts
- Ruth Berner – Forest Planner, NFs in North Carolina
- Sheryl Bryan, Forest Fish & Wildlife Biologist, NFs in North Carolina
- Miera Crawford – Grandfather District Ranger (since transferred to NFs in Alabama)
- Steve Hendricks – Recreation Planner, NFs in North Carolina
- Bill Jackson – Air Quality Specialist, NFs in North Carolina
- Barry Jones – Acting Grandfather Resource Assistant
- Gary Kauffman – Forest Botanist
- Dean Karlovich – Resource Assistant, Grandfather RD (since transferred to Ottawa NF)
- Richard Kincaid – Silviculture Technician, Grandfather RD
- Joy Malone – Grandfather District Ranger
- Mary Noel – Forest Ecosystems & Planning Staff Officer, NFs in North Carolina
- Terry Seyden – Public Affairs Officer, NFs in North Carolina
- Steve Simon – Forest Ecologist
- Ronnie Thomas – Forest Technician, Grandfather RD
- Barbara Watring – Acting Grandfather District Ranger

4.2 Government Agencies and Elected Officials Consulted

- Blowing Rock Town Council and Mayor J.B. Lawrence
- Honorable Richard Burr – United States Senator for North Carolina
- Caldwell County Board of Commissioners and Deputy County Manager Jack Horton
- Mr. Brian Cole – USDI Fish and Wildlife Service
- Chairman James Deal, Jr. – Watauga County Board of Commissioners
- Honorable Elizabeth Dole – United States Senator for North Carolina
- Honorable Virginia Foxx – United States Representative for North Carolina’s 5th District
- Ms. Rene Gledhill-Early – North Carolina State Historic Preservation Office

Mr. Scott Hildebran – City Manager, Town of Blowing Rock

Mr. Ron Linville & Mr. Gordon Warburton – North Carolina Wildlife Resources Commission

Honorable Patrick McHenry – United States Representative for North Carolina’s 10th District

Eric Wooldridge – Senior Planner for Caldwell County

4.3 Others Providing Input ---

Over 1,280 members of the public provided comments on the proposal during scoping; the 30-day notice and comment period; additional comment period; after the comment periods and before issuance of the November EA; and at the August 9, 2006, public meeting in Blowing Rock, NC. A complete list of individuals and their comments is located in the project record.

APPENDIX A – BIOLOGICAL EVALUATION

BIOLOGICAL EVALUATION

GLOBE TIMBER SALE

National Forest in North Carolina
Grandfather Ranger District
Caldwell County, NC

I. INTRODUCTION

This report documents potential impacts to the biologic resources from the proposed Globe Timber Sale (Grandfather Ranger District) and associated improvements. The potential direct, indirect and cumulative effects on Threatened, Endangered (T&E), and Regional Forester's Sensitive (S) species are evaluated. Potential direct and indirect effects to T&E and S species were analyzed in the areas where timber harvest or ground disturbance is proposed. This area is referred to as the activity area. This document also analyzes the effects to species potential habitat from the proposal. The proposed activity areas are shown on the project map at the end of the environmental assessment (EA). The Forest Plan analysis areas (AAs), Upper John's River and Upper Mulberry are located in northern Caldwell County, southeast Avery County, and southern Watauga County, North Carolina. Alternative D is the preferred alternative and fully evaluated in this Biological Evaluation (BE). Actions considered in this analysis are (See EA project description for a detailed and complete description of activities):

1. Regeneration by two age timber harvest of approximately 212 acres.
2. Construction of about 1.5 miles of temporary road, improvement of about 0.8 miles of road of unauthorized roads, and use and maintain existing authorized roads.
3. Creation of about 9 acres of permanent grass and forb habitat.
4. Unsurfaced temporary roads, skid roads, and log landings would be disced and seeded following harvest activities.
5. Site prepare and release, if needed, all stands being regenerated using both herbicide and manual methods.
6. Daylighting approximately 2 miles of Frankum Creek Road.
7. Control non-native invasive plant species with herbicides along roads and landings.
8. Identify 311 acres (total) of small patch old growth in compartments 12 (50 acres), 13 (50 acres), 14 (50 acres), 35 (108 acres), and 37 (53 acres).
9. Re-install gate at China Creek on Thunderhole Road and post-harvest, seed roadbed to wildlife and wildflower seed mix.
10. Re-install a gate at the entrance to Thunderhole Road which would be seasonally closed for wildlife, non-motorized recreation, and road maintenance (January 1 – August 31).

II. SURVEYS AND ANALYSIS METHODS

Potentially affected Threatened, Endangered (T&E) and Regional Forester's Sensitive (S) species were identified by:

1. Reviewing the list of T&E and S species of the Pisgah, and Nantahala National Forests and their habitat preferences;
2. Evaluating element occurrence (EO) records of T&E and S species as maintained by the North Carolina Natural Heritage Programs;
3. Consulting with individuals both in the public and private sector who are knowledgeable of the area and its flora and fauna;
4. Conducting field surveys in areas of proposed activities.
5. Past surveys in the area, such as the 1996 Globe Mountain timber sale and the 2004 Rocky Knob prescribe burn.

Wildlife Methods and Surveys

Wildlife habitat surveys in the proposed activity areas were completed on May 8, 10, 11, 15 and 16, 2006. Snail and salamander surveys found only common species occurred within the proposed units. Bird surveys were completed on May 19, 2006. No bog turtle or spruce-fir moss spider habitat was found. The proposed timber units are generally steep, gravelly soils, with a sparse herbaceous layer. The AA surveys resulted in no T&E or S listed species within the activity area habitat.

The wildlife effects analysis area (AA) included both Upper Johns River and Upper Mulberry Analysis Areas identified in the Nantahala Pisgah Land Resource Management Plan (Forest Plan) and cover a total of about 11,226 acres. The Nantahala and Pisgah National Forest Plan, Amendment 5, identified a patch of forest interior habitat with minimal edge within this AA. The patch was identified by the Forest Plan as patch #38 and the proposed actions would not affect the habitat within this patch.

Botanical Methods and Surveys

The field surveys were conducted by a meander search pattern to survey all the variation in habitat within the unit. The survey was conducted until all of the habitats within the unit were surveyed and no new plant species were added to the unit species list after a minimum of 20 minute's search was made (timed meander search). Focused attention was given during the surveys to habitats within the units that may be associated with plant T&E, and S plant species, i.e., rock outcrops, seeps, etc. The intensity of the coverage varied depending on the extent of any likely T&E, and S plant species habitat, complexity of vegetation, and/or presence of indicator species. Some areas were virtually devoid of herbaceous vegetation and required very little intensive survey while other areas required considerably more time to adequately survey. Although the search was focused on the possibility of occurrences of the T&E and S plants listed on Table A-1; all T&E and S plant species were searched for during the survey. The survey was conducted so that a T&E and S plant species would not be overlooked due to phenology or time of the year that the species could reasonably be detected. A summary of the habitats and/or

community(ies) in the activity area specified and the occurrence of plant T&E and S plant species may be found in the Botanical Analysis (BOTA).

The botanical AA or “boundary of effects” used for this proposal is defined as: the total area within 2 kilometers of any proposed unit (activity area) or known EO (element occurrence) of any plant T&E and S species. The botanical AA consists of about 13,194 acres. All potential effects (direct, indirect and cumulative) to botanical resources in the botanical AA were analyzed using this “boundary”. The botanical AA definition was selected because it is analogous to the Natural Heritage Program and The Nature Conservancy’s plant delimitation guidelines of EO. Other resource disciplines may employ different definitions to analyze this proposal.

The proposed activity areas were surveyed by David M. Danley, Forest Botanist on March 21; April 13, 14, 27, 28; and May 23, 2006. All proposed units or activity areas were visited at least once during this time. Gary Kauffman (USFS Botanist) did botanical surveys along Frankum Creek road (April, 2006).

Other relevant Botanical surveys that were analyzed include: Globe Mt. timber sale (1996) and Rocky Knob Prescribed burn (2004).

Aquatic Method and Surveys

The aquatic analysis addresses activity area waters and AA waters. Activity area waters are defined as those in the area of potential site-specific impacts on aquatic habitat and populations. The AA encompasses waters downstream that potentially could be impacted by project activities, in addition to activity area waters. The aquatic AA is larger than the activity area.

Lorie Stroup, USFS Fisheries Biologist and Kerri Lyda, USFS Biological Technician conducted aquatic habitat and aquatic insect surveys of the proposed aquatic project and analysis areas in the late winter and spring months of 2006. The surveys consisted of examining streams within the aquatic activity area, noting habitat quality, quantity, and suitability for rare aquatic and management indicator species (MIS), as well as existing impacts and their source. Georges, Friddle, and Frankum Creeks were surveyed for fish using a backpack electrofishing machine in February 2004.

Additional information specifically addressing aquatic MIS was obtained from North Carolina Wildlife Resources Commission (NCWRC) biologists, North Carolina Natural Heritage Program (NCNHP) records, North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Quality aquatic biologists, and US Fish and Wildlife Service (USFWS) biologists.

III. EXISTING CONDITION

Communities and Habitats Found in the Globe Botanical AA

The Globe botanical analysis area can be characterized by low-mid elevation Mountain region plant communities. The area has several southeast to south trending drainages through the

analysis area. The major streams are Thunder Hole Creek and Mulberry/Mills Creek. A succession of south trending, interlinking ridges is found between drains. The highest points of these ridges are about 2,200 feet elevation (Globe Mountain and Round Mountain). The drainage flows downward to about 1,300 feet elevation towards the Johns River. The AA exhibits many typical natural communities of the low to mid elevation southern Appalachian mountains.

Three common community types are characteristic within the analysis area. These communities are: Pine-oak Heath Forest, Chestnut Oak Forest, and Acidic Cove Forest, and, to a much lesser extent, the Montane Oak-Hickory Forest. A Montane Alluvial Forest and Rocky Shore and Bar communities are associated with the low elevation areas directly adjacent to major streams but are best developed along Frankum Creek and Johns River. Small habitat areas such as small rock outcrops and forested seeps and streams can be imbedded within these communities. Natural communities often grade together and definite boundaries are usually difficult to see. However, there is often a pattern to these communities on the landscape. Within the analysis area, the Acidic Cove Forest often occupies areas near streams, lower cove slopes and northern aspects. Higher cove slopes, south and western slopes are often dominated by the Chestnut Oak Forest. Pine Oak Heath Community is found on dryer Ridges and slopes. The Montane Oak-Hickory Forest, Montane Alluvial Forest and anthropogenic communities have the most diverse herbaceous component of the communities found within the analysis area. However, taken in whole, the analysis area has a very poor herbaceous diversity. All of the communities are very common community types and have a relatively low probability of occurrences for Forest T&E and S plant species (See Schafale and Weakley for a detailed description and discussion of these communities); thus, making a general low potential for T&E and S plant species to occur in the potential activity areas. The primary natural communities affected by this proposal are the Chestnut Oak Forest and Acidic Cove Forest.

The Forest Plan, Amendment 5, identified a patch of forest interior habitat with minimal edge within this AA. The interior bird patch was identified as patch #38 and the proposal would not affect the habitat within this patch.

All the stands being considered for management activities exhibit sparse to non-existent herbaceous layer and fine gravel-based soils with shallow humus layer. The only exception is the daylighting being proposed along Frankum Creek road and, in Alternative C, a portion of the Thunderhole road daylighting. Portions of these road corridors exhibited a continuous herbaceous layer where sunlight from the roadbed opening and moisture were both present. In many cases, the shrub layer of the stands was dominated by a dense rhododendron shrub layer. Overall, there was no T&E wildlife habitat within the proposed action areas. There is habitat for both larval and adult stage habitat for *Speyeria diana* throughout the wildlife effects AA. No additional S species habitat was observed within the activity areas.

Existing data for aquatic resources within the aquatic AA is used to the extent it is relevant to the project proposal. This data exists in two forms: 1) general inventory and monitoring of Forest aquatic resources; and 2) data provided by cooperating resource agencies from aquatic resources on or flowing through the Forest. Both of these sources are accurate back to approximately 1980 and are used regularly in project analyses. Data collected prior to 1980 is used sparingly (mostly

as a historical reference). Project-specific surveys are conducted to obtain reliable data where none exists.

Substrate within the activity area waters (Table A-1) was evaluated and visually estimated. The three primary types of substrate that exist were documented at each macroinvertebrate sample site. This information is valuable for determining the amount of habitat available for proposed endangered, threatened, and sensitive (PETS) species, MIS, as well as other aquatic organisms.

Table A-1 – Forest Plan Watershed 60 (Johns River)

Stream Name (UT denotes an unnamed tributary)	Compartment- Stand	Miles in Activity area	Miles in Analysis Area
Thunderhole Creek			3.52
UT1	37-5a	0.01	0.34
	37-5b	0.006	
UT2	33-11	0.25	0.56
UT3			0.15
UT4			0.19
UT5	37-9	0.06	0.76
UT6			0.23
UT7			0.19
UT8	37-9	0.14	0.14
John River			0.57
UT1			0.59
China Creek	38-7	0.3	0.3
Georges Creek	14-1a	0.17	1.34
	14-1b	0.19	
UT1			0.39
UT2			0.25
Friddle Creek			1.33
Frankum Creek	13-7/13-19	0.23	2.65
	13-18	0.36	
UT1			1.3
UT2			0.25
Total		1.716	14.69

Fish habitat exists within the analysis areas of Georges Creek (below activity areas), Frankum Creek (adjacent to stands 13-11&13-21 and 14-12), Thunderhole Creek, and China Creek (adjacent to stand 38-7). In the remaining areas, there is limited habitat for fish species within the activity area waters, due to small stream size and restricted flow regimes. Activity area waters provide habitat for macroinvertebrates.

IV. PAST AND FORESEEABLE FUTURE ACTIVITIES POTENTIALLY AFFECTING SPECIES AND THEIR HABITAT

The 2000 Frankum Creek timber sale was implemented from 2000 to 2002 and utilized clearcuts and two-aged harvest methods on 45 acres. The increased soft mast production and 0-10 early successional habitat conditions would remain over this harvest area until approximately 2012. Although hard mast species were retained as residuals where they occurred, there remains a decreased amount of available hard mast over this 45 acre sale area. There was also 115 acres of release work done in connection with this sale in 2000. This release work was completed to improve the tree species composition in releasing hard mast regeneration and removing the competing species of silver bell, striped maple, red maple, and other competing hardwood species.

There have been approximately 140 acres of wildfires within these analysis areas since 1981 and approximately 150 acres of prescribed fire in 2005, which included slash down on approximately 20 acres of pine trees killed by southern pine beetles (SPB), prior to the burn. There is a future prescribe burn, Boyd Branch, planned on approximately 160 acres. Where these fires occurred, the shrub layer has been reduced and scattered tree mortality occurred. During years following these fire events, soft mast shrubs regenerate with a greater vigor and production. Wild fires and prescribe burns rarely enter riparian areas or are low intensity burns with low severity effects within this moist environment.

The southern pine beetle (SPB) epidemic within the past 5 years has resulted in large clumps and scattered yellow pine species mortality, especially where they occur along ridgetops. The Rocky Knob prescribe burn in 2005 was intended to reduce the downed and dead trees and allow yellow pine to regenerate along the ridge top more freely.

There have been two recent cases of encroachments on NFS lands within the vicinity of Frankum Creek over the past three years and law enforcement is continuing to address these incidents. Past encroachment cases have mainly occurred on the eastern portion of the AA and are being resolved. There is watershed damage created by unauthorized Off Highway Vehicle (OHV) use in the vicinity of the upper tributary of John's River. Watershed repairs are planned for 2007-2008 and law enforcement continues to address the trespass incidents. Unauthorized OHV use in several locations across the AAs continues to be a problem and a law enforcement challenge.

Mountain bike recreationists using the Thunderhole road are currently leaving the road surface and creating a "path" in the China Creek riparian area. The District is continuing to educate recreationists on proper uses to reduce impacts to riparian areas.

Hurricane damage from the 2004 events within this analysis area includes three roads scheduled for repair this year, George's Creek road #4111, Frankum Creek #188, and Thunderhole Road #4071 this year. Frankum Creek and Thunderhole rehabilitation would be within the existing ditch line, while the George's Creek road rehabilitation includes some straightening and realignment for approximately 1,000 total feet.

As the Hemlock Woolly Adelgid infestation moves across the District infecting hemlock tree species, release of beetles and soil injection is being done in two small areas within the AA; however, not all the hemlock currently present in the AA would be treated and some mortality is expected.

There are hiking trails and dispersed camping use throughout this AA. This recreational use is expected to continue. Special forest product permits have been issued in the past and are expected to continue within this AA.

Private land uses surrounding and within these AAs includes forested land, nurseries, farms, and single family dwelling. Several nurseries exhibit plantations of shrubs and tree species with herbicide application limiting grass or herbaceous growth. Due to the herbicides applied on NFS lands and project design features, adverse cumulative effects are not anticipated (see Section 3.4 and Appendix F). There is an increased amount of housing development along the north and east portions of these AAs. This housing development commonly consists of permanent tree and shrub removal on up to one acre. This amount of development is expected to continue. Overall, private lands are heavily impacted by human disturbance, roading, and elimination of natural ecosystems.

V. THREATENED, ENDANGERED, AND SENSITIVE SPECIES EVALUATION

Two S plant species (*Helianthus glaucophyllus* and *Tsuga caroliniana*) are known to occur within the botanical AA. No other T&E or S botanical species are known to occur within the botanical AA. Appendix A lists the total of 18 plant T&E and S plant species known to occur in Caldwell County, North Carolina. All T&E and all sensitive plant species but six (Table A-2) were dropped from the list for further consideration and discussion for one of the following reasons: 1) lack of suitable habitat for the species in the botanical AA; 2) the species has a well-known distribution that does not include the analysis area; or 3) based on field surveys no habitat was seen in the activity areas. Habitats, community types, and ranges of plant T&E and S species are derived from information in Classification of the Natural plant Communities of North Carolina, the Natural Heritage Program's List of Rare Plant of North Carolina or information obtained through other botanist.

Three S aquatic species have been listed by NCWRC, USFWS, or NCNHP as occurring or potentially occurring in Caldwell County. Table A-2 lists sensitive aquatic species for Caldwell County and indicates their occurrence within the activity and/or analysis area. No proposed, threatened, or endangered aquatic species or habitat is known to occur in Caldwell County. There were no aquatic PETS found during activity and analysis area surveys within the Globe Project area. However, 2 sensitive and 8 Forest concern species are included in this analysis due to their habitat preferences and the presence of this habitat within the project and analysis areas. *Alasmidonta varicosa* was eliminated from the Globe analysis because of their known distribution being far outside of the aquatic analysis area for this project. *Alasmidonta varicosa* was eliminated because mussel habitat ends in the Johns River at the confluence with House Branch where there is an obvious change in habitat availability for mussels. The Globe project is several miles upstream of this area, thus there would be no impacts to mussels or their habitat.

There are six wildlife T&E and S species listed by the NCNHP and USFWS as potentially occurring in Caldwell County (Table A-2). The proposed activity areas as well as past and foreseeable future actions within the AAs were evaluated to determine the habitat and potential occurrence for these T&E and S wildlife species.

Table A-2: Potential & Known T&E and S Species in the Globe Biological AA

Species	Type	Natural Community or Habitat	Occurrence
Federally Threatened or Endangered species (T &E)			
No T&E plant or aquatic species	N/A	N/A	N/A
Bog turtle	Reptile, T	Wet meadows and bogs	No habitat within proposed activity areas
Virginia big-eared bat	Mammal, E	Cave Dwelling	Not known to occur in the wildlife AA
Spruce-fir moss spider	Arachnid, E	Moss within spruce-fir forests	No habitat within wildlife AA
2002 Region 8 Regional Forester’s Sensitive species (S)			
<i>Aconitum reclinatum</i>	Vascular Plant	Rich Cove Forest	Not known to occur in botanical AA or activity areas.
<i>Fissidens appalachensis</i>	Moss	Aquatic on rocks in Acidic Coves	Not known to occur in botanical AA or activity areas.
<i>Helianthus glaucophyllus</i>	Vascular Plant	Anthropogenic, roadsides; Rich Cove Forests	Known to occur in proposed activity areas. See analysis below.
<i>Juglans cinerea</i>	Vascular Plant	Rich Cove Forest	Not known to occur in botanical AA or activity areas.
<i>Monotropsis oderata</i>	Vascular Plant	Chestnut Oak Forest	Not known to occur in AA or activity area.
<i>Tsuga caroliniana</i>	Vascular Plant	Chestnut Oak Forest, Pine Oak-Heath Forest.	Known to occur in proposed activity areas.
<i>Ophiogomphus edmundo</i> (Edmund’s snaketail)	Dragonfly	Lotic-fast, clean substrate rivers	May occur in the riverine habitat of the Johns River within the aquatic AA.
<i>Macromia margarita</i> (mountain river cruiser)	Dragonfly	Lotic-streams and rivers	May occur in the AA but not within the activity areas due to small size of streams.
<i>Alasmidonta varicosa</i> (brook floater)	Mussel	Lotic-clean, swift waters with stable gravel, or sand and gravel substrates	Does not occur within aquatic AA; may occur well below the aquatic AA in the Johns River.
<i>Speyeria diana</i> , Diana Fritillary	Insect	Larvae -riparian areas with rhododendron; Adults- open areas along roads, trails, or streams	Likely to occur

“Known to occur” those species for which there is documentation that the species exists within a specified area, or it was found in the area during surveys.

“Likely to occur” those species for which there is no documentation of the species occurring in a specified area but are expected to occur based on documentation of very similar or suitable habitat to known populations. For purposes of the AQUA, it should be assumed that the species does occur in a specified area until presence/absence of the species is verified.

“May occur” the species probably occurs in a specified area in the broadest sense. Only very general habitat preferences and species distribution are used to determine if a species may occur. This does

not imply their existence in an area, but that their general habitat description is found in the area, so therefore the species may occur.

“Does not occur” exhaustive surveys (past and current) have not found the species in the project and/or analysis areas. These species are not included in the analysis.

VI. EFFECTS TO THREATENED AND ENDANGERED SPECIES

An hibernacula (shelter of a hibernating animal) for the Virginia big-eared bat, *Corynorhinus t. virginianus*, was listed by the USFWS as possibly occurring within Caldwell County; however, phone conversations with the USFWS on July 20, 2005, confirmed this bat hibernacula is actually located outside Caldwell County and the activity areas. Bob Currie and Allan Ratzlaff, USFWS stated this cave was utilized by the bat for a winter hibernacula; the bats are hibernating in the cave throughout the winter months and leave the area when they emerge. While suitable summer foraging habitat may be present within Caldwell County, this species of bat has never been documented to remain and forage in the county. For that reason, this species was dropped from any further analysis.

As there are no spruce-fir forests or bogs and wet meadows within these proposed action areas for the Spruce-fir moss spider, *Microhexura montivaga*, or the Bog turtle, *Clemmys muhlenbergii*, they were dropped from further analysis.

There are no known T&E botanical or aquatic species or habitat within the project’s activity areas or Caldwell County. There are no further T&E wildlife species or their habitat within this project’s AA or Caldwell County.

VII. EFFECTS TO REGIONAL FORESTER’S SENSITIVE SPECIES

A. Wildlife Species

The Diana Fritillary, *Speyeria diana*, has been documented within 15 of the 18 western most counties of North Carolina. Over half of the occurrences (greater than 40) are known to occur within the Nantahala or Pisgah National Forest. As a result of all the recent documentations for this species, the North Carolina Natural Heritage Program no longer formally tracks Diana Fritillary (Legrand et al. 2004). Generally speaking, the distribution or population sizes of this species in the state are fairly well known. This butterfly prefers rich woods with host plants of both *Viola* and rhododendron for the larval stage and adjacent edges or openings with nectar species for the adult stage. Habitat for the Diana Fritillary is found throughout both AAs, within the riparian areas of George's Creek, Thunderhole Creek, and Frankum Creek. Nectar species are found along State roads and Forest Service roads within the AAs.

Alternative D would indirectly benefit the adult stage of this butterfly by increasing the nectar species habitat within harvest areas (212 ac), Frankum Creek road daylighting corridor (5 ac), on the closed and seeded portion of Thunderhole Road (3 ac) and within the grass/forb openings (9 ac). A small amount of habitat within the riparian area, estimated to be no more than one acre, would be adversely affected with the planned temporary roads. As there are approximately 1860 acres of riparian forests within these AAs, this one acre removal is not considered significant. The proposed herbicide application for the control of non-native invasive plant species is not

expected to effect the fritillary as the nectar species of paulownia does not contribute a measurable amount of nectar species. Alternative D would result in an indirect beneficial effect of increased nectar species (adult habitat) and an insignificant negative effect to larvae and eggs habitat.

Within the China Creek riparian area, the current unauthorized mountain bike traffic along and in China Creek may be affecting larval and egg habitat where violet species are eliminated by bike traffic within the riparian area. The District is continuing to educate recreationists on proper uses to reduce impacts to riparian areas and habitat. There have been two recent cases of encroachments on NFS lands within the vicinity of Frankum Creek over the past three years that together with past encroachments have altered water drainage and small segments of riparian habitat. The encroachments are limited in nature and in areas where no violet species are know to occur. The OHV trespass has generally not altered riparian habitat.

The planned storm-related hurricane road rehabilitation projects would eliminate the nectar species initially but they would return along all the road corridors within two years. The SPB caused mortality of yellow pine is expected to create more nectar species growth where the canopy has been killed. The hemlock adelgid treatment would not affect the butterfly. However, the loss of hemlock trees within the riparian area is expected to create openings which may increase the nectar species while is not expected to decrease either the rhododendron or viola species. Due to the herbicide treatment surrounding commercial nurseries, there is little nectar species available for the butterfly. Flower gardens surrounding many home sites increase nectar species availability however, the construction may have eliminated habitat. The 2000 Frankum Creek TS has provided nectar species habitat through canopy openings and temporary roads. However, these 45 acres of nectar species habitat would not persist into the next 10 year cycle as the canopy closes. Prescribe burning and wildfires may have eliminated some fritillary eggs or larvae and created habitat for nectar species. The adverse effect would have been for one season while the positive affect of increased nectar species is expected to be of three to five years in duration. No additional past or foreseeable future actions would affect this species.

Overall, Alternative D is expected to indirectly benefit the Diana Fritillary habitat across the AAs throughout the next ten years. There may have been negative direct effects to individual larvae and eggs from past disturbance actions on both private and public lands, such as illegal mountain bike traffic, housing development and wildfires. However, the increased habitat development with the Frankum Creek timber sale would have indirect beneficial effects on a larger habitat area. No further past and foreseeable future actions are expected to affect this species. This proposed action is not likely to cause a trend toward federal listing or loss of viability across the Nantahala and Pisgah National Forest.

B. Botanical Species

The known local population of *Tsuga carolinia*, Carolina Hemlock, in the analysis area occurs mostly along ridges and upper slopes (Pine-oak Forest) within the analysis area. *Tsuga caroliniana* occurs in proposed activity areas within the Boyd Gap area along FSR 4071.

Periodic maintenance of FSR 4071 may directly adversely affect approximately 10 individuals of *Tsuga caroliniana*. The proposal would have little effect on the entire population of *Tsuga caroliniana* within the botanical AA. The population of *Tsuga caroliniana* has a very large (estimated at 3,173 acres by model) viable population within the AA in areas that would not be affected by this proposal. Therefore, although this proposal would likely adversely affect individuals of *Tsuga caroliniana* it would not affect local or Forest viability of *Tsuga caroliniana*. Furthermore, the indirect effect to the habitat of *Tsuga caroliniana* is not expected to be permanently altered by this proposal and *Tsuga caroliniana* is expected to recover from actions proposed in the activity areas. No mitigation for *Tsuga caroliniana* is recommended.

Within the Botanical AA, there have been no effects to *Tsuga caroliniana* that are a result of past actions (see project list above). Nor are there any foreseeable actions that could affect *Tsuga caroliniana*. Therefore, the cumulative effects to *Tsuga caroliniana* are those of the current proposal. On a Forest wide scale, this proposal would have very little effect on *Tsuga caroliniana*. Although the hemlock wooly adelgid infestation is likely to reduce the numbers of *Tsuga caroliniana* and while the two adelgid control sites may limit the impact of the adelgid infestation, the adelgid infestation is not the result of any past or proposed action. There would be no known effect to this species by any other known past and foreseeable future activity. There are so many individuals of *Tsuga caroliniana* distributed over a wide area across the Forest that the species is not monitored in any quantified manner. Therefore, this proposal would have little effect on the total numbers of *Tsuga caroliniana* individuals throughout the Forest but would directly affect some individuals. As stated above, this proposal would have no effect upon the Forest viability of *Tsuga caroliniana*.

The only known local population of *Helianthus glaucophyllus* in the Botanical AA occurs along FSR 4071. Under Alternative D the maintenance of FSR 4071 may directly adversely affect individuals of *Helianthus glaucophyllus*. The impact to *Helianthus glaucophyllus* would have little effect on the entire population within the botanical AA. The population of *Helianthus glaucophyllus* has greater than two hundred individuals scattered along FSR 4071. The local roadside population of *Helianthus glaucophyllus* receives regular maintenance. *Helianthus glaucophyllus* thrives in open areas. The regular disturbance of road maintenance probably has created the habitat necessary for its existence within the AA. Maintenance of FSR 4071 would affect no more than 10% of this population. A viable population of *Helianthus glaucophyllus* would remain within the AA. Although Alternative D would likely adversely affect individuals of *Helianthus glaucophyllus* it would not affect local or Forest viability of *Helianthus glaucophyllus*. Furthermore, the indirect effect to the habitat of *Helianthus glaucophyllus* is not expected to be permanently altered by this proposal and *Helianthus glaucophyllus* is expected to recover in the proposed activity areas. No mitigation for *Helianthus glaucophyllus* is recommended.

Within the Botanical AA, there have been no known effects to *Helianthus glaucophyllus* that are a result of past actions, nor are there any foreseeable actions that could affect *Helianthus glaucophyllus*. Therefore, the cumulative effects to *Helianthus glaucophyllus* are those of the current proposed actions.

C. Aquatic Species

Alasmidonta varicosa, Brook floater, was eliminated because mussel habitat ends in the Johns River at the confluence with House Branch where there is an obvious change in habitat availability for mussels. The Globe project is several miles upstream of this area, thus there would be no impacts to mussels or their habitat.

There were no aquatic PETS found during activity and analysis area surveys within the Globe Project area. However, two S species are included in this analysis due to their habitat preferences and the presence of this habitat within the activity and AA.

Activities within the Globe Activity area would follow the riparian area guidelines along perennial and intermittent streams as stated in the Land and Resources Management Plan (LRMP) for the Nantahala and Pisgah National Forests and NC Best Management Practices. During specific activity area surveys, none of the members of the S species were present, however habitat did exist. Aquatic insects present during bridge installation may suffer mortality during disturbance at stream crossings. This disturbance may cause a temporary fluctuation in turbidity, but it is not expected to impact any of the area's aquatic resources.

Alternative A: No action would be taken associated with the Globe Project therefore there would be no bridge installations and road construction or reconstruction that would occur. There would be no direct or indirect effects to any Proposed, Endangered, Threatened, or Sensitive or Forest Concern aquatic species.

Alternatives B, C & D:

Sensitive Edmund's snaketail (*Ophiogomphus edmundo*) and mountain river cruiser (*Macromia margarita*)

Direct and Indirect Effects

The greatest likelihood of direct impact to aquatic macroinvertebrates is from the bridge installations for the temporary road projects associated with this project. Individual insects may be displaced and stressed during installation but these effects would dissipate approximately 50 feet downstream of the construction area and within 1 day. While installation techniques are designed to prevent visible sediment from entering project area waters, there would be a slight increase in sediment within the creeks substrate within the first 50 feet below the activity area. These sediments would persist until the next high flow event, which would scour these sediments from the stream channel. There may be an increase in stream turbidity during the installations. However, these effects would be minimized by application of erosion and sedimentation control measures (e.g. diversion pumps, silt fence, sediment traps, seeding, and mulch). Turbidity effects would persist for 1-2 days during construction, possibly longer depending upon the local weather conditions. The riparian disturbed areas would be seeded and mulched within 24 hours of completion to prevent or minimize erosion.

Cumulative Effects

The proposed bridge crossings on Frankum Creek with the Globe project may add to short-term (the time interval between the activity and the next storm event) negative impacts to habitat for these two species if they exist within the activity area. The previous storm events in 2004

resulted in short-term and continuing sedimentation impacts due to damage to roads and stream crossings, resulting in sedimentation that may have negatively impacted rare aquatic species within the upper Johns River watershed. Reducing or eliminating these sources of sedimentation with storm recovery projects would result in a positive effect to habitat. No other known past and foreseeable future activities are expected to affect these species. While there may be a short term negative increase in turbidity from the storm repair activities, particularly the culvert replacements and the bridge installations associated with the Globe Project, the long term benefits of stabilizing the existing erosion problems should enhance aquatic resources in the upper Johns River watershed by improving water quality. As already stated, this should result in an improvement in suitable habitat for rare aquatic organisms.

VIII. PROJECT DESIGN FEATURES

1. Marking guidelines would include priority residual tree species of; white oak, red oak, hickory, black oak, and chestnut oak, where they occur. In addition, two 12 inch diameter or larger diameter black gum species would be left as residuals within every 10 acres, where they occur. (Purpose is for wildlife habitat and vegetation diversity).
2. To reduce the possibility of spreading invasive plants treat known populations of *Miscanthus sinensis*, *Paulownia tomentosa*, *Celastrus orbiculatas*, and *Ailanthus altissima* should be treated prior to disturbance activities. *Miscanthus sinensis* was found along Forest Service Roads. All populations total less than one acre. Control of *Miscanthus sinensis*, *Paulownia tomentosa*, and *Ailanthus altissima* is most easily and effectively done by herbicide (Glyphosphate). (Purpose is to reduce spread of non-native invasive plant species).
3. Temporary crossings of ephemeral streams would include temporary bridges or armoring with stone or brush.
4. Native plants would be used in permanent wildlife improvement and roadside erosion control. (Purpose is to reduce spread of non-native invasive plant species).
5. Exclude a 150-foot area near station 8+50 on the Frankum Creek Road from daylighting to provide protection to the *Calystegia catesbeiana ssp. sericata* (Catesby's false bindweed) population. (Purpose is for habitat protection of a Forest Concern botanical species).

No mitigation measures are recommended for Alternative D.

IX. SUMMARY OF EFFECTS

This proposal would not affect (directly, indirectly, or cumulatively) any proposed or listed Federal T&E botanical, aquatic or wildlife species. Consultation with the USDI Fish & Wildlife Service is not required.

This proposal may impact individuals of Regional Forester's S species white leaf sunflower (*Helianthus glaucophyllus*) and Carolina hemlock (*Tsuga caroliniana*). These impacts would not lead towards federal listing or loss of Forest viability.

The current records for Regional Forester's S dragonfly species *Macromia margarita* and *Ophiogomphus edmodo* are within larger, more riverine type habitats than what is present within the aquatic activity areas. These species could be present within the aquatic AA of the

Johns River which is well away from the bridge installations on Frankum Creek. Since the stream crossings are located in Frankum Creek, which is a tributary to Mulberry Creek, *Macromia margarita* and *Ophiogomphus edmundo* would not be impacted by the project proposal. According to personal communication with Sarah McRae, North Carolina Heritage Program Freshwater Ecologist, the record of *Macromia margarita* for Caldwell County is unclear but most likely is from the lower reaches of Wilson Creek or the Johns River. Based on activity area surveys and habitat preferences, there would be no impacts to *Macromia margarita* or *Ophiogomphus edmundo* as a result from the implementation of the proposal. This proposed action is not likely to cause a trend toward federal listing or loss of viability across the Nantahala and Pisgah National Forest for either species.

Alternative D would have an indirect beneficial effect to nectar species habitat for the Regional Forester's Sensitive species, Diana Fritillary (*Speyeria Diana*) on 222 acres while there would be negative indirect effects to one acre of habitat. Overall, the proposal is expected to benefit the Diana Fritillary and its habitat across the AAs throughout the next 10 years. Past actions and foreseeable future actions, both on private and public lands may have had negative direct effects on individual larvae however; there have been positive indirect effects to habitat over the AAs. This proposal is not likely to cause a trend toward federal listing or loss of viability across the Nantahala and Pisgah National Forest.

No further botanical, aquatic, or wildlife Regional Forester's S species would be impacted by the proposed action.

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Attachment A

Federally Listed and Regional Sensitive Species of Caldwell County

Federally Listed Plant Species

Species	Natural Communities	Occurrence
<i>Liatrix helleri</i>	High Elevation Rocky Summit	4
<i>Hexastylis naniflora</i>	Piedmont Alluvial Forests	4

Regional Sensitive Plant Species

Species	Natural Communities	Occurrence
<i>Abies fraseri</i>	Spruce-Fir Forest, Northern Hardwood Forest	4
<i>Aconitum reclinatum</i>	Rich Cove Forest, Northern Hardwood Forest Elevation Seep Boulderfield Forest	3
<i>Bazzania nudicaulis</i>	Spruce-Fir Forest, High Elevation Rocky Summit	4
<i>Cardamine clematidis</i>	Spruce-Fir Forest, High Elevation Seep Boulderfield Forest	4
<i>Fissidens appalachensis</i>	Aquatic, on Rocks	3
<i>Geum geniculatum</i>	Grassey Bald, High Elevation Seep, Spruce-Fir Forest, Northern Hardwood	4
<i>Helianthus glaucophyllus</i>	Rich Cove Forest,	1
<i>Juglans cinerea</i>	Rich Cove Forest	3
<i>Lilium grayi</i>	Grassey Bald, Northern Hardwood Forest Appalachian Bog	4
<i>Monotropis odorata</i>	Chestnut Oak Forest, Pine Oak Heath	3
<i>Metzgeria furcata</i> var. <i>setigera</i>	High Elevations on bark	4
<i>Penstemon smallii</i>	Montane Acidic Cliff	4
<i>Plagiochila sullivantii</i> var. <i>sullivantii</i>	Spray zones of waterfall at high elevation	4
<i>Rhododendron vaseyi</i>	Spruce-Fir Forest, Heath Bald, Grassey Bald	4
<i>Tsuga caroliniana</i>	Pine-Oak Heath, Chestnut Oak Forest, rock outcrops	1

1 = Found in activity area;

2 = Found within botanical analysis area but not activity area;

3 = Possibly may be found with botanical analysis area (based on broad habitat concepts); or

4 = No known occurrences or habitat known within botanical analysis area, (not further analyzed).

Federally Listed and Regional Sensitive Aquatic Species of Caldwell County

Common Name	Scientific Name	Type
Threatened, Endangered, & Proposed Species		
NONE		
Sensitive Species (based on January 1, 2002 Regional Forester's list)		
mountain river cruiser	<i>Macromia margarita</i>	dragonfly
Edmund's snaketail	<i>Ophiogomphus edundo</i>	dragonfly
brook floater	<i>Alasmidonta varicosa</i>	mussel

Federally Listed and Regional Sensitive Wildlife Species Caldwell County

Species	Type & Status	Occurrence
Bog Turtle	Reptile (T)	No habitat within proposed activity areas
Spruce-fir Moss Spider	Arachnid (E)	No habitat within AAs
Diana Fritillary	Insect (S)	May occur
Virginia big-eared Bat	Mammal (E)	No record within the county

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Definitions

Threatened, or Endangered (T&E): is a species that has been listed or is proposed for listing by the United States Fish and Wildlife Service. These species are included in every BE conducted for projects where the species is known to, likely to, or may occur. These species are also included in projects where the species occurred historically but hasn't been found during recent surveys.

Sensitive species (S): is a species appearing on the Regional Forester's Sensitive Species List for the Southern Region (August 7, 2001). These species are included in every BE conducted for projects within an area where the species is known to, likely to, or may occur.

Known to occur: those species in which there are records that they exist within a specified area, or it was found in the area during project specific surveys.

Likely to occur: those species in which there is no documentation of the species occurring in a specified area but are expected to occur based on documentation of very similar habitat to known populations. For purposes of the BE, it should be assumed that the species does occur in specified area until presence/absence of the species is verified.

May (could) occur: the species probably occurs in a specified area in the broadest sense. Only very general habitat preferences and species distribution are used to determine if a species may occur. This does not imply their existence in an area, but that their general habitat description is found in the area, so therefore the species may occur. See the attached resource reports for “may occur”.

Activity Area: The geographic boundary where direct effects of the proposal (i.e. specific timber stands, haul routes, temporary roads, linear wildlife fields, trails, prescribed fire, treatment of non-native invasive, etc.) would specifically occur, and would change by alternative.

Biological Analysis Area: The maximum geographic boundary where cumulative biological effects of analyses from past, present, and reasonably foreseeable actions are expected to be combined with effects from the proposal. Analysis areas are specific to individual resources and may have different boundaries. They are referred in the body of this report as the botanical, wildlife, and aquatic Analysis Areas.

Coldwater Streams: Are usually defined as those with maximum temperatures of 68 degrees F or less. In North Carolina, these streams are largely ground-water fed, have relatively stable flows and generally elevations of 1,100 feet or more. They have gradients that are steep with stable banks. Boulder-rubble dominates their bottoms, and their turbidity is low. Productivity is usually limited.

Coolwater Streams: Represent the transitional community between coldwater streams and warmwater streams. Components of the community may include elements of both coldwater and warmwater habitats.

Forest Plan (LRMP) Analysis Area (AA): 4th order watersheds as determined by the Forest Plan.

Management Area: Forest Plan designated areas with specific management objectives, standards, and guidelines.

Project Area: The general location identified by the Responsible Official where actions are proposed.

Warmwater Streams: Are characterized by having annual maximum temperatures greater than 68 degrees F.

APPENDIX B – AGE CLASS DISTRIBUTION

Forest vegetation within the Globe project area consists of upland and cove hardwood species such as oaks, yellow poplar, hickories, red maple, black gum, and black locust. White pine, pitch pine, shortleaf pine, and hemlock occur in varying degrees throughout the area. Understory vegetation includes rhododendron, mountain laurel, red maple, white pine, hemlock, blackgum, sourwood, oak and various other shrubs and herbs. Most overstory oaks are scarlet oak or chestnut oak with areas of white oak, black oak and northern red oak. (All stand ages discussed below were determined for the year 2008.)

Within the Upper Johns River AA, approximately 75 percent of forested acres are 71 years old or older. There is no acreage in the 0-10 year age-class, and only three percent is in the 11-20 year age-class. Within the Upper Mulberry AA, over 90 percent of forested acres are 71 years old or older. There are approximately one percent of forested acres in the 0-10 year age-class, and approximately four percent is in the 11-20 year age-class. Within the 4,837 acre project area (compartments where harvesting is proposed), approximately 80 percent of the forested acres are 71 years old or older. Less than one percent is in the 0-10 year age-class, and only seven percent is in the 11-20 year age-class.

This age-class distribution is very unbalanced for MA 3B where sustainable timber harvest and provision of young forest is emphasized (Forest Plan, page III-71). The age-class distribution is also unbalanced for MA 4A where timber harvests are utilized to provide a wide variety of tree ages and wildlife habitat (Forest Plan, page III-77).

This analysis determines the minimum and maximum harvest levels for the project area according to the Forest Plan. Both action alternatives would help to balance the age-class distribution. Action alternatives would result in bringing the 0-10 year age-class in the project area up to about five percent by the end of the project implementation. The resulting sum of 0-10 and 11-20 year age-classes would be approximately 13 percent. All stands proposed for harvest are from 69 to 98 years old.

Forest Plan Direction for Distribution of Early Successional Habitat

The Forest Plan contains specific desired conditions for the amount of 0-10 year age-class in management areas with timber production (Forest Plan, pages III, 29-31). Regulation is at three scales: the analysis area or topographic level; the management area within the analysis area or topographic area; and the compartments within the area. The tables below summarize the existing 0-10 year age-class and regeneration goals for these areas and for the Globe project compartments within each analysis area. Uncut inclusions and non-forested areas are not considered as 0-10 year old regeneration.

Globe Compartments 12, 13, 14, 33, 35, 37, 38, 39

For every AA with at least 250 acres in MAs 1B, 2A, 3B, 4A and/or 4D, the number of acres in each management area is multiplied by the maximum percent allowed and then summed to

determine the amount of 0-10 year age-class allowed in the analysis area, or 367 acres in Upper Mulberry and 333 acres in Upper Johns River.

For every management area with at least 250 acres in the analysis area, the amount of 0-10 year age-class allowed in the management area is calculated by multiplying the number of acres in each management area in the AA by the maximum percent allowed. Each result is the amount of 0-10 year age-class allowed in that management area. In Upper Mulberry AA there is a maximum of 367 acres allowed in MA 3B (Table B-1). In Upper Johns River AA there is a maximum of 50 acres allowed in MA 3B and 283 acres in MA 4A (Table B-2).

Table B-1: Forest Plan Allowed 0-10 Year Age-Class for Upper Mulberry AA

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	2,446	122	367	68	54	299
2A	0	-	-	-	-	-
4A & 4D	0	-	-	-	-	-
Other	2,892	-	-	-	-	-
Total	5,338	122	367	68	54	299

Summary: In Upper Mulberry, harvest 54 to 299 acres in MA 1B and 3B.

Table B-2: Forest Plan Allowed 0-10 Year Age-Class for Upper Johns River AA

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	331	17	50	0	17	50
2A	0	-	-	-	-	-
4A & 4D	2,825	0	283	0	0	283
Other	2,731	-	-	-	-	-
Total	5,887	17	333	0	17	333

Summary: In Upper Johns River, harvest 17 to 50 acres in MAs 1B and 3B and harvest up to 283 acres in MAs 4A and 4D.

For every compartment with at least 250 acres in MAs 1B, 2A, 3B, 4A, and/or 4D, the amount of 0-10 year age-class allowed in each compartment is calculated by determining which of the MA's has the most acres in the compartment (1B, 3B, 2A, 4A, or 4D). If MAs 1B and 3B have the most, then the maximum allowed in the 0-10 year age-class is 15 percent of all acres in the compartment. If MAs 2A, 4A, or 4D have the most acres, then the maximum amount allowed in the 0-10 year age-class is 10 percent of all acres in the compartment. The following tables display the age-class by compartment and Forest Plan standards (harvest goals):

Table B-3: Upper Mulberry AA, Compartment 12, 0-10 Year Age-Class

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	373	20	59	0	20	59
2A	0					
4A & 4D	0					
Other	19					
Total	392	20	59	0	20	59

Summary: In Compartment 12, harvest 20 to 59 acres in MAs 1B, 2A, 3B, 4A and 4D.

Table B-4: Upper Mulberry AA, Compartment 13, 0-10 Year Age-Class

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	588	32	96	22	10	74
2A	0					
4A & 4D	0					
Other	54					
Total	642	32	96	22	10	74

Summary: In Compartment 13, harvest 10 to 74 acres in MAs 1B, 2A, 3B, 4A and 4D.

Table B-5: Upper Mulberry AA, Compartment 14, 0-10 Year Age-Class

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	575	32	95	0	32	95
2A	0					
4A & 4D	0					
Other	57					
Total	632	32	95	0	32	95

Summary: In Compartment 14, harvest 32 to 95 acres in MAs 1B, 2A, 3B, 4A and 4D.

Table B-6: Upper Johns River AA, Compartment 33, 0-10 Year Age-Class

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0					
2A	0					
4A & 4D	427	0	82	0	0	82
Other	395					
Total	822	0	82	0	0	82

Summary: In Compartment 33, harvest up to 82 acres in MAs 1B, 2A, 3B, 4A and 4D.

Table B-7: Upper Johns River AA, Compartment 35, 0-10 Year Age-Class

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0					
2A	0					
4A & 4D	781	0	87	0	0	87
Other	92					
Total	873	0	87	0	0	87

Summary: In Compartment 35, harvest up to 87 acres in MAs 1B, 2A, 3B, 4A and 4D.

Table B-8: Upper Johns River AA, Compartment 37, 0-10 Year Age-Class

Mgmt. Area	Forested Acres	0-10 YEAR AGE-CLASS			HARVEST GOALS	
		Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.

Mgmt. Area	Forested Acres	Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0					
2A	0					
4A & 4D	287	0	35	0	0	35
Other	61					
Total	348	0	35	0	0	35

Summary: In Compartment 37, harvest up to 35 acres in MAs 1B, 2A, 3B, 4A and 4D.

Table B-9: Upper Johns River AA, Compartment 38, 0-10 Year Age-Class

		0-10 YEAR AGE-CLASS			HARVEST GOALS	
Mgmt. Area	Forested Acres	Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0					
2A	0					
4A & 4D	536	0	62	0	0	62
Other	80					
Total	616	0	62	0	0	62

Summary: In Compartment 38, harvest up to 62 acres in MAs 1B, 2A, 3B, 4A and 4D.

Table B-10: Upper Johns River AA, Compartment 39, 0-10 Year Age-Class

		0-10 YEAR AGE-CLASS			HARVEST GOALS	
Mgmt. Area	Forested Acres	Min. Desired	Max. Allowed	Existing 0-10 Yr.	Min.	Max.
1B, 3B	0					
2A	0					
4A & 4D	188	0	51	0	0	51
Other	324					
Total	512	0	51	0	0	51

Summary: In Compartment 39, harvest up to 51 acres in MAs 1B, 2A, 3B, 4A and 4D.

APPENDIX C – OLD GROWTH COMMUNITIES ANALYSIS

Forest Plan Direction for Old Growth

The Forest Plan contains specific directions for designating large, medium, and small old growth restoration patches (Forest Plan, pages III 26-28). The administrative watersheds affected by this project are 60 (Johns River) and 61 (Mulberry Creek). The requirements for this project are as follows: (1) utilize large patch 24 in the Upper Johns River AA and large patch 30 in the Upper Mulberry AA; (2) select and designate small patches for compartments 12, 13, 14, 35 and 37, and utilize existing small patches for compartments 33, 38 and 39.

The purpose of the **large patches** is to serve as permanent reservoirs of biological diversity and to provide preferred habitats for forest interior birds across the landscape.

Large Patch 24: Approximately 5,900 contiguous acres with 1,049 contiguous acres located within the Upper Johns River AA.

Large Patch 30: Approximately 3,326 contiguous acres with 2,609 contiguous acres located within the Upper Mulberry AA.

The purpose of the **small patches** is to increase biological diversity and to provide structural components of old growth at the stand and landscape levels. Both action alternatives would designate the following areas as small patches:

Table C-1: Small Old Growth Patches in the Upper Johns River and Upper Mulberry AAs

Comp.	Min. Acres	Stand No.	Est. Acres	CISC Age in 2006	Initial Inv.?	Community Type
12	50	02 (partial)	3	96 ¹	No	Cove Forest
		11 (partial)	28	79	No	Cove Forest
		12 (partial)	19	96	No	Oak/Hickory Forest
13	50	11 (partial)	15	85	No	Cove Forest
		12 (partial)	15	85	No	Oak/Pine Forest
		22 (partial)	20	85	No	Oak/Pine Forest
14	50	01 (partial)	6	76	No	Cove Forest
		11	44	76	No	Cove Forest
35	108	06	27	88	No	Cove Forest
		07	51	92	No	Cove Forest
		08 (partial)	16	77	No	Cove Forest
		18	14	68	No	Cove Forest
37	53	11 (partial)	37	111	No	Oak/Hickory Forest
		13	16	111	No	Oak/Hickory Forest

- 1 Previous EAs disclosed this portion of Stand 12-02 was 12 years in age. This disclosure did not take into account that this three acre portion was not harvested in 1995 along with the remainder of the stand. As a result, the three acre portion is now incorporated into adjacent Stand 12-12 making it 96 years old with the rest of Stand 12-12 and not 12 years old.

The following table displays the current old growth in the two Forest Plan analysis areas where harvesting is proposed:

Table C-2: Existing Old Growth in the Upper Johns River and Upper Mulberry AAs where Harvesting is Proposed¹

Comp.	O/G Comp Acres	Stand No.	Acres	CISC Age in 2006	Community Type
33	291	04	68	94	Pine/Hardwood Forest
		06	28	74	White Pine Forest
		07	80	74	Cove Forest
		08	96	88	Oak/Hickory Forest
		22	19	74	Cove Forest
38	466	01	52	124	Oak/Hickory Forest
		02	70	134	Oak/Hickory Forest
		03	37	88	Cove Forest
		04	105	115	Oak/Hickory Forest
		05	62	86	Oak/Hickory Forest
		06	41	74	Oak/Hickory Forest
		08	99	132	Oak/Hickory Forest
39	295	05	10	83	Cove Forest
		06	70	83	Oak/Hickory Forest
		09	57	75	Oak/Hickory Forest
		10	75	97	Cove Forest
		11	57	82	Oak/Hickory Forest
		12	16	87	Cove Forest
		14	10	89	Cove Forest

¹ Total non-contiguous old growth in Upper Johns AA is 2,462 acres and in Upper Mulberry AA is 2,653

Initial Inventory of Old Growth

None of the treatments are proposed in areas included in the initial inventory of old growth, so there would be no impacts to those acres.

Forest Plan Direction for Forest Interior Birds

The Forest Plan contains specific directions for providing preferred habitat conditions for forest interior breeding birds in selected areas (see Forest Plan, page III-32 and Appendix F). About 70% (3,400 acres) of the Interior Forest Habitat Patch #38 is within the Globe project Upper Mulberry AA, and would not be affected by this proposal.

APPENDIX D – APPROPRIATENESS OF HARVEST METHODS

Regeneration methods were discussed at length in Appendix E of the FEIS for the Forest Plan, and on pages E-1 and E-2 Forest Plan, Amendment 5. Choices include shelterwood cutting and clearcutting (even-aged management system), two-age (two-aged system), and group selection (uneven-aged system). At this time, single-tree selection (uneven-aged management) is not being considered as appropriate in meeting long-term regeneration needs to sustain productive stands of desirable tree species except in northern hardwood (beech-birch-sugar maple) or hemlock stands (all shade tolerant species). This is because regeneration objectives would not be met and single-tree selection does not work with shade intolerant species as occur in the Upper Johns River and Upper Mulberry AAs. Thinning and sanitation cutting may also occur, but they are intermediate treatments not meant to establish regeneration.

With any method, there must be enough quantity and quality of timber to be removed to make a sale operable, i.e. economically feasible to log at a given stumpage price (stumpage is the price paid for standing timber). The minimum quantity would generally be three thousand board feet of sawtimber per acre, although markets may develop for lower value products. Sawtimber would be defined as trees that are large enough, free enough of defects, and of commercially valuable species which could be sawed into grade 3 or better lumber. Some species like scarlet oak occasionally may not contain any grade 3 logs because of defect. Other species like sourwood seldom reach large enough diameter to become sawtimber. Changes in markets may change operability standards in a local area as well as affecting stumpage price.

Operability and stumpage price are also affected by transportation cost, logging cost, and size of the area being logged. Costs of getting logs from the sale area to the mill are higher for timber in remote areas, where haul roads must be built, or for timber logged with specialized logging equipment, e.g. with cable systems or with a helicopter. As costs increase, prospective timber purchasers lower their bid prices on stumpage to compensate. If the price they can pay becomes less than the minimum acceptable stumpage price, the timber becomes inoperable (no one would buy it).

Each logging crew, depending on the size of their operation and the value of the timber to be logged, would have a minimum amount of timber that would be economical for them to move in and cut. For instance, in a given stand, it might be economical for a given logging crew to harvest a clearcut as small as 10 acres to obtain 50 MBF. If group selection is chosen, where only about 25 percent of the area is regenerated per entry, 40 acres would be needed to provide the crew with the same amount of sawtimber. Therefore, operability becomes an important factor in determining which regeneration methods are appropriate.

Much concern has been expressed over clearcutting as a management tool. In compliance with recent direction, other regeneration methods would be used when management objectives can be met and when the other methods are economically feasible. In a memo to Regional Foresters dated June 4, 1992, the Chief of the Forest Service stated that *Clearcutting would be limited to areas where it is essential to meet forest plan objectives and involve one or more of the following circumstances:*

1. *To establish, enhance, or maintain habitat for threatened, endangered, or sensitive species.*
2. *To enhance wildlife habitat or water yield values, or to provide for recreation, scenic vistas, utility lines, road corridors, facility sites, reservoirs, or similar development.*
3. *To rehabilitate lands adversely impacted by events such as fires, windstorms, or insect or disease infestations.*
4. *To preclude or minimize the occurrence of potentially adverse impacts or insect or disease infestations, windthrow, logging damage, or other factors affecting forest health.*
5. *To provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant.*
6. *To rehabilitate poorly stocked stands due to past management practices or natural events.*
7. *To meet research needs.*

These circumstances would be referred to on a site-specific basis when showing that clearcutting is optimum for a given stand.

Regeneration using the **group selection** method is appropriate where slopes are gentle enough to allow ground skidding of timber (logging costs are relatively low) and where there is enough volume and value in the stands to make selection cutting operable. Group selection is not appropriate in very small stands, on slopes greater than 40 percent where cable logging is required, where timber volume or value is low, or in stands where insect or disease hazards are high and widespread. It is also not appropriate where partial cutting and leaving a white pine seed source would result in conversion of mixed pine/hardwood stands to almost pure pine stands, if the accompanying long-term loss of mast production would be detrimental to local wildlife populations.

The **shelterwood** method of regeneration has been traditionally used where a residual seed source was needed for stand establishment or where new seedlings developed best with partial shade or protection from exposure. In the Appalachian Mountain region, seed from reserve trees (or "leave trees") are usually not needed to establish a new stand, but visual concerns often make shelterwood desirable. Leave trees must be those that would not likely be windthrown after having the adjacent trees cut. The residual overstory of a new shelterwood cut would look more park-like with the biggest and best trees evenly distributed across the landscape, rather than having a denuded appearance like a fresh clearcut might have. Regeneration would become established under the residual overstory. Then, at some later time depending on objectives, all or part of the overstory may be removed so it would not hinder further growth and development of the new stand. Some damage to the regeneration would occur during the overstory removal. Shelterwood is not appropriate on slopes greater than 40 percent where cable logging is required unless timber volume and values are very high. Shelterwood is not appropriate in stands where leaving an overstory would make the stands inoperable, or in stands where insect or disease hazards are high and widespread. It is also not appropriate where partial cutting and leaving a white pine seed source would result in conversion of mixed pine/hardwood stands to almost pure pine stands, if the accompanying long-term loss of mast production would be detrimental to local wildlife populations.

The **two-age** regeneration method is similar to shelterwood except that overstory removal is deferred indefinitely or until another two-age cut can be done. This perpetuates at least two distinct ages of timber growing on the same site. Since leave trees do not have to support another operable sale, they do not have to be merchantable and not as many have to be left.

The type of leave trees retained would depend on site-specific objectives. Basal area of leave trees should not exceed 20-30 sq ft/acre fifteen years after harvest so they would not hinder further growth and development of the new stand. More than one harvest entry may be used to reduce basal area to this level. For example, a shelterwood removal could reduce basal area from 50 sq ft/ac to 15 sq ft/ac, thus perpetuating a two-aged stand. The two-age method is appropriate in operable stands on slopes less than 40 percent whenever there are enough leave trees that would live to be a part of the stand for 50-100 years into the future. Two-age could be appropriate to meet objectives other than timber production, e.g. if continuous acorn production is needed within a stand, or if den trees are scarce, or if aesthetics is a consideration. Two-age would be appropriate on slopes greater than 40 percent if timber value is high enough to offset increased costs of selective logging with cable systems, and if visual concerns or wildlife habitat objectives cannot be met by clearcutting. Two-age is not appropriate in stands where leaving an overstory would make the stands inoperable, or in stands where insect or disease hazards are high and widespread.

The following table describes factors to be considered in determining appropriateness of regeneration methods for each stand:

Table D-1: Factors Considered in Determining Appropriate Regeneration Methods

Compt - Stand	Est Acres	Vol./ac (MBF)	1/ Timber Quality	2/ Leave Trees	3/ Future Removal	4/ Access	5/ Special Concerns
12-05	25	7.0	Med-High	Spotty	No	Good	WL, Vis
12-12							
13-07	10	7.0	Med-High	Spotty	No	Good	WL, Vis
13-19							
13-10	7	6.0	Med-High	Spotty	No	Good	WL, Vis
13-18	10	10.0	High	Spotty	No	Good	WL, Vis
14-01a	10	9.0	High	Spotty	No	Good	WL, Vis
14-01b	10	9.0	High	Spotty	No	Good	WL, Vis
14-09	10	7.0	Med-High	Spotty	No	Good	WL, Vis
14-12	30	8.0	Med-High	Spotty	No	Fair	WL, Vis
13-11							
13-21							
33-11	40	8.0	Med-High	Spotty	No	Good	WL, Vis
35-11	11	8.0	High	Spotty	No	Good	WL, Vis
35-11	8	8.0	Med-High	Spotty	No	Good	WL, Vis WL, Vis WL, Vis
35-01							
35-23							
37-05a	4	9.0	High	Spotty	No	Good	WL, Vis
37-05b	3	9.0	High	Spotty	No	Good	WL, Vis
37-09	8	9.0	Med-High	Yes	No	Good	WL, Vis
38-07	12	11.0	High	Spotty	No	Good	WL, Vis
38-10	8	8.0	Med-High	Yes	No	Good	WL, Vis
39-04	15	9.0	High	Spotty	No	Good	WL, Vis WL, Vis
39-13							
39-15	10	6.0	Med-High	Yes	No	Good	WL, Vis

- 1/ Timber Quality: Very High = Northern Red Oak, White Oak, Black Cherry;
 High = Large White Pine, Yellow-poplar;
 Medium = Small Diameter Sawtimber, Mixed Oak;
 Low = Small Roundwood, Scarlet Oak, Yellow Pine.
- 2/ Leave Trees: Yes = Well distributed, long-lived, meet objectives;
 Spotty = Available in clumps; not well distributed;
 No = Scarce, scattered, or high mortality risk.
- 3/ Future Removal: Yes = Potential for operable removal of overstory;
 No = Removal would not be operable within 10 years;
 Cable = Slopes >40 percent require cable logging systems.
- 4/ Access: Good = Less than 0.5 mile from existing haul road;
 Fair = 0.5-1.0 mile from existing haul road;
 Poor = Greater than 1.0 mile from existing haul road.
- 5/ Special Concerns: Conversion = Risk that oak component be lost to pine; (Conv)
 Wildlife = Modify to provide needs for wildlife; (WL)
 Visual = Modify to mitigate aesthetic concerns; (Vis)
 Insect/Disease = High risk of loss due to SPB and/or loss due to oak decline. (I/D)

The following table summarizes appropriate regeneration methods for each stand and what is proposed in each alternative:

Table D-2: Appropriate Regeneration Method by Stand by Alternative

Compt.-Stand	Acres	Forest Type	Age	Method Of Logging	Alts. B&C		Alts. B&C		Alts. B&C		Alts. B&C	
					Alt. D	Alt. D	Alt. D	Alt. D	Alt. D	Alt. D		
					Selection (groups <1 ac)	Shelter-wood BA ¹ 30-50	Two-Age BA 20-30	Clearcut w/ Reserve Trees				
12-05	25	Up. Hwd.	96	Cable				Yes	Yes	Yes	Yes	
12-12												
13-07	10	Up. Hwd	82	Skidder				Yes	Yes	Yes	Yes	
13-19												
13-10	7	Up. Hwd.-WP	82	Skidder				Yes	Yes	Yes	Yes	
13-18	10	Up. Hwd.	82	Skidder				Yes	Yes	Yes	Yes	
14-01a	10	Up. Hwd.	76	Cable				Yes	Yes	Yes	Yes	
14-01b	10	Up. Hwd.	76	Cable				Yes	Yes	Yes	Yes	
14-09	10	WP-Up. Hwd	71	Skidder				Yes	Yes	Yes	Yes	
14-12	30	Up. Hwd.-WP-Cove Hwd.	85	Cable				Yes	Yes	Yes	Yes	
13-11												
13-21												
33-11	40 ²	Up. Hwd-Cove Hwd.	68	Cable				Yes	Yes	Yes	Yes	
35-11	11	Up. Hwd.-WP	75	Cable				Yes	No	Yes	No	
35-11	8	Up. Hwd.-WP	75	Cable				Yes	Yes	Yes	Yes	
35-01												
35-23												
37-05a	4	Up. Hwd	78	Skidder				Yes	Yes	Yes	Yes	
37-05b	3	Up. Hwd	78	Skidder				Yes	Yes	Yes	Yes	

Compt.-Stand	Acres	Forest Type	Age	Method Of Logging	Alts.	Alt. D	Alts	Alt. D	Alts.	Alt. D	Alts	Alt. D
					B&C		B&C		B&C		B&C	
					Selection (groups <1 ac)	Shelter-wood BA ¹ 30-50		Two-Age BA 20-30		Clearcut w/ Reserve Trees		
37-09	8	Up. Hwd	67	Skidder					Yes	Yes	Yes	Yes
38-07	12	Up. Hwd	91	Cable/Skidder					Yes	Yes	Yes	Yes
38-10	8	Up. Hwd	91	Skidder					Yes	Yes	Yes	Yes
39-04	15	Up. Hwd	89	Cable					Yes	Yes	Yes	Yes
39-13												
39-15	10	Up. Hwd	69	Skidder					Yes	Yes	Yes	Yes

1 – Basal Area (BA)

2 – Stand 33-11 is 32 acres under Alternative D

Stands 12-05, 12-12, 13-11, 13-21, 14-01, 14-12, 33-11, 35-01, 35-11, 35-23, 38-07, 39-04 and 39-13

Since slopes are steeper than 40 percent in these stands, cable logging systems are needed to limit soil exposure. Topography precludes the use of selection cutting. Timber volume is too low in these stands to allow leaving enough merchantable trees as “overwood” to make a future cable removal cut operable, so shelterwood is not appropriate. There is adequate timber value in the stands to cover the increased cost of leaving and logging around a few leave trees per acre; therefore, two-age harvest would be appropriate. Clearcutting would be appropriate for providing regeneration, but since the same objectives can be met with two-age, clearcutting is not the optimum method. The added expense of two-age system is warranted by wildlife habitat needs in these stands.

All Remaining Stands

These stands are located on relatively gentle slopes and all have good accessibility. However, available leave trees are not well distributed and/or stand sizes are relatively small. The small size and medium timber volume would make a future removal cut inoperable; therefore, shelterwood is not appropriate. The two-age method would be appropriate if small diameter trees are included as leave trees, and if good distribution of leave trees is not critical. In addition, many of these stands contain a significant component of mature scarlet oaks and leaving these trees in a shelterwood or thinning would result in heavy mortality losses due to wind throw, insect infestations, or disease. The added expense of the two-age system is warranted by wildlife habitat needs or aesthetic concerns in these stands. There are pockets of other tree species, which have the capacity to increase in size and value. Where white pines are left in any partial cut, thick establishment of white pine natural regeneration would occur in openings. Some of the stands contain an overstory white pine component and this would result in a reduction of the hardwood component, which would affect mast production in the long run. Therefore, a two-age cut leaving mostly hardwoods would meet wildlife objectives better than thinning or shelterwood. Clearcutting would be appropriate for providing regeneration, but since the same objectives can be met with two-age, clearcutting is not the optimum method.

Timber Cutting Methods Considered

The following is a list of timber cutting methods which were considered in this analysis. A brief description is provided to help the reader understand these terms as they are used in this document:

Cutting for Even-aged or Two-aged Regeneration

Clearcutting

Clearcutting is the removal, in a single cutting, of older trees to establish a new stand of trees in a fully exposed microclimate. All merchantable trees on an area are harvested, and remaining trees are cut or killed in site preparation. This method would be used only when no other method is feasible.

Shelterwood Cutting

Similar to clearcutting, except some overstory trees are temporarily left well distributed across an area to accomplish some objective. Usually 20-40 sq ft/acre of basal area is left. Depending on diameter, this could be between 10 and 50 trees per acre (fewer large trees are required to reach a given basal area). Normally, only healthy, windfirm trees are left as overwood. After a time, usually within 10 years, the overwood is removed by logging or by other means so that it does not impede development of the younger trees that were established after the shelterwood cut.

Two-Age Cutting

Similar to shelterwood cutting except fewer overstory trees are left in place, and they are not subsequently removed, so that two distinct ages of trees are maintained on the same site. Trees left as overwood should be long-lived since they may be expected to live 120 years or more (Beck 1986).

Cutting to Establish Regeneration and Maintain at Least 3 Ages in an Area

Group Selection Cutting

Group selection cutting is cutting small areas between 0.2 and 1.0 acre each, distributed over a large area, with the intent over time to establish three or more distinct age-classes. Width of an individual opening would be 1.5 - 2 times the height of trees adjacent to the opening. Small trees having good growth potential may be left standing within openings, and priority for openings would be where mature timber occurs. The number of openings would depend on the size of the area where selection would be used, the frequency of timber sale entry, and the desired age of the oldest trees. Intermediate harvests to improve the condition of the residual stand or to establish advance regeneration may be done between openings when needed.

Cutting to Anticipate Mortality and Improve the Growth and Vigor of the Remaining Trees without Regard for the Establishment of Regeneration

Free Thinning

Cutting trees that are diseased or damaged, suppressed by other trees, or that are crowding other trees. The best trees in terms of species, size or quality are left to grow. Some minimum basal area is usually set using this type of timber stand improvement.

Sanitation Thinning

Sanitation thinning is cutting trees that have been attacked or appear in imminent danger of attack from injurious agents (such as disease or insects) other than competition between trees.

The best trees in terms of species or vigor are left to grow. No minimum basal area is set using this type of timber stand improvement.

Selection Thinning

Cutting the larger trees in an area to improve the growth of the remaining trees, but leaving enough desirable, healthy trees to recapture the potential of the site and develop into larger merchantable trees themselves in a reasonable time. This may be done with yellow-poplar on a good site, but only once during a rotation (Beck 1988).

Other Terms Used

Advance Reproduction

Young trees, usually seedlings and saplings, growing in the understory of existing stands.

Rotation

The time between regeneration and final harvest.

Stand

A community of trees sufficiently uniform in composition, age, site productivity, spatial arrangement, or condition to be distinguishable from adjacent communities, thereby forming a silvicultural or management entity.

APPENDIX E – FINANCIAL EFFICIENCY

Purpose

The purpose of a financial efficiency analysis is to present the estimated costs and revenues of the alternatives considered in the EA for the proposed timber sale and associated activities. Forest Service policy requires a financial efficiency analysis be prepared for timber sale proposals expected to exceed \$100,000 in value (Forest Service Manual 2432.12).

Assumptions

For the purpose of this analysis, the following assumptions would apply:

1. Discount Rate is 4%.
2. Inflation rate is 0% throughout the analysis period (60 years plus).
3. Estimated timber revenues were calculated using the base prices from the Pisgah and Nantahala National Forests 2nd Quarter Adjustment Sheet for Fiscal Year 2006 issued out of the Forest Supervisor's Office in Asheville, North Carolina.
4. Sale preparation costs and timber harvest administration costs were obtained from budget figures for the 2006 National Forests in North Carolina. Sale/contract preparation costs are approximately \$8.95/CCF and timber harvest administration costs are approximately \$6,000 per year of Sale (generally sale runs 3 years).
5. Reforestation and silvicultural treatment costs were taken from averages of actual contract costs on the Grandfather Ranger District plus an additional 25% to cover district preparation and administration costs.
6. Temporary road construction is estimated at \$30,000/mile.
7. A 60-year long-term projection was used to simulate the time for high quality hardwood sawtimber and as per Forest Service Handbook 2409.18, Section 13.05, Long-term Efficiency Analysis.

Financial Analysis Worksheets

The following tables display financial-related information for the alternatives:

Table E-1: Sale Revenue Estimates for all Alternatives

Alternative	Timber Volume (CCF)	Revenues
A	0	\$0
B	3,750	\$275,025
C	3,850	\$282,359
D	3,250	\$238,355

Table E-2: Sale Cost Estimates – Alternative B

Activity	Units	Number	Cost/Unit	Total Costs
Silvicultural Exams	Acres	1,053	\$5.43	\$5,720
Sale/Contract Preparation	CCF	3,750	\$8.95	\$33,562
Sale Administration	Year	3	\$6,000	\$18,000
Road Engineering and Construction	Miles	0	\$90,000	\$0
Temp. Road Engineering and Construction	Miles	1.5	\$30,000	\$45,000

Activity	Units	Number	Cost/Unit	Total Costs
Cable Yarding	CCF	1,268	\$17.50	\$22,190
Site Preparation – Herbicide	Acres	231	\$80	\$18,480
Total				\$142,952

Table E-3: Benefit Cost Ratio – Alternative B

Year	Discount Factor	Revenue	Cost	Present Net Value	Benefit Cost Ratio
0	0	\$275,025	\$142,952	\$132,073	1.92
60	0.04	\$11,001	\$5,718	\$5,283	1.92

Table E-4: Sale Cost Estimates – Alternative C

Activity	Units	Number	Cost/Unit	Total Costs
Silvicultural Exams	Acres	1,053	\$5.43	\$5,720
Sale/Contract Preparation	CCF	3,850	\$8.95	\$34,458
Sale Administration	Year	3	\$6,000	\$18,000
Temp. Road Engineering and Construction	Miles	1.5	\$30,000	\$45,000
Cable Yarding	CCF	1,268	\$17.50	\$22,190
Site Preparation – Herbicide	Acres	231	\$80	\$18,480
Total				\$143,848

Table E-5: Benefit Cost Ratio – Alternative C

Year	Discount Factor	Revenue	Cost	Present Net Value	Benefit Cost Ratio
0	0	\$282,359	\$143,848	\$138,511	1.96
60	0.04	\$11,294	\$5,754	\$5,540	1.96

Table E-6: Sale Cost Estimates – Alternative D

Activity	Units	Number	Cost/Unit	Total Costs
Silvicultural Exams	Acres	1,053	\$5.43	\$5,720
Sale/Contract Preparation	CCF	3,250	\$8.95	\$29,088
Sale Administration	Year	3	\$6,000	\$18,000
Temp. Road Engineering and Construction	Miles	1.5	\$30,000	\$45,000
Cable Yarding	CCF	1,268	\$17.50	\$22,190
Site Preparation – Herbicide	Acres	212	\$80	\$16,960
Total				\$136,958

Table E-7: Benefit Cost Ratio – Alternative D

Year	Discount Factor	Revenue	Cost	Present Net Value	Benefit Cost Ratio
0	0	\$238,355	\$136,958	\$101,397	1.74
60	0.04	\$9,534	\$5,478	\$4,056	1.74

Salability of Globe Timber Sale

Salability is determined by accessibility of timber and current markets for timber. Globe project area is mainly accessible from County Road 1367 and Forest Service Roads 4071, 188, and 4111. Some temporary road construction is necessary to access some units; however temporary road construction costs are estimated to be \$33,000; well below the value of the timber to be

removed, which is estimated to be as high as \$283,899. The overall timber quality is medium-high within the proposed sale units. Market for this quality timber is good within western North Carolina. Recent timber sales sold on the Pisgah National Forest show revenues have been higher than estimated, there are no problems anticipated in selling the Globe project timber sale units when offered.

APPENDIX F – PROJECT DESIGN FEATURES FOR HERBICIDE USE

Herbicide Application Project Design Features (see also Forest Plan, Appendix I, pages I-10 – I-14)

1. Herbicides are applied according to labeling information and the site-specific analysis done for projects. This labeling and analysis are used to choose the herbicide, rate, and application method for the site. They are also used to select measures to protect human and wildlife health, non-target vegetation, water, soil, and threatened, endangered, proposed, and sensitive species. Site conditions may require stricter constraints than those on the label, but labeling standards are never relaxed.
2. Only herbicide formulations (active and inert ingredients) and additives registered by EPA and approved by the Forest Service for use on National Forest System lands are applied.
3. Public safety during such uses as viewing, hiking, berry picking, and fuelwood gathering is a priority concern. Method and timing of application are chosen to achieve project objectives while minimizing effects on non-target vegetation and other environmental elements. Selective treatment is preferred over broadcast treatment.
4. Areas are not prescribed burned for at least 30 days after herbicide treatment.
5. A certified pesticide applicator supervises each Forest Service application crew and trains crew members in personal safety, proper handling and application of herbicides, and proper disposal of empty containers.
6. Each Contracting Officer's Representative (COR), who must ensure compliance on contracted herbicide projects, is a certified pesticide applicator. Contract inspectors are trained in herbicide use, handling, and application.
7. Contractors ensure that their workers use proper protective clothing and safety equipment required by labeling for the herbicide and application method.
8. Notice signs (FSH 7109.11) are clearly posted, with special care taken in areas of anticipated visitor use.
9. No herbicide is ground-applied within 60 feet of any known threatened, endangered, proposed, or sensitive plant. Buffers are clearly marked before treatment so applicators can easily see and avoid them.
10. Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers.
11. No herbicide is ground-applied within 30 horizontal feet of lakes, wetlands, or perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations. Buffers are clearly marked before treatment so applicators can easily see and avoid them.
12. During transport, herbicides, additives, and application equipment are secured to prevent tipping or excess jarring and are carried in a part of the vehicle totally isolated from people, food, clothing, and livestock feed.
13. Only the amount of herbicide needed for the day's use is brought to the site. At day's end, all leftover herbicide is returned to storage.
14. Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas.
15. During use equipment to store, transport, mix, or apply herbicides is inspected daily for leaks.

APPENDIX G – PROJECT-LEVEL ROADS ANALYSIS

This roads analysis evaluates the existing condition of the transportation system within the Globe Project Analysis Areas (AAs). This analysis incorporates the 2003 Forest-wide roads analysis. It is being completed for information and support of the environmental assessment and the decision to be made for the Globe Project. This report includes the analysis of all system classified Forest Service Roads (FSRs) within the project's AAs as well as making recommendations for some of the existing unclassified roads. Objectives of the Globe Project roads analysis are:

1. *Identification of needed and unneeded roads.*
2. *Identification of road associated environmental and public safety risks.*
3. *Identification of site-specific priorities and opportunities for road improvements and decommissioning.*
4. *Identification of areas of special sensitivity or unique resource value that may require specific road management.*
5. *Provide other specific information that may be needed to support the Globe Project.*

1. Existing Condition of Roads

This analysis includes the Upper Johns River and Upper Mulberry AAs. These AAs are within the scope of the Globe Project decision to be made. Forest Plan transportation system management and Road Management Objectives (RMOs) need to be reviewed concurrently with most resource management projects. The designation of RMOs is to establish the intended purpose of an individual road based on management area direction and Forest Plan access management objectives. RMOs contain design, operation, and maintenance criteria.

Table G-1: Inventory of all system classified FSRs within the Globe Project

FSR No.	FSR Name	Analysis Area	Length in miles	Road Mgmt Objective (RMO)	Mgmt. Area	Status
4071	Thunderhole I	Upper Johns River	2.5	C2	4A	Open
4071	Thunderhole II	Upper Johns River	2.5	D3	4A	Open
4072	Tolbert Cemetery	Upper Johns River	0.3	D1a	4C	Closed
4094	Globe Mtn.	Upper Mulberry	0.9	D1a	3B	Closed
188	Frankum Creek I	Upper Mulberry	1.4	C2	3B	Closed
188	Frankum Creek II	Upper Mulberry	0.4	D3	3B	Closed
4111	Georges Creek	Upper Mulberry	5.9	D3	3B	Closed
4110	Shop Branch	Upper Mulberry	0.6	D3	3B	Closed

Road Management Objectives

RMO C2:

Restricted low speed single lane gravel road.

Blade every 2 years and brush every 3 years. Maintain shoulders, drainage and turnarounds at the end of dead end roads.

Use as 2-wheel drive access for timber harvesting and fire protection.
 Access closed with a gate and restricted most of the year to administrative use.
 Encourage non-motorized use such as hiking, biking and horseback riding.

RMO D3:

Restricted low standard timber haul road.
 Blade every 2 years and mow cut and fill slopes every 3 years. Maintain drainage and suitable turnarounds for fire equipment at the end of dead end roads.
 Use as 2-wheel drive access for timber harvesting and fire protection.
 Access closed with a gate and restricted most of the year to administrative use.
 Encourage non-motorized use such as hiking, biking and horseback riding.

RMO D1a:

Linear wildlife opening.
 Mow roadbed annually and brush shoulders once every 3 years. Maintain suitable turnarounds for fire equipment at the end of dead end roads.
 Scarify, seed and fertilize roadbed. Provide access for future timber operations and fire protection.
 Access closed with a gate and restricted to administrative use.
 Discourage non-motorized use but do not prohibit.

Table G-2: Comparison of FSRs within the Globe Project versus Forest Plan Direction

Analysis Area	Total ac. by Mgmt Area	Total miles of FSRs	Forest Plan direction for open FSR/sq. mi.	Current miles of open FSR/sq.mi.
Upper Mulberry	2,446 (3B)	9.2	0.5 (or 1.9 miles in this AA)	0
Upper Johns River	2,825 (4A)	5.0	0.25 (or 1.1 miles in this AA)	5.0 ¹
	2,266 (4C)	0.3	0.25 (or 0.9 miles in this AA)	0

1 – Currently does not meet Forest Plan standard (see Section 5 below for further discussion)

Forest Plan Direction for Transportation System Management

Management Area 3B: (Forest Plan, page III–76)

Emphasize sustained yield timber management.
 Close most roads to motorized vehicles
 Permit road construction.
 Manage access through an approximate density of 0.5 miles of open road per square mile.
 Where existing open road densities exceed 0.5 square mile, and, if closure of existing roads is prohibitive for administrative or legal reasons, then document these exceptions to the standard and investigate strategies to reduce open road density.

Management Area 4A: (Forest Plan, page III–87)

Emphasize visually pleasing scenery.
 Emphasize non-motorized recreation use.
 Close most roads to motorized vehicles.

Permit timber management modified to emphasize visual quality and wildlife benefits.

Permit road construction.

Manage access through an approximate density of 0.25 miles of open road per square mile.

Where existing open road densities exceed 0.25 mile per square mile, and, if closure of existing roads is prohibitive for administrative or legal reasons, then document these exceptions to the standard and investigate strategies to reduce the open road density.

Management Area 4C: (Forest Plan, page III–87)

Emphasize visually pleasing scenery.

Emphasize non-motorized recreation use.

Close most roads to motorized vehicles.

Classify land as not suitable for timber production.

Manage access through an approximate density of 0.25 miles of open road per square mile.

Where existing open road densities exceed 0.25 mile per square mile, and, if closure of existing roads is prohibitive for administrative or legal reasons, then document these exceptions to the standard and investigate strategies to reduce the open road density.

2. Identification of road associated environmental and public safety risks

In following Forest Plan direction, when performing road planning and road maintenance, we must insure road stability and protection of the environment. The maintenance of all roads (open or closed) must be done at a level sufficient to provide appropriate use and protect soil, water and other resources.

Properly designed, constructed and maintained roads incorporate outlets so that runoff water will infiltrate soils and erosion will be deposited before reaching stream channels. Access management of specific road segments with the use of gates can be used to seasonally or permanently control uses such as hunting, recreation, administrative (i.e. resource or pest management) and fire protection.

Improperly maintained roads can be a source pollutant to water quality when inadequate or nonfunctioning outlets for runoff are not periodically inspected and maintenance performed. Such roads, if open to the public, may become a hazard to many motorized vehicles which in turn could threaten public safety via vehicle accident or limit emergency fire protection access.

A proper combination of RMOs and access management (seasonal or permanent closures) of FSRs must be implemented to ensure the integrity of resources (i.e. wildlife, recreation and road stability) in order to protect the environment while minimizing risks.

3. Identification of site-specific priorities and opportunities for road improvements and decommissioning.

The current process of road reconditioning in response to damage received during the tropical storms Frances and Ivan of 2004 is under way on Georges Creek Road (FSR 4111), is planned for autumn of 2007 on Thunderhole Road (FSR 4071) and is completed on Frankum Creek Road (FSR 188). Road blading (shaping, waterbarring and dipping), ditch blading (shaping and

cleaning), culvert work (replacement, installation and cleaning) and surface course placement (gravel and natural with seeding) have been designed into all these road reconditioning contract work projects to better stabilize the current system classified road locations.

Alternatives B, C, and D of this project would develop approximately 1.5 miles of new temporary road. Following Globe Project use, temporary roads, skid roads, and log landings would be appropriately shaped, waterbarred, disked and seeded with an erosion-control seed mix. All new temporary roads would be permanently closed and any new stream crossings on these roads are considered temporary and would be removed.

Alternatives B, C, and D of this project would utilize and Construct about 0.8 miles of road on old woods road locations (RMO will be D1a). Following Globe Project use, these roads would be placed on the Forest's Transportation System as authorized roads, stabilized (i.e. shaped, waterbarred, and seeded with an erosion-control seed mix) and maintained closed for administrative use only.

4. Identification of areas of special sensitivity or unique resource value that may require specific road management.

There are no areas of special sensitivity or unique resource value that will require specific road management within the scope of the Globe Project.

5. Provide other specific information that may be needed to support the Globe Project decision.

In order to fully meet Forest Plan transportation system management direction, the Thunderhole Road (FSR 4071) would need to have a gate installed at approximately the 1.1 mile post to limit year long motorized access to administrative use only. The current design of this road limits the ability to properly install a gate at that 1.1 mile post due to road width and turn-around access. As an exception to the standards, according to Forest Plan direction, the option of a combination of new gate installations and seasonal gate closures on FSR 4071 would sufficiently reduce open road density to meet Forest Plan direction (see also Alternative D, Chapter 2).

Due to access needs for fire suppression, private inholdings, and other administrative purposes, the existing system roads in the AAs are not scheduled for decommissioning.

During project level surveys, no other woods roads were identified that were causing sedimentation/erosion that needed correction or decommissioning. Future analyses would be completed to address future problems should they arise.

APPENDIX H – RESPONSE TO COMMENTS FOR THE JULY AND NOVEMBER 2006 GLOBE PROJECT ENVIRONMENTAL ASSESSMENTS

General Discussion

Pursuant to 36 Code of Federal Regulations (CFR) 215.6(a)(1)(i) and 215.6(a)(1)(iv), a formal 30-day Notice and Comment period for the Globe Project Environmental Assessment (EA) began July 12, 2006, and ended on August 10, 2006. Pursuant to 36 CFR 215.5, the legal notice initiating the 30-day Notice and Comment period was placed in *The McDowell News*, the Grandfather's newspaper of record on July 12, 2006. On August 2, 2006, District Ranger Joy Malone mailed a notice to the Grandfather Ranger District's mailing list stating she would consider comments from the end of the 30-day Notice and Comment period thru August 18, 2006. On August 9, 2006, Forest Service officials hosted a public information meeting at the Blowing Rock, North Carolina town hall—244 members of the public signed in at the meeting. Based on review of comments received, the Grandfather Ranger District prepared another EA with a new preferred alternative and made it available for a formal 30-day Notice and Comment period that began on December 1, 2006, and ended on January 3, 2007, when a legal notice was placed in *The McDowell News*. Following the formal 30-day Notice and Comment periods, the public meeting, the additional comment consideration period, the December 4, 2006, open house in Collettesville, NC, and the December 7, 2006, open house in Blowing Rock, NC; over 1,800 total comments were submitted on the proposal. The comments that were submitted had the following 35 "themes" contained within them:

Air Quality	Alternatives (range of)	Archaeology/Cultural/Heritage	Clear Cutting
Cumulative Effects	Economics	EIS Required	Environment/Ecosystem
Erosion/Soil	Extend Comment Period/ Comments Received	Flooding	Global Warming
Harvesting	Herbicides	Inadequately Informed	Inappropriate Purpose & Need
Invasives	Litigate/Appeal/Objection	Meetings	No Action
No Comment	Old Growth	Prefer Alternative B	Prescribed Burning/Wildfires
Property Values	Recreation/Tourism	Road Construction/ Reconstruction	Road Use
Save Botanicals	Scenery	Support (for proposal)	Thinning
Water Quality	Wilderness/Wilderness Study Area	Wildlife	

To meet requirements at 36 CFR 215.6(b), the Agency listed each "theme" with the comment received on it (or if more than one comment was received, a representative group of comments for that theme are listed) followed by the Agency's response.

Air Quality

Representative Group of Comments Received

A): *The Forest Service failed to evaluate the impact to air quality in the area, quantify the amount of pollutants that will be emitted from such "harvesting" activities. The forest Service failed to consult with nearby metropolitan planning organizations, particularly in the Hickory-Morganton-Lenoir, NC, Early Action Compact (EAC) area. Those groups have been working diligently to attain the ozone NAAQS since 2004 and designation of non-attainment for the ozone NAAQS has been delayed in order to provide this planning area more time to work on plans with effective control measures to reduce pollution. Therefore, due to the nature of the pollutants (i.e. known for their transport) that most likely will be generated during this project, the attainment of the NAAQS could be in jeopardy. Therefore, I strongly recommend that the Forest Service consider air quality impacts from ozone/particulates/visibility generated by this proposed action.*

B): *The Forest Service failed to address the impact of air quality – amount of pollutions estimated to be emitted from the planned activities. The Forest Service did not consult with nearby metropolitan planning organizations, particularly in the Morganton, Hickory, Lenoir EAC (Early Action Compact) planning areas. These groups have been working diligently to attain the ozone NAAQS – the designation of non-attainment was delayed by EPA in 2004 so as to provide this area time to work on plans/control measures. It is possible because of the nature of the pollutants (formal and/or emitted) could jeopardize efforts of the work planned by the EAC parties.*

C): *No proof of improving air quality*

D): *I am still very concerned about the environmental impact of the use of herbicides on [t]he air*

E): *The more interference man has on our environment the more destruction our lands, air and water will suffer.*

F): *Any local disregard for air and water quality is one element in the cluster of issues which has brought us global warming, atmospheric pollution and pollution of seas, lakes, etc.*

Agency Responses

A) – B): An air quality effects analysis has been completed and is disclosed in Section 3.12, Chapter 3.

C): See Comments A and B above. The project's objectives were not to improve air quality (see also Section 1.4, Chapter 1).

D): See Herbicide theme below.

E): See response to Comments A and B above.

F): Due to the relatively small area of impact (about 250 acres), the analysis done in the Environmental Assessment does not indicate that the Globe project will contribute to global warming, atmospheric pollution, or pollution of seas, lakes in any significant measure.

Alternatives (range of)

Representative Group of Comments Received

A): *NEPA requires that the Forest Service develop a range of "reasonable" alternatives. The Globe analysis fails to do this. The difference between the two proposed action alternatives is so slight that the Forest Service, when analyzing the environmental impacts of each, reaches the exact same conclusion. The Forest Service should have considered the alternative that excluded the stands of old growth in the project area and the watershed restoration alternative.*

B): *Based on the inadequate identification of issues conducted by the Forest Service at the scoping phase, the agency has identified two action alternatives for this project that are nearly identical, save for the addition of daylighting to address concerns that the preferred alternative would create inadequate brushy interface habitat. The EA notes that reasonable alternatives must serve the purpose and need for the project and address at least one significant issue. Logging in existing old growth forest is a significant issue. Despite the stated purpose and need of creating a network of old growth areas across the landscape, the Forest Service eliminated from detailed study the possibility of dropping stands 33-11 and 38-7 from the sale to avoid logging existing old growth resources. NEPA requires more. CEQ regulations direct that "Federal agencies shall, to the fullest extent possible: [u]se the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment." 40 C.F.R. § 1500.2(e) (emphasis added).*

Indeed, adequate consideration of alternatives is the “heart” of the NEPA process because it defines the issues and provides a clear basis for choices by the decision maker and the public. 40 C.F.R. §1502.14. Accordingly, the Forest Service must consider a “broad range of reasonable alternatives.” Curry v. United States Forest Service, 988 F. Supp. 541, 554 (W.D. Pa. 1997); see also Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1228-29 (9th Cir. 1988), cert. denied 489 U.S. 1066 (1989). This requirement applies to EAs as well as EISs. Bob Marshall Alliance, 852 F.2d at 1229. The failure to consider a “viable but unexamined alternative” renders an EA inadequate. Alaska Wilderness Recreation and Tourism Association v. Morrison, 67 F.3d 723, 729 (9th Cir. 1995); accord Dubois v. USDA, 102 F.3d 1273, 1289 (1st Cir. 1996), cert. denied 521 U.S. 1119 (1997). The decision made by the Forest Service to sacrifice rare and irreplaceable existing old growth forest with post-logging habitat which can be created elsewhere on the forest in younger stands is indefensible and, at a minimum, the agency must consider in detail an alternative that would avoid this significant environmental impact. See Comments of Alan Weakley (“Old growth forests are rare and should not be traded for post-logging habitat which can be created elsewhere in younger forest.”); Comments of Christopher Hainey (“Conversion of this rare resource which can be maintained, if at all, in place, for the post-logging successional conditions which can be created elsewhere is irresponsible from a standpoint of sustained integrity for some of the rarest species in large landscapes.”). The Forest Service’s decision to eliminate Alternative 3 from detailed consideration is based on the same erroneous conclusion addressed above, that compliance with the minimum standards of the Forest Plan for designation of future old growth patches eliminates the agency’s obligation to disclose and analyze environmental impacts to existing old growth as part of the project-level NEPA analysis. But for that error, and the failure to consider impacts to existing old growth as an issue, the Forest Service might have recognized its obligation to consider a reasonable alternative that meets the agency’s purpose and need while avoiding the significant environmental impacts caused by logging in existing old growth forest. Rather than trade rare and irreplaceable existing old growth forest for young forest stands which can be created elsewhere, the obvious alternative is to conserve existing old growth forest in place by eliminating logging in those areas, eliminating project activities in those areas, and buffering existing old growth from the edge effects and fragmentation caused by logging. Stand 33-11 contains high quality existing old growth in the upslope portions of the stand which must be eliminated from the proposal to log. In addition, the entire stand must be eliminated from the project because cable logging to reach the downslope portions of that stand will significantly degrade the soil and hydrology of the upslope old growth sites. Stand 38-7 borders high quality old growth and logging within that stand will fragment contiguous mature forest habitat and introduce edge effects. The Forest Service must consider in detail the reasonable alternative of buffering the exceptional existing old growth upslope of stand 38-7 by dropping stand 38-7 from the sale, or, at a minimum, providing for a 200 foot vertical buffer between logging activities and the old growth communities. See Strategies for Conservation of Old Growth, Reed Noss, August 1988 (“We need to start thinking of ways in which we can buffer these edge effects and other types of intrusions on our existing old growth reserves and special habitats we are interested in preserving. One way to do this is to incorporate a gradation, a buffer zone around our core of reserves.”) See also Comments of Alan Weakley (“A buffer of 200 vertical feet would protect these old growth communities from the edge effects created by two-age regenerative harvest in the neighboring stand.”); Comments of Jonathan Evans; Comments of James Runkle; Comments of Christopher Hainey. Such an alternative would serve the stated purpose of this project to create a “network of old growth areas across the landscape” by preserving the mature forest habitat corridor and existing old growth communities that connect the known large patches of old growth forest in the analysis area. Such an alternative would also serve the direction of the forest plan which is to manage this area for scenery and for the benefit of wildlife preferring mature forest conditions. Furthermore, such an alternative would not contravene any other purpose of the project. As the forest plan sets no minimum standard for post-logging habitat in management area 4A, an alternative that conserves existing old growth and by eliminating logging in those stands and buffering old growth communities would not undermine the wildlife purpose of this project.

C): I'm sure you will get many letters talking about the aesthetics, economic impact on tourism, and concerns for local health from the methods and activities proposed. As a native of Caldwell county and still frequent visitor to that area I deeply share those concerns. But my appeal to you is based on the global impact as well as the local. Please be sure that you have considered all of the perspectives before we take such a serious and irreversible action. 1) Please reduce the scope of this project dramatically by cutting fewer than 30 acres of the proposed 231 acre tract. 2) I propose cutting every other tree in the remaining area and no clear cutting. While more labor intensive, Caldwell county needs more jobs right now anyway, and the cost would be well worth it to maintain the health of the forest and its part in the larger ecosystem. 3) Where possible please reduce the additional cutting along roads as well. 4) I think that old fashioned logging roads, if done carefully and with proper erosion control can be done responsibly and allow for other growth in the area to flourish. 5) Please refrain from using any

herbicides in significant quantities and over large areas. If we thin trees individually rather than clear cutting, the remaining trees should be sufficient to naturally block sunlight that would lead to uncontrolled brush. And if some areas naturally grow up with blackberries and other undergrowth I think the natural course of those areas replenishing themselves would be vastly preferable and more responsible than the extensive use of chemicals. 6) Please do not sell or allow to be sold, any publicly owned natural land. 7) Please be sure that we re-plant so that within 10 years we have a net gain of trees and of protected lands rather than a net loss.

D): I do not believe the proposed benefits of wildlife habitat rejuvenation, management of pest populations and creating a network of old growth areas will actually be served by the recommendations and may actually be harmed. I believe there is a better way to handle these issues to better benefit the forests and more time should be given for alternative considerations.

E): I propose Alternative C: a) reduce the forest canopy in the areas in question by no more than 35% (i.e. 60-70 ba/ac), so one does not have to use herbicides to suppress invasive plant species; b) use selective digging out of invasives rather than herbicides. My experience is that herbicides suppress rather than kill unless one uses whopping doses that produce multiple other deleterious effects. Selective manual removal has three advantages: (i) it is the only way to totally remove undesirables, (ii) it is not toxic, and (iii) it will provide employment in the community.

F): I believe that IF selected trees must be cut to improve the long-term health of the forest and wildlife, that there are more ecologically sustainable, less invasive, and less long-term impact methods. These might entail use of [f]elling trees which are then left in place (as would happen in naturally occurring wind blow-downs), or harvesting of timber via “cleaner”, more renewable, smaller, lower impact means such as draft horses.

G): Many of these comments proposed the alternative of the creation of a National Scenic Area in and around the project area, to be known as the Grandfather National Scenic Area. This proposed Grandfather National Scenic Area has been supported by numerous local citizens and businesses.

Agency Responses

A): Alternatives analyzed in detail are developed based on issues identified and then need to meet the project’s purpose and need. Following scoping in early winter 2006 wildlife habitat diversity was identified by the State as a concern they had with the proposal – as a result, Alternative C was developed to address the concern. Following issuance of the July EA and comments received, a new alternative was developed to better address scenery concerns raised by members of the public. The November 2006 Globe EA analyzed eight alternatives – four in detail (Alternatives A – D) and four were eliminated from detailed analysis (Alternatives 1 – 4). See also Sections 2.2 and 2.3, Chapter 2.

B): The proposal does not harvest within Forest Plan designated old growth communities. That said, representatives of local and regional environmental organizations met with Forest Service staff in April 2006 to discuss the Globe proposal. Stands 33-11 and 38-7 were identified by the members as stands they would like dropped due to old trees found within them and a desire to reduce fragmenting old growth. Alternative 4 (Section 2.3.4, Chapter 2) was developed to do this. It was eliminated from detailed study because [t]he proposal as designed (Alternatives B, C, and D) meets Forest Plan old growth community standards. Compartments 33 and 38 already contain 1,048 acres of large patch designated old growth communities and designating additional old growth communities within them is not necessary to meet Forest Plan standards. The November 2006 Globe EA analyzed eight alternatives – four in detail (Alternatives A – D) and four were eliminated from detailed analysis (Alternatives 1 – 4). Under Alternative D, Stand 33-11 was reduced eight acres in the SE section (see Old Growth theme below).

C): The first two elements of this proposed alternative would not achieve the project’s objectives or Forest Plan standards for early successional habitat and stand regeneration. Alternatives B and D reduce daylighting acreages over Alternative C, however cutting along roads can be very helpful for road maintenance purposes by reducing shading on the road and thereby allowing quicker drying of wet roads, resulting in less mud and less rutting of the surface. Existing roads within the project areas are proposed to be used as much as possible to reduce the need for new roads; however, some of the stands still necessitate some temporary road construction and use of existing unauthorized roads. Any new road developed would be shaped, waterbarred, disked and seeded with an erosion-control seed mix to reduce potential for future impacts such as sedimentation or erosion. Herbicide use is limited to about 250 acres within the 11,225 acre analysis areas (~2%) and only for specific reasons and under strict use guidelines (see Section 3.4, Chapter 3 and Appendix F). No clearcutting or land sales are proposed with this project.

The proposal is designed to retain specific tree species (white oak, red oak, hickory, black oak, and chestnut oak, where they occur) to ensure adequate natural restocking to occur after harvesting.

D): The proposal is designed to improve wildlife habitat diversity by providing additional early successional habitat, as only 45 acres of early successional habitat is currently established in the 11,225 acre analysis areas. The North Carolina Wildlife Resources Commission stated in a letter on February 10, 2006: *The NCWRC supports this proposal because of its anticipated benefits to fish and wildlife resources in the region. The lack of early stages of forest growth diminishes habitat important for early successional wildlife species. Active timber management is needed to improve habitat conditions for wildlife and create diversity across the landscape. We encourage the USFS to place as much emphasis on providing early successional forest conditions as is placed on provisions for contiguous forest patches for old growth.* Treating/managing invasive exotic plants with herbicides is also an important objective of the proposal. The Western North Carolina Alliance stated in a letter on February 21, 2006: *We applaud the District for focusing some effort on controlling invasive exotic species along roads and around wildlife openings. We have commented previously on this issue and have expressed specific concerns here.*

E): Reserve basal areas of 60-70 are not considered regeneration prescriptions. Leaving this much basal area would not provide the conditions that research has shown is needed for adequate regeneration of young oaks and hickories, and would not allow for the habitat diversity needed in the analysis areas. Eliminating herbicide use for treating/managing invasive and competing vegetation was considered but eliminated from detailed study because [m]annual methods for treating competing vegetation for site preparation and managing non-native invasive plant species are not as cost effective or adequate as herbicide use to meet desired objectives (Section 2.3.2, Chapter 2).

F): The proposal has been designed to meet objectives as efficiently and effectively as possible. Other systems for harvesting (i.e., horse or helicopter) are not as efficient or effective as tractors or cable systems because of reduced yield per day and cost. Adverse effects of tractors and cable systems are reduced with implementation of project design features, Forest Plan standards (Best management practices), and timber sale clauses that require implementation of BMPs. Cutting and leaving timber on site would increase fuel loads and would eliminate a potential timber sale to be offered where a high bidder would pay to harvest the timber and allowing early successional habitat objectives to be met, while providing revenue to the US Treasury and local economies and contributing wood to the nation's timber supply. A cut-and-leave proposal would require federal revenue be spent to meet objectives.

G): An alternative (Alternative 5) that proposed designating a National Scenic Area in the Globe area was considered but eliminated from detailed study (Section 2.3.5, Chapter 2).

Archaeology/Cultural/Heritage

Representative Group of Comments Received

A): *Access to Forest Service lands via new road also opens the potential for theft of natural resources. Along one section of the existing Forest Service Road, an old farm from what looks to be the turn of the century is still evident by a lightly marked grave and several very large piles of fieldstone. The stones have been consistently robbed over the years and the grave is in danger of being lost. The Forest Service should be concerned about protecting the existing resources threatened by road building before exposing others to a new road. In many cases the culprits are the contracted logging companies themselves. While hunting along roads in the process of being built (especially in the Thorps Creek section of the Globe) I have had the distasteful experience of watching and hearing loggers spotlight deer. This is not an isolated logging company or cases, many of my hunting partners have told of similar occurrences.*

B): *I strongly disagree with the Forest Service's interpretation that the proposed action would not have direct, indirect, or cumulative effects on the area in question. Just because there are no neatly (carved out niches deemed suitable for the National Register of Historic Places) does not in the broad sense mean the entire area does not have historical and native cultural value. Generations have grown up around this unique part of the world and have close ancestral ties to this "sacred", serene, wild place. I alone can trace back 5 generations associated with this very place, the Globe area. This valley has been the inspiration for poets, writers, musicians, theologians, and others, a refuge for both the rich and the poor folk and a sanctuary for the mountain plants and animals. Therefore, I feel strongly that this particular area (cultural) has been sorely overlooked by the Forest Service in this assessment. How can one put an x value on something that is innate and spiritual???*

C): *Just because there were no sites found in the Natural Register of Historical Places and no impacts to Class I and Class II sites, does not mean that there are no strong cultural ties to this area. We have a proud heritage here in the Blue Ridge area and strong heritage ties to our beloved mountains – in particular the area in question.*

D): *The NCNHF has identified the following sites in the proposed logging area as “significant sites” in the state: Blowing Rock Cliffs, Johns River, Mulberry Creek, John River/Mulberry Creek Aquatic Habitat, and Wilson Creek Aquatic Habitat. This decision should be made with your partner, NCNHF in this regard before proceeding with this project. There are also archaeological concerns as the old “Globe Road” to Blowing Rock is believed to have impacted this area. No research has been done to identify any potential preservation sites in the area. Although there was consultation with archaeologists, no mention was made of earlier uses of this area. There are numerous homes and sites on the National Historic Registry that will be adversely impacted by the use of this area for logging purposes.*

Agency Responses

A): See Road Construction/Reconstruction theme below for a response to this comment. The Forest Service takes seriously its obligation to protect archaeological resources and would appreciate individuals forwarding to the Forest Service any information concerning theft of or damage to these resources.

B): The heritage survey methodology, site documentation, and determinations of significance used for this project have been reviewed and concurrence given by the NC State Historic Preservation Officer (SHPO) and the Eastern Band of Cherokee Historic Preservation Officer (HPO), as required by Section 106 of the National Historic Preservation Act.

C): The survey of this area has met all legal requirements and reviews for heritage resources (see Response B).

D): The areas listed are proposed State Natural Heritage Areas that lie outside of this project area. Globe proposal would not affect them or any special interest areas recognized in the current Forest Plan. See also responses to Comments B and C above.

Clear Cutting

Representative Group of Comments Received

A): *I am opposed to the clear cut in the Globe. It would be a sin and a moral failure as well as short-sighted and costly to clear cut our precious public lands.*

B): *I understand the Forest Service is about to allow clearcutting of many acres of forest right in front of us. As President of our POA and as a property owner I would like to vigorously protest.*

C): *I strongly object to the project with particular emphasis (objection) to the clear cutting*

D): *It is my hope that the Forest Service leave everything alone, as much as possible. Hopefully, no clear cutting. That is so un-attractive and un-necessary.*

E): *I strongly believe that this project is ridiculous. For one, this area is already strongly impacted by private development. To create more clear-cuts and to willfully destroy one of the few unaffected areas is unwise.*

Agency Responses

A) - E): No clear cutting is proposed for this project. Instead, project objectives would be met through two-aged harvest (Section 2.2, Chapter 2), which is described in Appendix D: *“The two-age regeneration method is similar to shelterwood except that overstory removal is deferred indefinitely or until another two-age cut can be done. This perpetuates at least two distinct ages of timber growing on the same site.”*

Cumulative Effects

Comment Received

A): *The draft Environmental Assessment fails to acknowledge that previous management activities in the project area significantly degraded habitat for MIS species. The Aquatic Analysis for the draft EA acknowledges that 1990s data indicate that Frankum Creek historically supported a wide range of fish species including brook trout, bluehead chubs, spottail chubs, rosieside dace, greenhead shiners, creek chubs, darters and various minnow and chub*

species. Draft EA at 5. The Aquatic Analysis EA also indicates that more recent surveys in Frankum Creek found that a heavy sediment load had impaired aquatic habitat and extirpated brook trout from the stream. *Id.* The EA notes a similar pattern for Friddle Creek. Separately, the EA discloses that between those two surveys the Frankum Creek timber sale and related timber stand improvement activities took place in the project area. The EA fails entirely to disclose the apparently devastating impact previous Forest Service management activities had on aquatic habitat in the project area. The IDT Meeting record dated February 29, 2006 notes that there are cumulative aquatic impacts arising out of the 2001 Frankum Creek timber sale to consider, but no discussion is offered anywhere in the Environmental Assessment or in the record. The only analysis of forest management impacts on water quality is to note that Forest Service best practices will be followed and that water quality will not be affected. Water quality is not identified as a significant issue in the draft Environmental Assessment. The Forest Service must disclose the cumulative impact of previous management actions and explain why the apparent failure of Forest Service best management practices on the Frankum Creek timber sale will not repeat in the Globe project. China Creek, which is directly below stand 38-7, is a designated trout water that is highly prized by area trout fishers. See letter from NC Wildlife Resources Commission 2-13-2006. The EA notes that China Creek is already suffering sediment input because of poorly maintained culverts along Forest Service roads. Draft EA at 6. The Draft EA must be revised to disclose and fully analyze the failure in Forest Service best management practices that impacted Frankum Creek. Under NEPA, this information must be considered and disclosed. *Robertson v. Methow Valley Citizen's Council*, 490 U.S. 332, 349-50 (1989) ("relevant information" must be made available so the public may play a role in decision making).

Agency Response

A): The EA did consider cumulative effects of the 2001 Frankum Creek Timber Sale along with the 1986 Thunderhole TS and concluded: *Remnants of road construction activities within the Globe project area where access was associated with harvest-related activities are in many cases on-going contributors to adverse impacts to aquatic resources. Undersized culverts and degraded stream crossings have caused constant sources of problems for aquatic resources including unstable stream banks and channelization. Within the AA, solutions to these problems are being addressed with storm-related proposals (road and trail maintenance & repairs in response to 2004 storms). There are places within riparian areas of this project area that have historically been harvested. However, as these areas continue to grow older, conditions should improve as large woody debris input into analysis area streams returns to a more natural state.* (Section 3.1.2.5, Chapter 3). The analysis at Section 3.1.2.5 incorrectly labeled the 2001 Frankum Creek TS as the Franklin Creek TS 2000. Best Management Practices (BMPs) include Forest Plan standards and are put in place so that they do not fail. Timber Sale Administrators monitor harvest implementation to ensure BMPs are properly functioning. However, as stated in the EA: *Should an implemented contract clause or BMP fail during project implementation, immediate corrective action should be taken to reduce impacts to aquatic resources.* (Section 3.1.2.2, Chapter 3).

Economics

Representative Group of Comments Received

A): *As Chairman Emeritus of the North Carolina State Board of Education, I can say that we do not need money from this source for our public schools! We received nearly a billion "new" dollars for K-12 from the recently-adjourned legislature and we have the Education Lottery which is designed to eliminate funding problems for public schools.*

B): *Our public lands are valuable resources which benefit all and should not be sold to benefit a few timber companies at everyone else's expense.*

C): *[y]et you propose to spend the taxpayers money on this project, using accounting procedures which are, at best, suspect. For example, what is the cost to the taxpayer of introducing this poison into this ecosystem? What will be the cost in soil erosion, etc.? How will denuding hundreds of visible acres impact tourism? These are only a few of the questions. I believe that if all of the costs are properly counted, this proposal would not make economic sense, and the taxpayers would pay the balance for years to come. This proposal is the kind that gives government a bad name; there is no good reason for the Forest Service to be engaging in this kind of activity-- certainly the justification that it is part of a master plan is insufficient to any taxpayer with rudimentary critical facilities.*

D): *Is the money the Forest Service is expecting to get on sales of timber from this cutting really worth all the damage to the area on so many levels? What kind of input have you received from the timber companies vs. input*

from the citizens who are paying for this? How much time have you spent listening to timber companies vs. the citizens?

E): *I would argue that no economic analysis of the financial impacts to real estate values, loss of tourism dollars to our State, loss of tourist related jobs, loss of related side industries/such as crafts, etc. was performed by the Forest Service. The Forest Service needs to do a more detailed analysis of the overall monetary loss to the impacted surrounding areas, in particular to Blowing Rock proper.*

F): *In the Globe proposal, Appendix E “Financial Efficiency” is not financially responsible. In this report, an approximated cost of \$134,000 is estimated for the Globe project. However, no mention is made of the extensive man-hours and research required to explore the logging of this 231 acre piece. I am familiar with consultants and engineering costs. This had to be a \$50,000 - \$100,000 cost just for the initial Globe Project report 80 pages. The topographical maps of the areas to be logged and the small patches of “old forest” to be left are extremely time consuming and required extensive research.*

Agency Responses

A): Revenue generation is not an important purpose for this project – the purposes and needs for this project are defined in Section 1.4, Chapter 1: (1) Improve habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer by dispersing early successional habitat (ESH) across the landscape. This also serves as foraging habitat for black bear. Periodically creating a regulated amount of 0-10 year age class in MAs 3B and 4A (Forest Plan, page III-31) accomplishes this. (2) Add to the designated network of old growth communities across the landscape that serves as permanent reservoirs of biological diversity (Forest Plan, pages III-26 and III-27). (3) Control/manage pest populations with pesticides (Glyphosate and Triclopyr herbicide) (Forest Plan, page III-52); specifically, to reduce infestations of non-native invasive plants.

B): The proposal has been designed to meet objectives listed in Section 1.4, Chapter 1. Similar projects in past years on the Grandfather Ranger District have been purchased and harvested by smaller, more local logging companies and this is expected on the Globe project as well.

C): The laws that govern the management of the National Forest System clearly state that sustainable timber production is one of the legitimate uses of these lands, and they have been managed for this use for many decades. One of these laws, the National Forest Management Act, also requires the Land Management Plans be developed for each national forest that specify which lands are suitable for sustainable timber production, and that land not suitable for timber production be reevaluated every 10 years to see if it has become suitable. This proposal complies with the Plan currently in place for the Pisgah National Forest.

As disclosed in Appendix E: *The purpose of a financial efficiency analysis is to present the estimated costs and revenues of the alternatives considered in the EA for the proposed timber sale and associated activities. Forest Service policy requires a financial efficiency analysis be prepared for timber sale proposals expected to exceed \$100,000 in value (Forest Service Manual 2432.12).* Economic analyses were completed for the Final Supplement to the Final Environmental Impact Statement for the Nantahala and Pisgah National Forests and the Final Environmental Impact Statement for the Vegetation Management in the Appalachian Mountains that analyzed socio and biologic-related impacts. The Globe EA tiers to these EISs (Section 1.2, Chapter 1). The proposal was designed to meet objectives disclosed in Section 1.4, Chapter 1.

D): All of the time spent on the Globe project has been with citizens – the Forest Service has not specifically met with any timber companies on this project. The proposal was developed by the Forest Service to meet specific objectives disclosed in Section 1.4, Chapter 1 of the EA and the Forest Plan. The proposal is not expected to have significant impacts on the human environment as disclosed by resource in Chapter 3 and the finding of no significant impact (FONSI) in the decision notice.

E): See response to Comment C above.

F): Appendix E was updated in the November 2006 EA to better account for roading proposals—the action alternatives would still provide positive revenue when measured against timber harvest-related costs. NEPA preparation costs are not measured in a financial efficiency because they have no bearing on the actual costs associated with timber harvesting. No outside consultants or engineers were used in development of the proposal or associated analysis. Maps were developed using existing GIS databases and USFS personnel.

EIS Required

Comment Received

A): Even if impacts to old growth communities were disclosed and analyzed in the draft Environmental Assessment, the Globe project would have to be withdrawn and reanalyzed because logging of old growth forest communities is a impact significantly affecting the quality of the human environment that requires more thorough study through an Environmental Impact Statement. 42 U.S.C. § 4332(C). The Council on Environmental Quality regulations clarify that weighing the significance of an impact requires evaluation of both context and intensity. 40 C.F.R. § 1508.27. Several of the factors enumerated in that regulation for evaluating intensity underscore the significance of logging in old growth forest: “(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. (4) The degree to which the effects on the quality of the human environment are likely to be highly controversial. (5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. (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. 40 C.F.R. § 1508.27. Logging existing old growth forest undermines a unique characteristic of the National Forests. Existing old growth forest is exceedingly limited in the Southern Appalachian forests. The Forest Plan identified existing old growth as “special habitat in limited supply.” Forest Plan at III-54. The Region 8 Old Growth Guidance estimates that “[e]xisting old-growth communities may represent around 0.5 percent (approximately 676,000 acres) of the total forest acreage (approximately 109,400,000 acres) in the Southeast.” Region 8 Old Growth Standards at 1. See also *Extent and Location*, by Mary Byrd Davis, Chapter 2 in *Eastern Old Growth Forests* (1996). Prior to European settlement, the majority of the forested landscape in the Southern Appalachians was in an old growth condition, but only a small, highly-fragmented remainder survives today. See *Comments of Jonathan Evans*. See also *Comments of Alan Weakley*; *Comments of James Runkle*; and *Comments of Christopher Hainey*. Furthermore, the majority of surviving old growth is found on public lands. See *How Much Old Growth is Enough*, by Robert Leverett, Chapter 23 in *Eastern Old Growth Forests* at 348 (1996). It is only on public lands managed with a conservation mandate that forests are allowed to reach and maintain an old growth condition. See *Comments of Jonathan Evans*. Old growth forest is also unique in that they are irreplaceable. “A disturbed forest can take hundreds of years to achieve old growth conditions. In addition, disturbance can alter soil and hydrology at a site, further undermining the natural balances that create the characteristics of old growth forest communities.” See *Comments of Alan Weakley*. See also *Definitions and History*, by Robert Leverett, Chapter 1 in *Eastern Old Growth Forests* at 8 (1996). See also Tyrell, L.E., and T.R. Crow. 1994. *Structural Characteristics of old growth hemlock-hardwood forests in relation to stand age*. *Ecology* 75:370-386). The courts have recognized that loss of old growth forest takes hundreds of years to replace. See *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1382 (9th Cir. 1998); *Idaho Sporting Congress v. Alexander*, 222 F.3d 562 (9th Cir. 2000). Old growth forest communities are also exceptional and unique in that they are important reservoirs of genetic information. Primary “forests were the result of centuries of evolution and adaptation and thus they produced the biggest and best of virtually every indigenous tree species.” See *Definitions and History*, by Robert Leverett, Chapter 1 in *Eastern Old Growth Forests* at 13 (1996). Old growth forests harbor genetic strains that have withstood the test of time and threats from disease and weather events. See *Comments of Christopher Hainey*. The genetic records in the remaining old growth communities in the Southern Appalachian forests are important to the long-term survival of the species and forest communities they represent. See *Comments of Jonathan Evans*. In addition, older stands contain species that when evaluated over large regional landscapes are shown to be the least common. See Hainey, J.C. 1999. *Hierarchical comparisons of breeding birds in old-growth conifer-hardwood forest on the Appalachian Plateau*. *Wilson Bulletin* 111(1):89-99. Old growth forests also serve as reference ecosystems. Region 8 Old Growth guidance recognizes that “[o]ld growth areas can provide opportunities to further understand the ecological processes associated with these communities and to further test the principles of forest dynamics and development.” Region 8 Old Growth Guidance at 13. Old growth forests are the baselines against which management of other forest can be measured. *Id.* See also *Comments of Christopher Hainey*. The lessons that can be learned from old growth forests “will help with the management of other forested ecosystems.” See *National Forests in the Eastern Region: Land Allocation and Planning for Old Growth*, by Lucy E. Tyrell, Chapter 17 in *Eastern Old Growth Forests* at 268 (1996). Old growth forests also provide unique habitat for an exceptionally diverse range of species. Because of gap phase dynamics, old growth provides a continuous self sustaining supply of a wide range of habitats, “such that old growth incorporates many of the elements found in previous forest developmental stages.” *Strategies for Conservation of Old Growth: Reed Noss* (August 1988). As a result, old growth forest supports much greater species richness and diversity than can be found on recently-logged young- to mid-age forests. One study found that, in a comparison of 10 primary forest sites and 10 secondary sites, species richness in 1 m² quadrants averaged

11.2 species on primary sites and 6.9 on secondary sites. See *Biodiversity in the Herbaceous Layer and Salamanders in Appalachian Primary Forests*, by Albert Meier, Susan Power, and David Cameron Duffy, Chapter 4 in *Eastern Old Growth Forests* at 53 (1996). Stress, competition, direct loss, slow recolonization rates, and diminished gap generation all contribute to reduced diversity in salamander and vernal wildflowers post logging. *Id.* at 54-58. Salamander species may require more than 120 years to recover pre-logging population levels. *Id.* at 54. The diverse range of habitat options available in old growth forest also contributes to a significantly greater diversity of avifauna in old growth forest than is found in logged forests. See *Functional Roles of Eastern Old Growth in promoting Forest Bird Diversity*, by J. Christopher Hainey and Charles P. Schaadt, Chapter 6 in *Eastern Old Growth Forests* at 85 (1996). Old growth forest communities provide valuable denning opportunities for animal species including black bears, bats, flying squirrels and woodpeckers. See *Comments of Jonathan Evans*. Old growth forest also provides unique habitat for a variety of carnivore species, including black bear, by providing security, energy savings, permanent habitat features on a changing landscape, psychological health, comfort, food sources, water, thermal stability, and flexibility in denning. See *The Importance of old Growth to carnivores in Eastern Deciduous Forests*, by Michael R. Pelton, Chapter 5 in *Eastern Old Growth Forests* at 67 (1996). Black bears need large trees averaging 175 to 280 years. *Id.* at 65. Dens in large trees found in old growth forest conditions provide bears with energy savings of up to 40% as compared to ground dens. *Id.* at 67. Because they are rare, important reservoirs of biodiversity, exceptional habitat for a diverse range of forest species, valuable benchmarks for understanding dynamics across the rest of the forest, and irreplaceable, old growth forest communities are “ecologically critical areas” and logging them is an impact significantly affecting the human environment within the meaning of the CEQ regulations. In addition, logging old growth is controversial. Because of its rarity and inherent value, scientific consensus is that existing old growth should be conserved. See *Comments of Alan Weakley* (“Old growth forests are rare and should not be traded for post-logging habitat which can be created elsewhere on younger forest.”); *Comments of Jonathan Evans* (“[T]he Forest Service should work wherever possible to preserve old growth examples of the representative communities found within the National Forest.”). Similarly, a recent paper by leading old growth researchers concluded that “[r]emnant stands should be ranked and designated for conservation.” See *Old-Growth Oak and Oak-Hickory Forests*, by Peter S. White and Ricky D. White, Chapter 13 in *Eastern Old Growth Forests* at 193 (1996). See also *National Forests in the Eastern Region: Land Allocation and Planning for Old Growth*, by Lucy E. Tyrell, Chapter 17 in *Eastern Old Growth Forests* at 269 (1996) (“Both enhanced protection of remnant stands and restoring the species composition in other areas may be needed.”); *The Importance of old Growth to carnivores in Eastern Deciduous Forests*, by Michael R. Pelton, Chapter 5 in *Eastern Old Growth Forests* at 71 (1996) (“Because of the history of logging in the East, it is clear we should preserve all remaining old growth and create more.”). Furthermore, logging in old growth is controversial because there is debate within the scientific community whether old growth communities can ever be restored. For this same reason, the impacts of logging existing old growth forest are significant because the possible effects on the human environment are highly uncertain or involve unique or unknown risks. It is not clear from current science whether the forest that replaces primary forest, even when it reaches maturity and demonstrates old growth characteristics, ever achieves the same suite of old growth characteristics of primary forest. Logging removes biomass, alters soil and hydrology, and alters species composition such that even over centuries, the forest may be unable to restore to the same community that is lost. According to one old growth researcher “[w]e do not know whether heavily logged forests will ever regain all the characteristics of original forest.” See *Definitions and History*, by Robert Leverett, Chapter 1 in *Eastern Old Growth Forests* at 8 (1996). Similarly, the Forest Service recognized in response to comments on Amendment 5 to the Forest plan that future old growth will not reflect all of the same characteristics of the primary forest it replaces. *Forest Plan, Appendix N Response to Comments at N-33*. Many native vernal species, for example, are eliminated from logged areas by a number of factors, by the time the logged stand ages to the point of restoring gap phase dynamics and topographical barriers in the mountains prevent some species from repopulating logged areas, even over long periods of time. See *Biodiversity in the Herbaceous Layer and Salamanders in Appalachian Primary Forests*, by Albert Meier, Susan Power, and David Cameron Duffy, Chapter 4 in *Eastern Old Growth Forests* at 59 (1996). The life history of many vernal herbs means that such species require very long recovery periods in logged areas, “if recovery occurs at all.” *Id.* Courts have held that failure to address uncertainty about impacts to rare old growth resources falls short of the “hard look” standard under NEPA. *Ecology Ctr. v. Austin*, 430 F.3d 1057, 1063 (9th Cir. 2005). Logging old growth in the Globe Project is also significant in that it would set a disappointing new precedent for the National Forests in North Carolina. In recent memory, the Forest Service has conscientiously avoided logging existing old growth. As noted by the Western North Carolina Alliance in its scoping comments for this project, the Grandfather Ranger District has a history of working with the conservation community to ensure the conservation of the important old growth resources within that district. This sale, if completed as proposed, would mark a precedential shift in management

that values the remaining 0.5% of the National Forests that are existing old growth forest communities more for their timber value than for their critical ecological value. Thus, the draft Environmental Assessment for the Globe project must be withdrawn both because the draft fails to disclose or analyze impacts to rare old growth resources and because logging of existing old growth is an impact significantly affecting the human environment that must be evaluated through a full environmental impact study.

Agency Response

(A): Pursuant to 40 CFR §1502.3, as to whether an EIS is required: *On proposals (§1508.23). For legislation and (§1508.17). Other major Federal actions (§1508.18). Significantly (§1508.27). Affecting (§§1508.3, 1508.8). The quality of the human environment (§1508.14).* If the Responsible Official determines the Selected Alternative for the Globe proposal will not have a significant effect on the quality of the human environment, this determination will be disclosed in a Finding of No Significant Impact (FONSI) pursuant to §§1501.4(e) and 1508.13. If the Selected Alternative will or may have a significant effect on the quality of the human environment, an environmental impact statement will be completed pursuant to §1501.4 prior to a decision being made.

The Agency recognizes the importance old growth communities are to diverse, forest ecosystems; thus the reason the Forest Plan provides standards for retaining old growth communities (Forest Plan, pages III-26 thru III-28). Within the two 11,225 acre analysis areas, 5,115 acres are currently designated as old growth communities (~45% of the AAs) and are unsuitable for timber harvesting. The proposal would harvest either 212 or 231 acres depending on the alternative implemented. As stated in the EA: *There would be individual trees greater than 100 years of age harvested, but old growth is a community and not an individual tree* (Section 3.11.2.1, Chapter 3). The EA also disclosed: *[n]o Forest Plan designated old growth communities or initial inventory old growth communities would be harvested; no stands averaging greater than 100 years in age would be harvested with this proposal; over 300 acres would be designated as small patch old growth communities and would not be scheduled for future harvest; and about 1,400 acres in the AAs currently average greater than 140 years and are not scheduled for harvesting with this proposal. Since 1986, about 500 acres have been harvested in the AAs—these acres are continuing to move forward in age-classes since they were not converted from forest land to non-forest land. There are changes that occur in a forest ecosystem as a result of developing 0-10 year age-classes, but adverse cumulative effects to old growth communities are not expected due to reforestation efforts; designation of old growth communities that would not be scheduled for future harvest; no stands averaging greater than 100 years in age being harvested under this proposal* (Section 3.11.2.2, Chapter 3). In addition, the proposal would designate 311 acres of additional small patch old growth communities that would be unsuitable to timber harvesting, bringing the total designated old growth communities to 5,426 acres (~48% of the AAs). See also FONSI, decision notice.

Environment/Ecosystem

Representative Group of Comments Received

A): Currently there is a great deal of mature forest in the analysis areas, but nature on its own is not providing the desired level of early successional habitat (ESH). The Forest Plan prescribe Management Area 3B (MA) to have at least 5% but not more than 15% ESH at the compartment and analysis area scale and MA 4A is not to exceed 10% ESH at both scales (Forest Plan, page III-31). These standards were developed by wildlife biologists specifically to benefit wildlife. The current condition in the analysis areas is 68 acres of ESH (0.61% ESH) in MAs 1B & 3B and 0 acres in MAs 4A & 4D – there is a need to provide additional ESH in order to meet Forest Plan standards and project objectives, and timber harvest can achieve this goal while also providing saw timber. The proposal has been designed to reduce impacts to resources by dispersing the ESH harvest stands across the analysis areas. In addition, harvest stands average less than 13 acres.

B): Forest Service managers are unaware of any promises made and cannot find any documentation to indicate that harvesting would not again occur in the Globe area. Such a promise would be inconsistent with objectives identified in the Forest Plan.

C): See Comment A and Agency Response above.

D): See response in Old Growth theme below. The forests in the analysis areas are currently and have historically been hardwood forests – evergreens (pines and hemlocks) have historically been a minor component of these forests.

Agency Responses

A): Our eastern forests have a long history of being shaped to greater or lesser degrees by human actions, and humans have a long history of extracting products for use from the forest and influencing its composition, structure, and function; i.e., timber harvesting, farming, fire control, housing developments, highway construction, and loss of major stand components. Currently, there is a great deal of mature forest in the analysis area, but nature on its own is not providing the desired level of early successional habitat (ESH). The Forest Plan calls for Management Area 3B (MA) to have at least 5% but not more than 15% ESH at the compartment and analysis area scale and MA 4A is not to exceed 10% ESH at both scales (Forest Plan, page III-31). These standards were developed by wildlife biologists specifically to benefit wildlife habitat. The current condition in the analysis areas is 68 acres of ESH (0.61% ESH) – there is a need to provide additional ESH by mechanical methods to meet Forest Plan standards and project objectives. The proposal has been designed to reduce impacts to resources by dispersing the ESH harvest stands across the analysis areas. In addition, harvest stands average less than 13 acres.

B): The 1987 Forest Plan and 1994 Forest Plan amendment designated MA 3B and MA 4A lands within the analysis areas – both of these MAs permit timber harvest. The Agency is unaware of any promises made that harvesting would not occur in the two analysis areas—such a promise would appear to be inconsistent with MA objectives in the Forest Plan. Forest plans are completed with extensive public involvement. It has been clear since the 1980s that scheduled timber harvesting would occur in the two analysis areas.

C): See Erosion/Soil, Recreation/Tourism, Water Quality, and Wildlife themes below.

D): See Old Growth Theme below. The forests in the analysis areas are currently and have historically been hardwood forests – evergreens (pines and hemlocks) have historically been a minor component of these forests.

Erosion/Soil

Representative Group of Comments Received

A): *The logging activities proposed in this project will cause impacts to soils that are the biotic foundation of the forest ecosystem. The impacted soil will experience increased runoff and erosion. The analysis for this project points out that “runoff is much lower where forest cover is intact and where forest litter has little or no disturbance”. To prevent runoff and negative soil impacts logging must not take place.*

B): *We have severe and increasing problems with flooding and runoff in the mountains which is directly related to deforestation.*

C): *I am opposed to any cutting and harvesting of the trees in the 231 acres. Our mountain soils depend on forests – without trees the soil erodes and washes into our streams, degrading water quality and wildlife habitat.*

D): *I protest this project for its impact on [s]oil.*

E): *Too many roads. Too wide! Erosion!!*

Agency Responses

A): The quote is from information provided by the USDA Natural Resource Conservation Service for Chestnut, Edneyville, and Evard soil types. The proposal has been designed to reduce potential for adverse effects to soil resources (see Section 3.5.2.1, Chapter 3). The proposal as designed will achieve Forest Plan standards for soil resources (Forest Plan, pages III-40 thru III-42).

B): Deforestation as a silvicultural treatment (permanent removal of forests) has not occurred on National Forest System (NFS) lands in the analysis areas and is not proposed with the Globe project. The preferred alternative would develop 12 acres of permanent wildlife fields to improve wildlife habitat diversity (see also Clear Cutting Comments and Agency Responses above).

C) – D): See also Comments A and B above and Agency Responses.

E): The proposal uses existing roads as much as possible and only develops/re-uses the minimum number of miles of temporary/existing unauthorized roads to meet harvesting objectives. The temporary roads would be

[a]ppropriately shaped, waterbarred, disked and seeded with an erosion-control seed mix. All new temporary roads would be permanently closed and any new stream crossings on these roads are considered temporary and would be removed. The 0.8 miles of unauthorized roads used with the proposal would be [p]laced on the Forest's Transportation System as authorized roads, stabilized (i.e. shaped, waterbarred, and seeded with an erosion-control seed mix) and closed for administrative use only. It is expected that these roads could be used again in approximately 10-15 years to access additional stands for management—future NEPA analysis would be necessary prior to entry (Section 1.3, Chapter 1 and Sections 2.2.3 & 2.2.4, Chapter 2). The seasonal closure of the Thunderhole Road, along with seeding and waterbarring on other roads used in the analysis areas is expected to result in less erosion after the proposal is completed compared to what is coming off the area's roads now.

Extend Comment Period/Comments Received

Representative Group of Comments Received

A): *We further request that the period of public comment be extended to the end of the year so that the citizens and property owners of Blowing Rock can comprehend and further digest this proposal, objections and alternates that would come out of a healthy, public debate. Should this project move forward on the original time line, we will have no choice but to oppose the entire project and all of its points regardless of any merits of any of the points, and this objection will be discussed in detail with our friends that represent us in the Congress and Senate.*

B): *Due to these errors and omissions, I respectfully request that a public presentation be made in Blowing Rock before the August 10th deadline and that the deadline be extended for comments for at least 30 days, so that Blowing Rock citizens can make their views known on this awful project. If the citizens are properly informed, you will soon understand that there is no public support for this misguided and disguised project.*

C): *Please allow us more time to comment so all who are affected can do so, and so we can review this matter further. I feel we have not been given adequate time nor notice.*

D): *Please note the passion of the people at this assembly that are stating that they feel that extension of the appeal period [comment period] needs to be changed and adjusted for fair discussion.*

E): *The process needs to be re-started with adequate notice!*

F): *The Revised Assessment did not disclose or adequately address this overwhelming public opposition to this project, and did not even mention the proposed Grandfather National Scenic Area. Instead, the Revised Assessment and its cover letter recognized that "concerns" had been expressed about impacts to scenic resources, recreation, and old growth. Revised Assessment at 5. The Revised Assessment did not mention the resolutions of the Watauga County Commission and the Blowing Rock Town Council, did not disclose the volume of public comment, and did not address that the vast majority of this voluminous public comment did not want the proposed logging to occur. Beyond disclosing the vast public opposition to its proposed logging, it was incumbent on the Forest Service to address this opposition through re-examination of its purpose and need and through development of real alternatives to its proposed actions, rather than the cosmetic changes reflected in Alternative D. Plainly, the public and the legislative bodies that represent the public want greater emphasis on and protection for this area's scenery, recreation, and old growth forest. Particularly with respect to Management Area 4A, which does not require any logging at all, the Forest Service should have addressed directly in its "purpose and need" why it was subordinating these many resources to promote a post-logging landscape, and directly should have addressed the trade-offs among these resources and goals through consideration of alternatives that better implemented the public's desires for this area, including (1) an alternative embodying the proposed Grandfather National Scenic Area, (2) no logging in Management Area 4A, and (3) no logging of existing old growth.*

Agency Responses

A): 30-day Notice and Comment periods were initiated on July 12, 2006, and on December 1, 2006. Federal regulations do not allow for these periods to be extended (36 CFR 215.6(1)(iv)). To have standing for appeal purposes, an individual needed to have submitted comments during one of these two 30-day Notice and Comment periods. However, comments received outside of these 30-day Notice and Comment periods were reviewed and considered in the formulation of the alternatives.

B): A public meeting was hosted by the US Forest Service at the Blowing Rock Town Hall on August 9, 2006. An open house was hosted by the US Forest Service at the new fire hall in Collettesville, NC on December 4, 2006, and

at the American Legion Building in Blowing Rock, NC on December 7, 2006 (see also Comment A above and Agency Response).

C): See Comments A and B above and Agency Responses.

D): Applicable appeal periods come after decisions are made. See Comments A and B above and Agency Responses.

E): See Comments A and B above and Agency Responses, and Inadequately Informed theme below.

F): All comments and associated attachments received on the Globe proposal are part of the project record. Public input has resulted in the modification of the original proposal in order the better address scenic values and access concerns.

Flooding

Representative Group of Comments Received

A): *Logging and road building in the Globe Forest will increase the risks of fires, exotic species, poaching, and flooding.*

B): *The old trees maintained the moisture levels in the forest floor environment (important in this land of low rainfall) and also protected the forests from flooding and resulting soil erosion.*

Agency Responses

A): The proposal is not expected to significantly increase potential for flooding, as the harvest treatment (two-age harvesting, retain 15-30 basal area/acre), would incorporate best management practices (e.g., no harvesting within stream buffers) and be implemented under a timber sale contract with clauses to require erosion control devices, grass seed, and only allow for work when soil moisture levels are adequate for ground-based activities.

B): See Comment A and Agency Response above.

Global Warming

Representative Group of Comments Received

A): *With all the benefits of having forests vs. helping destroy our earth through greater carbon emissions, one would think that we would not kill the forests that keep carbon emissions from causing global warming. This has finally been recognized as scientific fact. Will we ever learn?*

B): *I am outraged at the proposed Globe Project. In these days of extreme global warming, how can strip cutting 231 acres and then spraying the forest with chemical compounds be even considered by any intelligent person!?! Please don't let this happen.*

C): *If you have consciences, and care for the future of what this country must save for future generations on this planet and in this country; and preserve such forest to prevent global warming, as well as to keep some of its beauty, this "Globe Project", Alternative B, must be halted at once. It is also impossible that the mentioned herbicides would not get into drainage and watershed areas below the targeted areas.*

D): *I suggest that everyone in the Forest Service go and see the documentary movie "An Inconvenient Truth" on global warming or, if it is not playing in your area, visit it online. The movie points out satellite photos of logged areas versus forested areas that will make one nauseous if you have any conscience at all.*

E): *[t]he loss of trees that are vital to countering the dangerous levels of carbon dioxide in our atmosphere that are contributing to global warming.*

F): *I am curious if you and others in the Forest Service have seen the recent documentaries on the Discovery Channel by Tom Brokaw on Global Warming, or the popular cinema release of the documentary on Global Warming, "An Inconvenient Truth?" In response to what appears to be an irrefutable climatic priority, we should be encouraging as many trees as possible, not cutting them down and spraying to keep down new growth. We need to designate more of this tract as "old growth" and preserve it as long as possible. We need those trees to help convert carbon dioxide into oxygen to help slow the rate of warming in our atmosphere. The trees we cut here could*

speed the decline of glaciers and the arctic and Antarctic ice caps. If you have not seen these documentaries please contact me and I will be glad to arrange for you to see one or both of those films. We must act together as a global community or face some very dire consequences. The science of these issues is agreed by an overwhelming number of top respected scientists.

Agency Responses

A): Global warming is a concern for forest managers as well as the public. This proposal would not deforest the acres harvested – it would allow for a younger, more vigorous forest to become established in the area—one that research indicates would slightly increase carbon dioxide uptake and oxygen output over older forests in the area (decreasing potential for global warming).

B): See Comment A above and Agency Response along with Herbicides theme below.

C): See Comment A above and Agency Response along with Herbicides theme below. Of the 11,225 forested acres in the two analysis areas, the action alternatives would harvest about 1.9% or 2.2% of them—over 97% of the forested acres would not be harvested under the proposal (Table 3-4B, Chapter 3).

D): *An Inconvenient Truth* was viewed by the Responsible Official and many other Forest Service employees. For the Globe project, the average harvest stand is about 13 acres in size. There would be no clear cutting, and the proposal would harvest and regenerate only about 2% of the forested acres in the two analysis areas. These naturally regenerated stands would add diversity to the existing wildlife habitat.

E): See Comment A above and Agency Response.

F): See Comments A and D above and Agency Responses along with EIS Required and Old Growth themes.

Harvesting

Representative Group of Comments Received

A): *I am a property owner in Blowing Rock, and am writing to you to protest the Globe Project. This is entirely unnecessary and highly injurious to the forest and surrounding land. It will create permanent and lasting damage to the forest and slopes, decimate the wildlife, and create an eyesore easily visible from miles in all directions.*

B) *I want to record my opposition to your plan for stripping most of the timber from the Globe region down below Blowing Rock in order to sell it to private companies. Your "ecological" modeling and attendant justifications are both dated and incomplete. I find it disturbing, to put it mildly, that your Service's knowledge of ecology is so dated; the traditional, self-serving arguments attendant to "the plan" were, I suppose, to be expected. In fact, your plan seems to have less to do with ecology than it does with engineering the forest with outdated, suspect reasoning.*

C): *I am opposed to de-forestation of the globe either in timber cutting or chemical spraying.*

D): *As frequent visitors to Blowing Rock and its beautiful surroundings, we are outraged at the proposal to clearcut and spray with herbicides hundreds of acres adjacent to Blowing Rock in the John's River (Globe) Gorge. Please let us know what we can do to prevent this environmental disaster from happening. We will gladly contribute to a fund to prevent this deforestation. Who makes these decisions? Let us know so that we may express our outrage directly to the person(s) responsible for this.*

E): *It is appalling that there is even a consideration to clearcut and poison a section of the Globe area. What on earth can be gained??? Has God disappointed the Park Service with the way He has cared for this land for the last 15 million years? I ask you to think on this: We humans will pay dearly for the mistakes we are making destroying even a small part of this earth. I am not referring, necessarily, to the hereafter; I am referring to the present, perhaps in our lifetimes, but surely in the lifetimes of our children. Please don't misuse the little power that you have been given to destroy.*

F): *As an avid birder, I know that many songbirds need ESH to survive. But I am amazed that the Forest Service neglects to factor in natural canopy openings that occur in mature forests, never mind the abundance of ESH on surrounding private lands. This strikes me as unscientific and inaccurate. Sample surveys or modeling will demonstrate that mature forests naturally provide ESH in the form of blow downs, tree falls, and other natural disturbances. Deer and turkey somehow have managed to survive before the creation of your agency. If your agency feels the burning need to create ESH, then it could elect to create it in areas that offer few wildlife benefits. I*

am specifically referring to the areas your agency clear cut in the 80s and 90s. Why go into mature forests to create ESH, when you have an opportunity to right the past wrongs of your agency?

Agency Responses

A): We recognize that many people with ties to Blowing Rock are opposed to this project. Many people also appear to be unaware of laws that govern management of NFS lands and that the National Forests are to be managed for “multiple use and sustained yield”. The proposal has been designed to meet project objectives (Section 1.4, Chapter 1) and the Forest Plan (Section 1.2, Chapter 1). The purpose of an EA is to disclose the environmental effects of a proposed project. All of the concerns listed in the comment are addressed in Chapter 3 of the EA. See also Erosion/Soil, Scenery, and Wildlife themes. A number of specific project design features and monitoring requirements have been included in the preferred alternative and decision to ensure that the scenic properties of the forest that many people in Blowing Rock area value so highly are not adversely affected.

B): The Forest Plan is the guiding document for the Nantahala and Pisgah National Forests, as required by the National Forest Management Act. This project proposes two-age management of a very small portion of the Globe area, followed by natural regeneration of a new age-class of trees. We acknowledge there are different approaches to wildlife management, but providing a diversity of habitats, including the type provided by very young forest (ESH) as prescribed in this proposal, has been a valid approach traditionally and remains so today. Other agencies, universities, and established conservation organizations support these types of forest management project. See also Clearcutting and EIS Required themes.

C): No deforestation is proposed. Stands harvested using the two-age system would naturally regenerate a new age-class of trees. See also Clearcutting and Herbicides themes.

D): The Forest Plan and the EA are designed to analyze and disclose the environmental effects of a proposal, such as the Globe project. The proposal is designed to meet desired future condition set forth in the Forest Plan as well as its standards and guidelines and the project’s objectives. No deforestation or clear cutting is proposed with this project. Stands harvested using the two-age system would naturally regenerate a new age-class of trees. The Responsible Official is the Grandfather District Ranger. See also Clearcutting and Herbicides themes.

E): The Globe project has been proposed and developed by the USDA Forest Service and not the National Park Service—the USDA Forest Service is managed under a different mission than the National Park Service. National Forest System lands managed by the USDA Forest Service are by law managed for multiple uses and sustained yield; including providing timber for the nation’s wood supply. Sustainable timber harvest followed by regeneration of a new stand is one of the tools used to provide a diversity of wildlife habitats in a cost effective manner and would not destroy the area. The preferred alternative has been designed to ensure that the area’s wildlife, recreation, and scenic values are maintained. See also Clearcutting and Herbicides themes.

F): The Forest Service’s objective in regenerating stands has been not only to establish a fully-stocked young stand, but to achieve a better quality stand for the future. Through appropriate silvicultural activities, the Forest Service often restores a mix of tree species that will provide wildlife habitat needs during the long rotations associated with National Forest management. In many of the stands that are now 20+ years old, the crowns have closed, the best trees (typically species such as oaks, cherries, and hickories) are becoming dominant, and understories are less brushy. The diameter of the best trees is often greater than 8-10 inches. In the mountains and piedmont the Forest Service has been successfully regenerating oak following timber harvest except on the very best yellow-poplar sites. It has taken the Forest Service over 20 years to get these stands to the age-classes they are in. The Forest Service has begun to achieve the desired future conditions detailed in Forest Plans and previous Unit Plans. These trees are well on their way to becoming acorn producers for future generations of wildlife. There are opportunities to go into other stands and, in a day, create new 0-10 year age-class, but creating 21-30 or 31-40 year age-class from scratch cannot be done without time. It would not meet Forest Plan objectives to set back acorn production in these stands by cutting dominant and codominant 20+ year old oaks. If the objective is to create future grouse habitat or other early-successional forested acre objectives without the use of commercial timber sales, there are better opportunities for accomplishing this than re-cutting established young stands—it would be cheaper and more beneficial to cut sparse trees in unproductive, damaged, and low quality stands. Such opportunities arise occasionally across the Forest, but no such opportunities are a part of this proposal.

Herbicides

Representative Group of Comments Received

A): *Herbicide use is proposed across the entire project area. One of the chemicals proposed for use is Glyphosate which is the active ingredient in "Round up". This is one of the most widely used herbicides and is ubiquitous in the environment. Research is beginning to reveal the horrifying impacts this chemical is having on the environment. Glyphosate has been shown to destroy aquatic diversity and severely impact amphibians. The use of Glyphosate is unacceptable.*

B): *Secondly, I am very concerned about the effects of the herbicides that are to be used for this project. According to studies, Garlon 3A can cause permanent vision loss and other maladies to humans. Since studies indicate that Glyphosate destroys aquatic diversity, it should not be used. We must protect our water and wildlife.*

C): *I am not opposed to protecting our forests by creating fire breaks and protecting wildlife. However, I am opposed to the proposed cutting and selling of hundreds of acres of the Pisgah National Forest for creating natural areas for wildlife and, more importantly, using a herbicide to supposedly defoliate these areas. Before any cutting is done, there needs to be a full disclosure by the U. S. Forest Service regarding the long term success in creating these natural areas and, more importantly, the use of the herbicide and its long term affect on the environment, particularly on the wildlife and the rivers and streams.*

D): *Your proposal to denude this landscape and then create an oak-dominated "succession" [outdated concept] by poisoning competitor trees with a chlorinated hydrocarbon is, frankly, appalling. You have presented no credible reasons for introducing such a potent organic poison into that environment*

E): *Using herbicides and chemicals will kill desirable native species, including fish, and harm humans.*

F): *I am against the use of herbicides to control pest plants because of unknown and questionable long term damage to some of the wildlife you want to protect.*

Agency Responses

A): The Forest Service recognizes the public's concern with herbicide use and has completed extensive surveys, research projects, independent analyses, and an environmental impact study on the use of herbicides. As disclosed in the EA: *Use of herbicides would be pursuant to product labels; Material Safety Data Sheets (MSDSs); pesticide risk assessments; and standards and guidelines from the Forest Plan and the Vegetation Management in the Appalachian Mountains (VMAM) FEIS. Herbicide use (primarily Glyphosate) is necessary to more efficiently and effectively treat non-native invasive plants. Manual methods are less effective at treating non-native invasives as many species resprout once cut and removing entire root masses requires extensive labor and cost (see also Section 3.4, Chapter 3 for additional disclosures on herbicide use). According to a risk assessment (http://www.fs.fed.us/foresthealth/pesticide/risk_assessments/04a03_glyphosate.pdf), Glyphosate is readily metabolized by soil bacteria. (Section 2.3.2, Chapter 2). Specific public safety measures associated with herbicide use include: 1) Herbicides are applied according to labeling information and the site-specific analysis done for projects. This labeling and analysis are used to choose the herbicide, rate, and application method for the site. They are also used to select measures to protect human and wildlife health, non-target vegetation, water, soil, and threatened, endangered, proposed, and sensitive species. Site conditions may require stricter constraints than those on the label, but labeling standards are never relaxed. 2) Only herbicide formulations (active and inert ingredients) and additives registered by EPA and approved by the Forest Service for use on National Forest System lands are applied. 3) Public safety during such uses as viewing, hiking, berry picking, and fuelwood gathering is a priority concern. Method and timing of application are chosen to achieve project objectives while minimizing effects on non-target vegetation and other environmental elements. Selective treatment is preferred over broadcast treatment. 4) Areas are not prescribed burned for at least 30 days after herbicide treatment. 5) A certified pesticide applicator supervises each Forest Service application crew and trains crew members in personal safety, proper handling and application of herbicides, and proper disposal of empty containers. 6) Each Contracting Officer's Representative (COR), who must ensure compliance on contracted herbicide projects, is a certified pesticide applicator. Contract inspectors are trained in herbicide use, handling, and application. 7) Contractors ensure that their workers use proper protective clothing and safety equipment required by labeling for the herbicide and application method. 8) Notice signs (FSH 7109.11) are clearly posted, with special care taken in areas of anticipated visitor use. 9) No herbicide is*

ground-applied within 60 feet of any known threatened, endangered, proposed, or sensitive plant. Buffers are clearly marked before treatment so applicators can easily see and avoid them. 10) Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers. 11) No herbicide is ground-applied within 30 horizontal feet of lakes, wetlands, or perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations. Buffers are clearly marked before treatment so applicators can easily see and avoid them. 12) During transport, herbicides, additives, and application equipment are secured to prevent tipping or excess jarring and are carried in a part of the vehicle totally isolated from people, food, clothing, and livestock feed. 13) Only the amount of herbicide needed for the day's use is brought to the site. At day's end, all leftover herbicide is returned to storage. 14) Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas. 15) During use equipment to store, transport, mix, or apply herbicides is inspected daily for leaks. See also Section 3.4, Chapter 3

B): As disclosed in the EA: *According to another risk assessment (http://www.fs.fed.us/foresthealth/pesticide/risk_assessments/0303_triclopyr.pdf), Triclopyr is not considered soil active (mobile). Triclopyr is necessary to ensure practical/cost efficient site preparation treatments (see Veg Mgt FEIS IV-65—IV-66). As stated on page IV-66 of the FEIS: Manual cutting tools are highly selective and can be used year round on all land types, but repeated treatments, either annually or even more frequently, may be necessary to adequately control woody vegetation. Other herbicides such as Glyphosate are less effective at reducing woody plants. Herbicides, including Triclopyr are necessary to ensure practical/cost efficient site preparation, release, and control/management of invasive exotic plants. Use of herbicides (including Triclopyr) would be pursuant to product labels, MSDSs, and pesticide risk assessments. Effects disclosed in the risk assessments must be placed in proper context. For specific information see risk assessment website listed above. See also Section 3.4, Chapter 3 and Appendix F.*

C): See Section 3.4, Chapter 3, referenced risk assessments, and Appendix F.

D): This proposal would not denude the landscape. The many benefits of oaks are well documented and accepted.

E): See Comments A and B above and Agency Responses

F): See Comments A and B above and Agency Responses and Section 3.1, Chapter 3.

Inadequately Informed

Representative Group of Comments Received

A): *I was shocked to find out just today that there is a proposal to cut trees, sell land, build logging roads and herbicide plant material in the Thunder Hole / Globe area immediately adjacent to Blowing Rock. I was further shocked to find out that the public comment period ends August 10, 2006. As a property owner directly adjacent to the Pisgah National Forest, why wasn't I notified?*

B): *Apparently, Blowing Rock residents have not been properly informed as to the plans of the US Forest Service and a formal presentation has not been made to the citizens of Blowing Rock. It would appear that this has not been an accidental omission, but rather a deliberate attempt to keep Blowing Rock's citizens in the dark. At best someone has erred greatly in how this has been handled. I am sure a subsequent investigation will disclose the many bad mistakes that the Forest Service made in this effort. The identification of the "project" as the Globe Project 11 miles northwest of Lenoir as opposed to identifying it with Blowing Rock which is ten miles closer has been extremely misleading to the Blowing Rock citizens. Also, I understand that a Marion, NC newspaper was used as a place for your legal filings. This paper is not read by citizens of Blowing Rock. Information should have been in the Watauga Democrat and the Mountain Times and the Blowing Rocket.*

C): *I think that the suspect nature of this plan is reflected in your decision to not provide adequate notice by publishing in a newspaper in the region directly affected. No sentient person with minimal critical faculties will take seriously the excuse that the Service thought McDowell County's paper would serve to notify people in Blowing Rock and Caldwell County. Nor will they credit any attempt to explain why the "informational session" was scheduled for one day prior to the deadline for public comments; they know why it was so scheduled. The effort to*

manage this project through to fruition was stupid--- the only thing is question is the exact nature and motivation of the stupidity--- in either case, the powers that be should take this as the occasion to have a good long look at this particular branch of the Forest Service, and perhaps even a wider examination is warranted. If the Service does not have sufficient other, useful work to keep it busy, then it would seem only prudent that taxpayers insist that your budget and staff be pruned accordingly. I hope that this proposal will die the prompt death it so richly deserve and that the Forest Service and the private interests it seems to represent come away from this experience with an appreciation of the remarkable range of political persuasions opposed to this ill-considered idea. I further hope that our elected officials will get involved in this one as well, this time on the side of the public. I understand that other writers have received perfunctory replies from your office. I neither require nor want one.

D): *My first and most important point to make was that the process was flawed. Even though everything you did was technically correct, the end result to notify the affected community was ineffective. A process is only as good as the results you get from it. Specifically, only putting it in the McDowell paper(I understand that that is the paper of record) and, more importantly, by describing it as 11 miles from Lenoir rather than a few miles from Blowing Rock (which is the actual area it was going to impact) did not properly notify the involved citizens. It seems absurd that even when the forest service staff themselves recognized that a mistake was made in the project description (and admitted that mistake at the 3:30 Public Forum meeting) there was no action that could be taken to correct it.*

E): *Although you followed legal means, your approach is unfair and unethical to the citizens of Blowing Rock. You publicized in Lenoir that which you intended to do in Blowing Rock. You publicly stated that you had made a mistake in judgment by not publicizing your intentions in Blowing Rock. It seems that your behavior could be construed to have been with the intent to “pull the wool over our eyes.”*

Agency Responses

A): As disclosed in the EA: *“The proposal was listed in the January, April, July, and October 2006 editions of the Schedule of Proposed Actions (SOPA). The proposal was provided to members of the public, government agencies, and private organizations by mailing a scoping package to over 100 members of the public who had previously requested to receive such information and a 30 day scoping period ran from January 18, 2006, thru February 20, 2006, when a legal notice was published in The McDowell News, the Grandfather Ranger District’s newspaper of record as per 36 CFR 215.5(b)(2)(i). Information on the proposal was also provided in other formats: a press release was provided to The Blowing Rocket on January 19, 2006, inviting comments on the proposal; a request for public comment on the proposal was placed in the January 23, 2006, edition of The Watauga Democrat; the January 26, 2006, edition of The Watauga Mountain Times; and the February 16, 2006, edition of The High Country News; and information on the proposal was posted online at www.themountaintimes.com on January 26, 2006. [P]ursuant to 36 CFR 215.2 and 215.5(b)(1)(iv), a 30-day Notice and Comment period was initiated on July 12, 2006, when a legal notice was published in The McDowell News informing members of the public the EA was available for review. On August 1, 2006, a press release was issued stating the Forest Service would host an open-house meeting in Blowing Rock, North Carolina on August 9, 2006, to discuss aspects of the proposal. On August 2, 2006, District Ranger Joy Malone mailed a notice to the Grandfather Ranger District’s mailing list stating she would consider comments from the end of the 30-day Notice and Comment period thru August 18, 2006, (see also Forest Service Handbook 1509.12, Section 11.5). Following the 30-day Notice and Comment period, the additional comment period, and up to issuance of the November EA, 1,282 total comments were submitted on the proposal.”* (Section 1.6, Chapter 1). Following publication of the November EA, the Agency hosted two open house forums – one in Collettesville on December 4, 2006, and the other in Blowing Rock on December 7, 2006. Both meetings were made known to members of the public through press releases and notices placed in communities around the project area.

B): See Comment A above and Agency Response. The request for comment for this project as published in local newspapers was referred to the Globe Project – a name recognized by local residents as a National Forest area near Blowing Rock. The description of the project area’s location has been updated in the November 2006 EA: *“The area to be analyzed is within the 5,338 acre Upper Mulberry and 5,887 acre Upper Johns River Forest Plan Analysis Areas (AAs) about 2 miles southwest of Blowing Rock, North Carolina and 11 miles northwest of Lenoir, North Carolina. Specifically the proposal is located within Compartments 12, 13, 14, 33, 35, 37, 38, and 39 and within Avery, Caldwell, and Watauga Counties; however, the harvesting and road-related activities are within Caldwell County.”* (Section 1.2, Chapter 1) The Grandfather Ranger District’s newspaper of record is *The McDowell News*, pursuant to 36 CFR 215.5(b)(2)(i). Newspapers and a website in Blowing Rock, NC published information in January and February 2006 provided by the Forest Service on the proposal (Section 1.6, Chapter 1).

C): See Comment A above and Agency Response along with No Action theme.

D) & E): See Comments A and B above and Agency Responses.

Inappropriate Purpose & Need

Comment Received

A): *The stated Purpose and Need for this project is to: “1. Provide habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer, and travel corridors and foraging habitat for black bear across the project area by dispersing early successional habitat across the landscape by regulating the amount of 0-10 year age class in MA 3B (Forest Plan, page III-31). 2. Create a network of old growth areas across the landscape to serve as permanent reservoirs of biological diversity (Forest Plan, pages III-26 and III-27). 3. Use herbicides to control/manage pest populations (Forest Plan, page III-52).” Draft Environmental Assessment at 6. Thus, the only objective for this project that is served by logging is the creation of post-logging habitat conditions, ostensibly for the benefit of wild turkey, ruffed grouse, white tailed deer and travel corridors for black bear. In short, much of the activity proposed for this project is hinged on the supposed “need” for more logging to promote wildlife that allegedly benefits from logging. The draft Environmental Assessment paints a misleading picture about the status of these species and their habitat. “If an EA does not reasonably compile adequate information” and sets forth information that is materially inaccurate, then a court may find that the document “does not satisfy the requirements of NEPA, in that it cannot provide the basis for an informed evaluation or a reasoned decision.” W. N.C. Alliance v. N.C. DOT, 312 F. Supp. 2d 765, 777 (D.N.C. 2003) (internal quotations omitted). The truth is that there is no wildlife “need” for this timber sale, and the agency should not pretend that there is, or that this much logging is required to meet any such “need.” The draft Environmental Assessment indicates that age class distribution is unbalanced in management area 4A. Draft EA at 57. In the chart of age class distribution across the forest, the draft Environmental EA indicates that the Upper Johns Creek Analysis Area contains only 45 acres of early successional habitat, reflecting logging done in the area in the past 10 years. This calculation ignores natural gaps on the forest as well as early successional habitat created by management activities besides commercial logging. The Draft EA discloses that “uncut inclusions” are not included in the calculations for early successional habitat. Draft EA at 57. There is no authority in the Forest Plan to support this conclusion. No where does the Forest Plan direct that calculation of early successional habitat shall include only openings created by commercial timber harvest. Of course, such openings occur naturally and the Forest Service makes no attempt to consider natural forest openings. As described above, the project area encompasses a network of old growth and mature forest that provides a habitat corridor between existing old growth forests at Big Ridge and Upper China Creek. Allowing additional old growth forest to develop in the project area will, in time, result in the natural formation of canopy gaps and the “early successional habitat” the agency desires. The Southern Appalachian Assessment discussed several studies showing that canopy gaps in Southern Appalachian old growth forests form consistently and naturally at rates of 3-5% annually and may form at rates of 14% or more in high-disturbance years. See *The Southern Appalachian Man and the Biosphere (SAMAB) Cooperative, Southern Appalachian Assessment, Terrestrial Resources Technical Report at 94 (1996) (available at <http://samab.org/saa/reports/terrestrial/terrestrial.html>). At a minimum, there is consensus in the literature that old growth and mature forests create early successional openings at a rate of about 1% of the total forest area per year. See *Gap Dynamics of Old-Growth Eastern Forests: Management implications*, James R. Runkle, *natural areas Journal* Volume 11(1) 19-25 (1991). Furthermore, even young- to mid-age forest creates small canopy gaps through the effects of insects, disease and weather. The Forest plan recognizes that, in areas not scheduled for logging, insects and disease in younger stands and gap phase dynamics in older stands will create successional habitat. Forest Plan at Appendix N-11. Failure in the draft Environmental Assessment to account for natural gap generation creates a misleading impression that habitat for wild turkey, ruffed grouse, white tailed deer and bear is completely absent from the analysis area. The chart included in the draft Environmental Assessment also fails to account for habitat benefiting wild turkey, ruffed grouse, white tailed deer and bear through forest management practices aside from logging. The draft EA notes that 115 acres of timber stand improvement (TSI) work was conducted within the project area in 2000. TSI creates canopy gaps by killing and/or slashing down disfavored tree species. This process creates new early successional habitat conditions and extends the life of early successional habitat conditions in recently-logged stands. For example, the University of Tennessee Cooperative Extension advises woodlot owners that TSI work benefits wildlife by creating standing dead trees and “allowing sunlight to reach the forest floor, increasing forage for deer and nesting cover for wild turkeys and many species of songbirds.” *Crop Tree Release in Precommercial Hardwood Stands*, University of Tennessee Extension SP559. Similarly, the**

Indiana Division of Fish and Wildlife advises that TSI work can “promote development of a denser understory, improving nesting, brooding, and escape cover for several wildlife species.” *Indiana Division of Fish and Wildlife: Forest Habitat Improvement* p. 2. Virginia also advises that “[s]uch practices as timber stand improvement can be used to benefit both the economic and wild turkey yield of the hardwood stand” and that “[t]he productive span [as ruffed grouse habitat] for a clearcut can be extended by conducting timber stand improvement cuts at about 12 years after the cut.” Virginia Cooperative Extension, *A Landowner’s Guide to Wildlife Abundance through Forestry - Publication Number 420-138, Posted July 1997, at 14-16*. As a result, the draft EA creates a misleading picture for the public and for purposes of the agency’s own decision making about the status of habitat for wild turkey, ruffed grouse, white tailed deer and bear in the project area. This information is highly relevant to the purpose and need for the proposed project, to alternatives, and to environmental impacts. Under NEPA, this information must be considered and disclosed. *Robertson v. Methow Valley Citizen’s Council*, 490 U.S. 332, 349-50 (1989) (“relevant information” must be made available so the public may play a role in decision making); accord *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446-48 (4th Cir. 1996); *North Buckhead Civic Ass’n v. Skinner*, 903 F.2d 1533, 1540-41 (11th Cir. 1990). The Forest Service simply cannot sweep these issues under the rug. *Seattle Audubon Soc’y v. Moseley*, 798 F. Supp. 1473, 1479 (W.D. Wash. 1992) aff’d *Seattle Audubon Soc’y v. Espy*, 998 F.2d 699 (9th Cir. 1993) (agency cannot sweep problems, risks or criticisms under the rug). The unnecessary management for disturbance-dependent species proposed as part of this project is especially inappropriate in Management Area 4A, which encompasses the activity area adjacent to known old growth communities. Management Area 4 generally is managed “to provide high levels of scenic quality, many opportunities for nonmotorized recreational uses and **habitat for animals which prefer a predominance of older vegetation and limited disturbance.**” Mgt Plan at III-77 (emphasis added). Here again, the draft EA is misleading. The EA suggests that “[f]orest plan standards schedule to revisit each compartment in MA 4A every 10-15 years to meet early successional habitat standards.” Draft EA at 6. That language suggests that the project area has deviated from forest plan standards for post-logging habitat. In fact, the proposed timber activities are not required by the forest plan. Management Area 4 provides a maximum of 10% post logging habitat, but no minimum. Indeed, even if the forest plan provided a minimum standard for such habitat, the NFMA regulations state directly that forest plans “guide” natural resource management activities and establish “standards and guidelines” for the forests when management activities are undertaken, rather than “requirements” that force management activities to occur. 36 C.F.R. § 219.1(b). Following these regulations, the Supreme Court has held that forest plans do not “command anyone to do anything,” and that forest plans “permit” logging, but do not “require” it. *Ohio Forestry Association, Inc. v. Sierra Club*, 523 U.S. 726, 730, 733 (1998). Accordingly, the draft Environmental Assessment must be redrawn and new wildlife analysis prepared that reflects real conditions on the ground for early successional habitat and does not misstate forest plan requirements.

Agency Response

A): The project’s objectives are clear. The purpose and need has been developed to address resource areas where Forest Plan standards and guidelines are not being met. Meeting Forest Plan standards moves resource conditions in a project area towards the Forest’s desired future condition. As disclosed in the EA the purpose and need for the Globe project is: (1) To meet Forest Plan direction (desired future condition), the early successional habitat (0-10 year age-class) should be from five percent to 10 percent in MA 3B (Forest Plan, page III-31) and not to exceed 10 percent in MA 4A (Forest Plan, page III-31). Currently there is less than one percent early successional habitat in the project area (compartments that have proposed regeneration units)—there is one percent zero to 10 year age class in the Upper Mulberry AA and zero percent in the Upper Johns River AA. (2) To meet Forest Plan direction, the permanent grass and forb habitat within the MAs should be at least 0.5 percent (Forest Plan, page III-23) with a desired level of three percent (Forest Plan, pages III-74 and III-84). Currently there is no permanent grass and forb habitat on National Forest System NFS lands (NFS) within the AAs. (3) To meet Forest Plan direction, old growth across the forest is to have a network of small, medium, and large sized old growth communities (Forest Plan, page III-26). Currently Compartments 33, 38, and 39 contain small patches of designated old growth communities, while Compartments 12, 13, 14, 35, and 37 do not. The Upper Johns River watershed contains a portion of the designated Large Patch 24 which satisfies the medium patch requirement for this watershed, and a portion of Large Patch 30 is located within the Upper Mulberry watershed which meets the medium patch requirement for this watershed. Large Patches 24 and 30 are the only large patches within the AA of the project and have been evaluated and designated

as large patch old growth communities. (4) To meet Forest Plan direction, integrated pest management is to be the strategy used in managing pest populations to achieve resource objectives (Forest Plan, page III-52). Currently, invasive/exotic species have been identified in the AA and include princess tree, tree-of-heaven, Japanese plume grass, and others. (Section 1.4.1, Chapter 1). As disclosed in the EA, Forest Plan standards for early successional wildlife habitat in the two AAs are not being met or where the Agency desires them to be – thus the reason for the proposed action.

One of the objectives (Purpose and Need) of the Globe proposal is to: *Provide habitat conditions for species such as eastern wild turkey, ruffed grouse, white-tailed deer, and travel corridors and foraging habitat for black bear across the project area by dispersing early successional habitat across the landscape by regulating the amount of 0-10 year age class in MAs 3B and 4A (Forest Plan, page III-31). Habitat conditions include improving hard mast species.* (Section 1.4, Chapter 1). While the Forest Plan establishes a maximum level of 0-10 year age class (10%) and not a minimum level in MA 4A, it is clear that timber management is to be the primary tool for creating desired habitat: *Use timber management practices as the primary tool to create desirable habitat in Management Areas 4A and 4D (Forest Plan, page III-84).* To meet early successional habitat objectives of the Globe proposal, timber harvesting is preferred. Section 2.3.1, Chapter 2 discloses *Alternative 1 – Watershed Restoration without Harvesting* and rationale for why it was considered but eliminated from detailed study. The actions proposed in Alternatives B, C, and D would maintain a predominance of mature and older vegetation with limited or no disturbance on 9,228 acres or 82% of the analysis areas and provide suitable habitat for animals that utilize early successional habitat for a portion of their life cycle.

Many species, birds included, will benefit from the creation of early successional forest habitat in an area dominated by mature forests. The Southern Appalachian Assessment (SAA) concluded that gaps form in old growth (Terrestrial report, page 94) at a rate of 1% per year. A discussion specific to early successional habitat on page 91-92 (SAA, Terrestrial report) states the gap size needed to be considered and concluded natural disturbances may not support the species dependent on early successional habitat. A typical gap formed in mature forest stands result from one large tree falling and taking three to five trees down with it. This greatly increases the large, woody debris component in the area; however, these sites typically “regenerate” into brambles and red maple trees and within a short time frame (up to 5 years) the surrounding mature canopy closes the gap created by these downed trees. Greenberg and Lanham (2000) studied tree gaps created by Hurricane Opal that were greater than six trees. This hurricane event replicates the 30-40 year interval of disturbance where up to 14 percent of early successional habitat is created in mature, old-growth forests (SAA, Terrestrial report, page 94). Greenberg and Lanham (2000) found that species associated with young forests were more abundant in the gaps than the forested control sites (undisturbed mature forests). However, the incidence of interior species, with the exception of ovenbird, was also similar or more abundant in gaps. The study found that forest-interior species were indifferent to small gaps, but the species that require large patches of young forest were missing and concluded that minimum gap size may be necessary to provide young forest conditions required by even-aged generalists. Brawn et al. (2001) conducted a disturbance study considering the effects to mature forest communities of: natural blow downs, floods, historic and modern day fire, insects, and other pathogens. He cited multiple research studies which determined that overall, densities and species richness of birds in young regenerating forests were often similar to or much greater in early successional forests than those in mature or mid-successional pole-sized forests. Brawn et al (2001) concluded that if conservation strategies for birds are to be effective, some combination of habitats, including mature forests, should be maintained within and across landscapes. A widespread perception exists that disturbance-dependent bird species are merely returning to population levels likely found by the first European explorers and settlers (Hunter et al 2001). Hunter found that many disturbance-dependent bird species were now extinct, globally rare, threatened, or endangered and a balance needed to be made for birds dependent on disturbances and those closely associated with mature forests. Several research studies (Rivera et al. 1999, Vitz and Rodewald 2006) found that interior bird species utilized regenerating clearcuts during the post-breeding season. The National Audubon Society reported in their 2004 The State of Birds that 70% of grassland bird species, 36% of shrub-land bird species, and 25% of forest bird species were experiencing a significant decline.

Timber stand improvement (TSI) done on 78 acres in 1997 and 1998 was to thin the number of stems within regenerating stands three years of age. The normal three year old stand exhibits 7,500-10,000 commercially or desired woody stems and 10,000-15,000 non-commercial woody stems per acre, all less than five feet tall. TSI treatment in three year old stands allows the thinning of regenerating stump sprouts to one stem instead of four or five and the removal of some of the less desirable species to ensure the remaining stems are “free to grow” without

competition for sunlight and nutrients. This practice does not extend “the life of early successional habitat conditions”.

One crown touching release treatment was done in 1997 on a 37 acre twelve year old stand to release favorable tree species, such as oaks, by removing those trees whose crowns are crowding or touching the canopies of the selected trees. Schlesinger et al. (1993) found that oak species were not regenerating well, even where large oak trees were common within the existing forest. This research found that a combination of overstory removal and understory treatments did perpetuate oaks in the central hardwood forests. TSI is done where regenerating stands have naturally been reduced by insects, damage, or competition to 1,800-3,000 sapling trees greater than 10 feet tall per acre. The treatment selects approximately 70 trees crop trees per acre with 25' x 25' spacing and manually or chemically reduces any surrounding stems where their crowns are touching and limiting the growth of the selected crop tree. It is highly desirable for the species selected as crop trees to survive to maturity as many selected crop trees are future hard mast producing species, such as oaks. Wildlife, such as bear, wild turkey, grouse, and white-tailed deer, limit their use and travel in regenerating stands that are 1,800-3,000 stems per acre as movement and visibility of approaching predators is so limited. While this treatment will increase the number of small snags, it does not produce early successional habitat or a significant amount of grass/forb. After TSI, there is an increased amount of sunlight to the forest floor where grass and herbaceous species will thrive, however this sunlight is quickly diminished (within 5 years) as the crowns of the selected crop trees expand into the newly created canopy space. Ruffed grouse are not typically found in stands that are greater than 15 years of age due to the density of stems and lack of easily reachable food. TSI may increase the use of these stands to 20 years of age and the upper limit of what is considered an early successional stand. Birds have been shown to be limited in number within stands that are greater than 20 years old and less than 50 years of age as flight is extremely difficult within the dense stems present and ground level food source is very limited.

Invasives

Representative Group of Comments Received

A): *We have concerns about how this project will undoubtedly increase the prevalence of non-native invasive plants. The control measures proposed will not rid the threat of invasion and will only introduce toxic chemicals that impact biodiversity.*

B): *The Globe project will undoubtedly increase the prevalence of non-native invasive plants in the project area. The proposed actions will exacerbate a growing threat to forest health. It is unconscionable to propose activities which destroy native communities and the integrity of forest ecosystems. The best mitigation and control measures for non-natives would be to not implement this project. Control measures proposed will not rid the threat of invasion and will only introduce toxic chemicals which impact biodiversity.*

C): *It seems ironic that the Forest Service proposes to use herbicides to control exotics which would not likely exist if the clear cutting and daylighting were not done in the first place.*

D): *The “Purpose and Need” identifies controlling pest populations as a priority, yet the actions proposed would increase the level of nonnative invasive plant species across the entire project area.*

E): *The alien weeds can be manually pulled by hand and invasive off-site trees can be pulled up by the roots and deported to China. I know that Dow’s chemicals are “cost effective” for the Forest Service, but so is the removal of a gall bladder with a butcher knife. It might be a better investment to spend a little more and get a skilled surgeon.*

Agency Responses

A): One of the objectives (Purpose and Need) for the Globe proposal is to: *Control/manage pest populations with pesticides (herbicide) (Forest Plan, page III-52).* (Section 1.4, Chapter 1). As disclosed in Section 1.4.1, Chapter 1: *“Currently, invasive/exotic species have been identified in the AA and include princess tree, tree-of-heaven, Japanese plume grass, and others.”* The EA also disclosed: *“The persistence of most non-native plant species is not considered desirable to natural ecosystem health. Out of the 124 species of non-native plants known to occur on the Pisgah Nantahala National Forest, 25 are currently recognized as having aggressive invasive qualities that can dominate local communities (Danley and Kauffman, Regional Foresters, May 2001, List of Invasive Exotic Plant Species).”* (Section 3.3, Chapter 3) The proposal has been designed to control/reduce the spread of invasive exotic plants by applying herbicides as appropriate, planting native plants, and surveying and monitoring for invasive exotic plants (Items 3, 4, & 6, Section 2.4, Chapter 2 and Section 3.3, Chapter 3). An alternative that did not

propose herbicide use was considered but eliminated from detailed study (Section 2.3.2, Chapter 2). See also Herbicides Section above. The disturbance caused by this project may result in a short-term increase in invasives in the impact areas, but over the long-term, project actions should result in a reduction from the current level of exotic invasive species over the total project area.

B): See Comment A and Agency Response above.

C): As disclosed in Section 3.3.1, Chapter 3 for the No Action alternative: *Under this alternative no actions are proposed. There would be no potential increase in non-native invasive plant species as a result of ground disturbing actions. However, there would also be no control measures implemented to reduce the continued spread of these species. It is expected that non-native invasive plant species would continue to increase with or without planned activities.*

D): See Comment A and Agency Response above.

E): An alternative that did not propose to use herbicides was considered but eliminated from detailed study as disclosed in Section 2.3.2, Chapter 2.

Litigate/Appeal/Objection

Representative Group of Comments Received

A): *We the undersigned hereby object to the proposed clear cutting of the Pisgah National Forest. We request that the forestry service delay their decision to allow the undersigned to file an objection and standing in that process.*

B): *We are contacting our political representatives but we are also seeking legal counsel since we have not been officially notified of this eminent project and feel we must take immediate action.*

C): *You can take an informed opinion and follow the wishes of those of us who live here and cherish this area and abandon this project **or** follow the dictates of those above you and create legal expenses and drawn out time for all of us.*

D): *As an impacted property owner, I had written you earlier this week requesting an extension for the deadline for comments regarding the Globe Project. I understand (after the meeting today) that such an extension is not possible, but I wish to exercise my right to an appeal, and I request that any information regarding this project be sent to me.*

E): *I support an appeal to your decisions.*

Agency Responses

A): When these comments were submitted the Agency was conducting the 30-day Notice and Comment period on the July 2006 EA – a decision had not been reached yet. The Responsible Official will make her decision formal in a decision notice.

B): See Section 1.6, Chapter 1.

C): Comment is noted. The Agency does not relish making decisions on land management issues that may be appealed or litigated; however, sound land management based on established laws, regulations, and Forest Plan standards may not satisfy all individuals. Administrative and legal review processes have been established for affected parties to make their concerns known. The Agency does welcome open discussion on proposals, thus the level of public involvement this proposal went through as disclosed in Section 1.6, Chapter 1.

D): The Agency is restricted from extending the formal 30-day Notice and Comment period for an EA as per 36 CFR 215.6(a)(1)(iv). The Globe project imitated a formal 30-day Notice and Comment period on the July 2006 EA from July 12, 2006, thru August 10, 2006. On August 2, 2006, District Ranger Joy Malone mailed a notice to the Grandfather Ranger District's mailing list stating she would consider comments from the end of the 30-day Notice and Comment period thru August 18, 2006 (Forest Service Handbook 1509.12, Section 11.5). A formal 30-day Notice and Comment period on the November EA ran from December 1, 2006, thru January 3, 2007. The two formal Notice and Comment periods were run for a total of 63 days due to weekends, a holiday, and a presidential closure [36 CFR 215.6(a)(2)]. Not included in the formal Notice and Comment periods was a scoping period from January 18, 2006, thru February 20, 2006, along with an additional eight days from August 10, 2006, thru August

18, 2006, for a total of 104 days members of the public had to comment on the Globe proposal (see also Section 1.6, Chapter 1 and General Discussion at the top of this Appendix).

E): See Comment A and Agency Response above.

Meetings

Comment Received

A): *I also can't understand having an open house in Collettsville, a town I'd never heard of or been to, but that Mapquest tells me has less than half the population of Blowing Rock. I think that the public has spoken loud and clear regarding this project and that the Forest Service has deliberately turned a deaf ear.*

Agency Response

A): Collettsville is a Caldwell County community in close proximity to the project area. On December 4, 2006, an open house was held in Collettsville – agency officials had not previously held a meeting with members of the public in Caldwell County on this project. An open house was also held in Blowing Rock on December 7, 2006. The Forest Service provided similar information and comments were taken at both open houses.

No Action

Representative Group of Comments Received

A): *The Blowing Rock Town Council approved a resolution (#2006-10) in Opposition to the USDA Forest Service "Globe Project" at their meeting this morning.*

B): *The Watauga County Commissioners are strongly opposed to the "Globe Project" that is scheduled to be implemented by the USDA Forest Service.*

C): *I am adamantly opposed to any harvesting of the proposed 231 acres of the Pisgah National Forest in the Globe Road area, neighboring Blowing Rock. This area is the "Crown of the Blue Ridge". The impact of the proposed harvesting will be felt for a minimum of 10 years by everyone who loves Blowing Rock.*

D): *This is an appeal to The National Forestry Service to not go forward with the proposed cutting of land near Blowing Rock NC.*

E): *Please do not proceed with this project. I vehemently ask you to vote "no action" on this project.*

F): *I did EIS for a living and know how long it takes to read through them. If you cannot give us the time, then choose the "NO ACTION" alternative which is the right choice and the people's choice.*

Agency Responses

A) & B): Comments by the local governments have been noted, and have resulted in the Forest Service taking additional time to examine the proposal, create a new preferred alternative that reduces scenic impacts (Section 2.2.4, Chapter 2), and meet with local government officials to give them a better understanding of the proposal.

C): Preference for no action in the Globe project area is noted. The No Action Alternative is described in Section 2.2.1, Chapter 2 with potential impacts of implementing it disclosed in Chapter 3.

D): See Comment A and Agency Response in the Litigate/Appeal/Objection theme above.

E): See Comment C and Agency Response above.

F): See Comment C and Agency Response, and Comment D and Agency Response in the Litigation/Appeal/Objection theme above.

Old Growth

Representative Group of Comments Received

A): *The logging of mature and old growth forests as proposed is unacceptable and we demand that stands 33-11 and 38-7 be dropped from this project. These stands encompass 63 acres that MUST be protected. Old growth is a valuable and irreplaceable resource.*

B): *The Draft Environmental Assessment for this project must be withdrawn because ignores logging of old growth as an issue and falls far short of the Forest Service's obligation to take a hard look at environmental impacts under the National Environmental Policy Act. See National Audubon Society v. Department of the Navy, 433 F.3d 174, 187 (4th Cir. 2005). The draft environmental assessment does not disclose that the Globe project will log significant old growth forest communities and does not analyze the impacts of logging, edge effects and fragmentation on the continuity of old growth forest in the analysis area. The draft environmental assessment fails even to identify old growth as an issue, sweeping this significant issue under the rug. See Seattle Audubon Society v. Moseley, 798 F Supp. 1473, 1479 (W.D. Wash 1992), *aff'd sub. nom.* Seattle Audubon Society v. Espy, 998 F.2d 699 (9th Cir. 1993). The Environmental Assessment suggests that issues, which are used to identify alternatives and analyze environmental effects, EA at 8, were identified for analysis based on comments received at the scoping phase. The administrative record for this project reveals that the Forest Service received numerous concerned comments from individuals and organizations noting that the project as scoped would intrude upon forest communities identified by previous forest surveys as containing significant old growth communities. Comments from the Southern Appalachian Forest Coalition emphasized that "project level old growth surveys should be conducted in the project area and that "old growth surveys conducted by SAFC and WNCA using criteria consistent with Region 8 Old Growth Guidance have identified 2 areas of existing old growth: China Creek (326 acres) and Big Ridge (425 acres). This is high quality old growth that has been field verified using methodology consistent with Region 8 Old Growth Guidance." See Scoping Comments of the Southern Appalachian Forest Coalition at 2. The Western North Carolina Alliance expressed concern that "some of the stands appear to overlap with areas that our organization has previously delineated as old growth forest stands. We have a very good historic working relationship with the Grandfather District in assuring that such overlaps are corrected in any final project plans." See Western North Carolina Alliance Scoping Comments at 1. The Southern Appalachian Biodiversity Project submitted a report of survey work conducted by old-growth researcher Rob Messick identifying "two proposed cut stands that have existing old growth forest (38-7 and 33-11)" and noting that "[o]ld growth forests in these stands are part of a complex of five known sites in the [Upper Johns Creek River Conservation Area]." See Field Work, Thunderhole Creek Section of the Globe Project dated January 2006 by Rob Messick, at 2. Finally, in a meeting with the Interdisciplinary Team, the Southern Appalachian Forest Coalition, Southern Appalachian Biodiversity Project, and Western North Carolina Alliance, together with representatives from the Southern Environmental Law Center, met with the District Ranger and members of the IDT to emphasize the presence of known existing old growth areas within and around stands proposed for logging as part of the Globe project and to underscore the importance of conserving existing old growth forest in place and avoiding edge effects and fragmentation of wildlife corridors. Based on this record, the Forest Service's failure to identify old growth as an issue is arbitrary and capricious and falls far short of the agency's obligations under NEPA. Failure to address these concerns early in the project process is also a missed opportunity to collaborate with stakeholders in forest management and to ameliorate concerns about this project. In contrast, a concern expressed by the National Turkey Association that the project would not create sufficient "brushy interface wildlife habitat" at the scoping phase was elevated as the only significant issue analyzed by this environmental assessment. Water quality, scenic resources, aquatic habitat, invasive species, cultural resources, were each identified as nonsignificant issues. In truth, the logging proposed for this project would intrude on valuable old growth stands. After release of the draft environmental assessment Rob Messick and Josh Kelly performed more detailed analysis of the old growth sites in the globe project area over four days of survey work. The report of that survey work is attached to and incorporated into these comments. See attached report Evaluation of Forest Conditions in Compartments 33, 37, 38 and 39 of the Grandfather Ranger District of Pisgah NF. Those surveys included extensive survey treks through the affected compartments as well as four 20x50 meter plots using protocol Level 3 from the Carolina Vegetative Survey in and adjacent to stands 33-11 and 38-7. In each plot, the natural community type of the forest was determined, all woody plants over 1 cm in diameter a breast height (dbh) were identified and measured, and canopy trees exhibiting old growth characteristics were cored. Each plot and surrounding community was then evaluated for old growth characteristics including lack of signs of human disturbance, community type, presence of old trees in the canopy, presence of snags, presence of course woody debris, and presence of a mixed age canopy. These surveys delineated three areas of high-quality old*

growth Montane Oak-Hickory Forest and Chestnut Oak Forest communities (totaling approximately 10 acres) in stand 33-11. Maps representing these delineations are attached to and incorporated into these comments. Each of these delineations demonstrate strong old growth characteristics and two are in Montane Oak-Hickory Forest and Chestnut Oak Forest communities (totaling approximately 7 acres) that satisfy all requirements of Region 8 guidelines for existing old growth for stand composition, basal area of old trees, and tree age. See *Guidance for Conserving and Restoring Old-Growth Forest Communities in National Forests in the Southern region: Report of the region 8 Old-Growth Team, June 1997*. Tree cores taken in stand 33-11 identified trees with ages in excess of 300 years. These surveys also documented an exceptional old growth forest community immediately upslope of proposed logging in stand 38-7. This old growth community is a component of a contiguous 300 acre area of old growth forest which was described in Forest Service land acquisition documents from 1919 as “virgin.” The basal area of trees over 130 years in this area is an impressive 100.7 sq ft/acre. Core samples identified individual trees immediately upslope of stand 38-7 that exceed 250 years in age. Despite the concerns about old growth expressed at the scoping phase and the evidence of old growth offered into the administrative record at that phase of the process, the Interdisciplinary Team dismissed old growth as an issue early on. The notes from a June 15, 2006, IDT meeting conclude that old growth is “not an issue” because “currently stands 33, 38, 39 contain small patches of designated old growth” and designating additional old growth within them is not necessary to meet Forest plan standards.” The EA concludes the forest plan does not prohibit logging of existing old growth outside of areas identified in the initial inventory under the plan, and thus that old growth is not an issue. EA at 63. Even if the logging project complies with Forest Plan standards, however, the Forest Service is not relieved of its obligation to disclose and analyze the impacts of such logging on sensitive ecological resources like existing old growth forest communities. Failure to identify old growth communities in stands proposed for logging and failure to disclose the logging of those stands to the public violates Region 8 Guidance for Conserving and Restoring Old Growth Forest communities in the National Forests in the Southern Region, June 1997. Those standards provide guidance for treatment of old growth both at the plan and the project level. At the project level, Region 8 guidance directs the Forest Service to review any stands included in the preliminary inventory of the forest as old growth to determine if any of those areas satisfy Region 8 Guidance for existing old growth. Region 8 Guidance further directs the Forest Service to “determine the old-growth status of other stands in the project area.” Region 8 Old Growth Guidance at 26. Thus, at a minimum, the Forest Service must assess the old growth status of stands targeted for logging as part of this project. Furthermore, compliance with forest plan minimum standards for designation of old growth patches does not relieve the duty to disclose and to take a “hard look” at impacts to old growth under the National Environmental Policy Act. The purposes of NEPA are to ensure that agencies carefully consider detailed information concerning environmental impacts and to guarantee that the relevant information is made available to the public. *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 443 (4th Cir. 1996). Fundamentally, NEPA requires agencies to take a “hard look” at the likely environmental impacts of their actions before proceeding with those actions. *Id.* While Region 8 guidance provides that stands exhibiting characteristics of existing old growth should be managed according to the forest plan, Region 8 Old Growth Guidance at 26, it does not provide that impacts to such stands are exempted from analysis under NEPA. Indeed, the Region 8 guidance recognizes that, to conclude that there is no old growth issue with a project, the Forest Service must find that affected stands are “not a part of any old growth allocation or management direction identified in the forest plan” and that they “do not meet the operational definitions for old growth.” Region 8 Old Growth Guidance at 26. The Forest Plan itself clearly contemplates environmental analysis of impacts to existing old growth, not part of initial inventory old growth, at the project level where harvesting decisions are made. Accordingly, the impacts to existing old growth forest proposed as part of this project are not tiered to the environmental impact statement accompanying the Forest Plan. In response to comments protesting that the forest plan should “clearly disclose the extent of cutting in the oldest stands and describe the resulting ecological losses fully,” the Forest Service responded that “[t]he actual decision whether or not to harvest any specific stand is made as timber projects are analyzed and implemented across the forests.” Land and Resource Management Plan, Amendment 5, Nantahala and Pisgah National Forests, North Carolina, Appendix N Response to Public Comments at N-31. Similarly, in response to comments urging the forest plan ID Team to “re-examine the recommendation that 100+ year old stands in the Management Areas with timber production will be harvested” because “[t]o eliminate these stands and to fail to provide adequate buffer zones around them is to fail to meet the public's expectations, the Chief's mandate, and the Forest-wide goals developed to guide the amendment process,” the Forest Service re-emphasized that “[t]he Plan Amendment does not recommend any particular stands for harvest. Decisions of this nature are made on a site specific basis as timber projects are implemented across the forests.” *Id.* at N-36. The Globe project is an excellent example of why compliance with the forest plan standards for designating large, medium, and small patches of old growth does not eliminate environmental impacts to rare old growth forest communities. As noted by

the forest plan and by Region 8 Old Growth Guidance, old growth designations required by the forest plan are for the generation of future old growth forest over the long-term planning horizon of the plan. Many stands included in the old growth designations are relatively young stands that will not achieve old growth characteristics for hundreds of years. In the small patch designations proposed as part of the Globe timber sale, mid-age stands 68 to 77 years old are included as part of the designation, as is one stand that was logged only 12 years ago. Draft EA at 62. Meanwhile logging proposed for the Globe project would clear forest communities with 200-300 year old trees, impressive basal area of old trees, and strong old growth characteristics, as identified above. Compliance with forest plan standards for designation of old growth patches in this timber sale by no means eliminated environmental impacts of logging on old growth forest communities and habitats. Because it ignores the presence of existing old growth forest within the project area, the draft Environmental Assessment fails to analyze a host of environmental impacts attributable to logging in and around those resources. Logging operations will impact existing old growth stands in some areas even if trees within those areas are not removed. For example, high quality old growth forest communities upslope in stand 33-11 would be seriously degraded by logging in the downslope portions of that stand, because the Forest Service proposes to cable log that stand, dragging logs through old growth communities to the road at the top of the stand. The resulting alteration of soil and hydrology will disrupt the balance of these old growth communities and undermine the natural processes that create their old growth characteristics and habitat value. See Comments of Alan Weakley; Comments of James Runkle; Comments of Christopher Hainey; Comments of Jonathan Evans. Furthermore, the impact of logging these existing old growth forest communities will extend well beyond the boundary of the logged stands. Old growth forest communities are sensitive to edge effects, habitat fragmentation, and gradual creep of disturbance from logged areas into the boundaries of neighboring old growth areas. In addition to failing to acknowledge and analyze impacts by directly logging existing old growth, the draft Environmental Assessment fails to address the impacts of edge effects and fragmentation on neighboring old growth, including designated old growth patches. Edge effects from disturbance diminish the habitat value in neighboring old growth forest. See Comments of Alan Weakley. Many of the species that characterize old growth do best in large, unbroken stands. Edge effects from disturbance on neighboring stands introduce competition and predation from other species, create unfavorable environmental conditions at the edge, and restrict movement. See Comments of James Runkle. The EA completely ignores the impact of these edge effects on high quality neighboring old growth stands just outside the boundaries of affected stands. The Biological Evaluation for the Globe project concluded instead that logging for the proposed globe project would not affect initial inventory large patch old growth identified by the Forest Plan, but failed entirely to consider edge effects on that large patch designation or on existing but undesignated old growth habitat within the project area. Draft EA at 42. Furthermore, the old growth communities identified within stand 33-11 and upslope of stand 38-7 are part of a larger matrix of old growth sites west of Thunderhole Creek, totaling approximately 50 acres, that form a functional link between existing old-growth forests at Big Ridge and upper China Creek. As such, these old growth stands are part of a corridor of mature and old growth forest habitat connecting to large patches of old growth habitat. See attached report Evaluation of Forest Conditions in Compartments 33, 37, 38 and 39 of the Grandfather Ranger District of Pisgah NF and accompanying maps. It is important to preserve existing old growth forest communities contiguous with designated old growth patches in order to provide habitat continuity and travel corridors for species favoring mature forest conditions. See Comments of Alan Weakley. See also Comments of Christopher Hainey. Region 8 Guidance directs the Forest Service to avoid fragmentation of such corridors: "When developing overall management strategies for an area, care should be taken not to isolate the medium and small sized old-growth patches from the mid- to late- successional forests." Region 8 Old Growth Guidance at 27. The Forest Plan also recognizes that wildlife "[t]ravel corridors are necessary to link areas of suitable habitat for all species" and notes that "[e]xamples of travel corridors are . . . mature forest that link old-growth areas." Forest Plan at IV-20. Failure to disclose and analyze the impacts of logging old growth stands on travel corridors for mature forest species falls short of the "hard look" standard under NEPA. *Marble Mountain Audubon Society v. Rice*, 914 F.2d 179, 182 (9th Cir. 1990) (finding that failure to analyze fragmentation of wildlife corridors for species preferring mature forest conditions fell short of obligation under NEPA to analyze impact of logging old growth forest). In addition edge effects created by logging in stands adjacent to existing old growth forest will progress deeper into the old growth forest with time as impacts from wind-thrown trees, soil changes, and other dynamics expand from the edge of the logged stand. See Comments of Alan Weakley. An example of such impacts can be found at the Walker Cove Research Natural Area, a less than 100 acre old growth area which was subjected to clearcuts immediately adjacent to the old growth communities which degraded the old growth value for conservation and research. *Id.* Failure to acknowledge the impacts of logging old growth forest communities and disrupting mature forest corridors undermined other environmental analysis in the draft Environmental Assessment and led the Forest Service to conduct inadequate population surveys. The draft Environmental Analysis eliminated from analysis the

impact of the proposed action on ovenbird and mature forest habitat. Management Area 4A, which encompasses the old network of old growth forest proposed for logging in the Globe project, is to be managed for “the large group of game and nongame animals that benefit from a variety of mostly mature forest conditions and can not tolerate vehicular disturbance” primary emphasis on “black bear habitat.” Forest Plan III-84. Black Bear is a Management Indicator Species for old forest communities. Decision Notice and Finding of no Significant Impact for Changing the List of management Indicator species, the Species Groups to be Monitored, and Associated Changes to Plan Direction, June, 2005 at 5. Ovenbird is an MIS species for species associated with large areas of contiguous mature forest. Id. The draft environmental assessment erroneously eliminates these habitats from further analysis on the ground that “old forest communities” and “large areas of contiguous forest” do not occur within the project area. Draft EA at 34-35. As demonstrated above and by attached survey results, however, old forest communities do occur within stand 33-11 and on the boundary of stand 38-7. In addition, each of these areas is part of a larger contiguous section of mature forest suitable for ovenbird habitat.

C): I am especially disturbed by the destruction of old growth forests which are absolutely vital and must be protected. Cutting those areas is short-sighted and demonstrates very poor planning for the future.

D): The majority of logging proposed for this project is proposed in mature and old forests which comprise 91% of the analysis area. The destruction of old growth forests is unacceptable and especially stands 33-11 and 38-7 should be dropped from this project. These stands encompass a mere 63 acres and must be protected. Old growth communities are a valuable and irreplaceable resource that we are losing rapidly throughout the region. The Forest Service must protect these forests.

E): The Revised Assessment failed each of these hallmarks for a “hard look” at the old growth issue. It did not directly address whether the Globe project will log old growth -- it will -- and did not forthrightly acknowledge this impact, as well as the related edge and fragmentation impacts of logging in and adjacent to further old growth in this area. Indeed, even the agency’s compliance with the Forest Plan is dubious. The Forest Plan provides that, in selecting areas to managed for old growth, the number one criteria is “priority consideration for areas currently exhibiting high quality old growth characteristics,...”. Forest Plan at III-26, Revised Assessment at 50. Inherent in this “priority consideration” is an obligation to identify any areas that are currently exhibiting high quality old growth characteristics. The Forest Service has not met that obligation in this project. Moreover, the Forest Service has received clear and conclusive evidence that at least 10 acres in stand 33-11 exhibit high quality old growth characteristics and otherwise meet the criteria for old growth under Region 8 guidance. Kelly and Messick, “Evaluation of Forest Conditions in Compartments 33, 37, 38 and 39 of the Grandfather Ranger District of Pisgah NF,” (attached to previous comments). To comply with the Forest Plan, the agency should have addressed this evidence and directly considered whether to manage stand 33-11 for old growth, especially given the stand’s importance as part of a matrix of existing old growth in the project area. Id. at 4. Instead, the Revised Assessment designated a number of stands for old growth management that are not old growth at all, and will not be old growth for several decades or longer. Revised Assessment at 85. Perhaps the most fundamental flaw in the Revised Assessment is its failure to investigate, analyze, or even acknowledge that all action alternatives of this project will log in and adjacent to existing old growth. The Kelly and Messick report provided detailed evidence, based on thorough field surveys, that stand 33-11 contains approximately 10 acres of existing old growth and that stand 38-7 is immediately adjacent to high-quality old growth. The environmental impacts of logging in and adjacent to this existing old growth were set forth in the statements of Drs. Runkle, Evans, Haney, and Weakley, as well as the other materials that were submitted with our previous comments. None of this evidence or information, and none of these impacts, are addressed or even disclosed in the Revised Assessment. The Kelly and Messick report is not mentioned. The statements from Drs. Runkle, Evans, Haney, and Weakley are not mentioned, nor is there any mention of any of the impacts of logging in or adjacent to existing old growth that were outlined by these scientists. Nor is there any mention of any on-the-ground field work by the Forest Service. In all of these respects, the Revised Assessment failed to provide the “hard look” required by NEPA. Instead, the Revised Assessment provided incomplete and misleading information concerning the impacts to old growth. The Revised Assessment stated that (1) no “designated” old growth communities or “initial inventory” old growth would be logged, (2) while “individual trees” greater than 100 years would be cut, “old growth is a community and not an individual tree,” and (3) no stands averaging greater than 100 years in age would be cut. None of these statements addressed the fundamental issue of whether this project will log in and adjacent to existing old growth, and, together, they create the misleading impression that this project will have no impact on old growth, an impression that is plainly erroneous. Taking these statements in turn, that the old growth in stand 33-11 is not in a “designated” patch or was not in the “initial inventory” does not address or diminish that these acres are in fact old growth. The Kelly and Messick

report provided conclusive evidence that stand 33-11 contains existing old growth, but the Revised Assessment did not mention or address this evidence at all. Second, that old growth is a community is a truism that specifically was addressed in the Kelly and Messick report, which documented the multiple old growth community characteristics within stand 33-11 and specifically described this old growth as within the Montane-Oak-Hickory and Chestnut oak community types. Kelly and Messick at 2. In addition, Kelly and Messick documented multiple trees in excess of 200 years old and at least one tree that is over 300 years old, Report at 3; thus, to describe these as trees “greater than 100 years old” substantially and misleadingly understates their age and their ecological and other values. Third, that no stands averaging over 100 years in age will be logged is a red herring. The “stands” are merely where the Forest Service has drawn lines for logging purposes; these lines do not reflect ecological criteria. Kelly and Messick specifically documented the mixed conditions in stand 33-11 and that at least half the stand had experienced logging in past, which would reduce the “average age” of the stand. Report at 2. Nonetheless, this stand contains approximately 10 acres of existing old growth, including trees aged 172+ years, 194+ years, 211 years, 253 years, 253+ years, 272 years, 272+ years, 299+ years, and 318+ years. Report at 3. Logging these old growth communities and their rare ecological jewels will have significant impacts, yet the Revised Assessment did not even acknowledge that these communities will be lost. Nor did the Revised Assessment acknowledge, analyze or address that the action alternatives will disrupt and fragment the matrix of existing old growth in this area and will carry significant and damaging edge effects for the remaining old growth. Drs. Runkle, Evans, Haney and Weakley all discussed these effects in detail, yet none of these impacts were even mentioned in the Revised Assessment. Especially with respect to stand 38-7 and the edge and fragmentation effects on the exemplary old growth that is immediately adjacent to this stand, all of these experts described the negative impacts of logging next to and through this exemplary old growth, and all recommended at least a 200-foot buffer for this old growth in stand 38-7, but none of this information was disclosed or addressed in the Revised Assessment. Region 8 Guidance directs the Forest Service to avoid fragmentation of such corridors: “When developing overall management strategies for an area, care should be taken not to isolate the medium and small sized old-growth patches from the mid- to late successional forests.” Region 8 Old Growth Guidance at 27. The Forest Plan also recognized that wildlife “[t]ravel corridors are necessary to link areas of suitable habitat for all species” and notes that “[e]xamples of travel corridors are . . . mature forest that link old-growth areas.” Forest Plan at IV-20. Failure to disclose and analyze the impacts of logging old growth stands on travel corridors for mature forest species falls short of the “hard look” standard under NEPA.

Agency Responses

A) – C): We acknowledge there are valid differences of opinion as to what constitutes old growth communities; what minimum size area is necessary for functioning old growth communities; and the need for “buffers” to protect designated old growth from potential edge effects.

The EA identifies old growth as an issue (Section 1.7.2.10, Chapter 1) and effects to old growth communities are disclosed (Section 3.11, Chapter 3). Alternative 4 (Section 2.3.4, Chapter 2) which eliminates harvesting in stands 33-11 and 38-7 was considered but eliminated from detailed study. In Alternative D stand 33-11 is reconfigured and eight acres at the southern end would not be harvested. These eight acres contain one of the areas of old trees that are of concern to the commentors.

The Forest Plan includes a Forest-wide design for a system of large, medium, and small old growth patches across the landscape. This design is well underway and all the large patches and medium patches have been identified, as have many of the small patches. This design requires that a small patch at least 50 contiguous acres in size be designated for old growth in each compartment, if the compartment does not contain portions of a large or medium patch (Forest Plan Amendment 5, page III-27). Compartment 33 has 291 acres of designated old growth ranging in CISC (Continuous Improvement Stand Conditions) age from 74 through 94 years old. In contrast, stand 33-11 is 32 acres under Alternative D with a CISC age of 68 years. While stand 33-11 does contain areas of old trees, these do not comprise the majority of the stand, and the stand also contains areas that were harvested in the past. The stand itself is not large enough to qualify for selection as a small old growth patch, even if one were required in this compartment for the Forest-wide design. Given the location, history, and existing condition of the stand as a whole, it is our judgment that the 291 acres previously designated provide adequate old growth for this compartment, and in fact exceed Forest Plan requirements. It is not the intent of the Forest Plan to never harvest and regenerate areas with old trees. Since harvesting in this stand would be two-age and would leave 30 square feet of basal area, it is likely that some old trees would be cut and some would be left in place. Additionally, stand 33-11 has been reconfigured under Alternative D and this reconfiguration eliminates from harvest one area in the southern portion of the stand identified by commentors as containing old trees.

Stand 38-7 is 12 acres in size with a CISC age of 91. Compartment 38 already has 466 acres of designated old growth. These stands range in CISC age from 74 through 134 years old, with 326 of those acres CISC-aged over 100 years old. Indeed, stand 38-7 is adjacent to the designated old growth, and while stand 38-7 does not exhibit old growth character, concerns expressed by commentors is that harvest in stand 38-7 would create edge effects that could harm adjacent designated old growth. However, the Forest Plan old growth design of large, medium, and small patches does not call for buffering. The design presumes the patch sizes are adequate unto themselves, without further additions, and the surrounding forest is to be managed for the multiple uses appropriate for the management area. The Forest Plan and its FEIS adequately analyzed potential impacts to old growth communities. Due to the topographical position of the designated old growth in relation to stand 38-7, harvesting in stand 38-7 would be two-age, and 30 square feet of basal area being left, we do not anticipate any degradation of the adjacent designated old growth patch. The average CISC age of the 311 acres of proposed small patch old growth is 88 years. The Agency has reviewed stands 33-11 and 38-7 in the field and believe stand 38-7 does not meet old growth habitat as described in the Forest Plan and believe stand 33-11 has patches of old growth habitat as described in the Forest Plan but the number of single and multiple tree-falls is lacking to warrant designation (see also Comment E and Agency Response).

D): The harvesting proposed is within stands that average 51-100 years in age (Table 3-17, Chapter 3). As disclosed in the EA: *[t]here are currently over 5,100 acres of old growth designated in the two AAs; no Forest Plan designated old growth communities or initial inventory old growth communities would be harvested; no stands averaging greater than 100 years in age would be harvested with this proposal; over 300 acres would be designated as small patch old growth communities and would not be scheduled for future harvest; and about 1,400 acres in the AAs currently average greater than 140 years and are not scheduled for harvesting with this proposal.* (Section 3.11.2.2, Chapter 3). There is nothing inappropriate about harvesting in mature and old forest. On the contrary, federal law requires that stands harvested on national forests “shall generally have reached the culmination of mean annual increment of growth...” [National Forest Management Act Sec. 6(m)(1)], which generally means harvesting mature trees (see also Comments A – C and Agency Responses).

E): The Globe project will not log Forest Plan designated old growth communities or Forest Plan initial inventory old growth communities and disclosed this in Section 3.11.2.1, Chapter 3 and Appendix C. There are Forest Plan standards specific to old growth communities (pages III-26 – III-28) and these were adhered to in the Globe proposal. There would be trees greater than 100 years of age harvested, and even some trees around 300 years may be harvested, but the proposal has been designed to meet Forest Plan standards for old growth communities; is located within lands identified as suitable for harvesting under the Forest Plan; proposes to designate over 300 acres of small patch old growth communities; and over 5,100 acres in the two analysis areas are designated as old growth communities and are not scheduled for harvesting. It is expected that some of the older trees will be retained during timber sale preparation (marked as leave trees) to meet basal area retention requirements for scenery and leave tree requirements for wildlife. Alternative D was reduced eight acres for scenery and other resource concerns – the eight acres partially encompasses the 10 acres in question. There are various reports and opinions on what constitutes old growth communities in the southern Appalachians in general and the Globe project area in particular; however, as previously stated, the proposal meets Forest Plan standards for old growth communities. Some members of the public believe the Forest Service should provide buffers adjacent to designated old growth – to reduce an “edge effect”. There is no direction in the Forest Plan for this. When the small patch old growth communities were developed for Amendment 5, the general consensus among researchers at the time was that stands of at least 35 acres in size would provide viable old growth communities. The standard for small patch old growth communities is to: *Select a contiguous area at least 5% the size of the national forest land in the compartment or at least 50 acres, which ever is greater.* (Forest Plan, page III-27). The Globe project meets Forest Plan standards and does not propose to designate “buffers” around the 311 acres of small patch old growth communities. All information provided by members of the public during the various comment periods was made a part of the Globe project record; was available for public review; and was before the Responsible Official prior to the decision. The Forest Plan states: *The desired future condition for old growth across the forest is to have a network of small, medium, and large sized old growth areas, representative of sites, elevation gradients, and landscapes found in the Southern Appalachians and on the Forests that are well dispersed and interconnected by forested lands.* (Forest Plan, page III-26). Within the Globe analysis areas, there are 3,658 contiguous acres of designated old growth communities and an additional 1,457 non-contiguous acres of designated old growth communities (over 5,110 designated acres of old growth in the 11,225 acre analysis areas). These 5,110 acres provide corridors throughout the Globe analysis areas; Forest Plan direction for old growth communities and corridors is being achieved in the Globe project area.

Concerning the Region 8 old growth report, the Regional Forester stated on May 9, 1997, that: *This report provides guidance for incorporating old growth into Forest Plan revisions and project-level planning. Included in the guidance are old growth operational definitions for 16 forest community types; the summaries of the scientific definitions for 16 old growth communities types; standardized terminology; new criteria for a preliminary inventory of possible old growth for forest planning; and considerations for old growth allocations and management prescriptions during Forest Plan revision. It should be noted that this guidance does not render any land management decisions related to old growth.* For the Globe proposal, more stringent old growth standards from the Forest Plan would be adhered to in lieu of less stringent guidelines from the report (see also Comments A – C and Agency Responses).

Prescribed Burning/Wildfires

Representative Group of Comments Received

A): *I have concerns about the project. Those concerns include: [c]reating and leaving debris in the forest that will serve as fuel for future forest fires.*

B): *We support the proposed use of prescribed burning as a wildlife management tool. It is widely recognized by wildlife specialists the benefits of regular prescribed burning to a number of important wildlife species across the landscape. We encourage you to consider a recurring burning plan for the area.*

C): *I believe that IF selected trees must be cut to improve the long-term health of the forest and wildlife, that there are more ecologically sustainable, less invasive, and less long-term impact methods. These might entail use of controlled burns*

Agency Responses

A): Some material such as leaves, branches, and tops too small to make merchantable wood products from would be left onsite following harvest operations, but would be done in accordance with Forest Plan objectives (Forest Plan, pages III-73 and III-81) and project design features (Section 3.7.3.4, Chapter 3). Review of past logging operations on the District has shown that in a season or two following harvest, most of the more combustible material has begun to deteriorate due to environmental factors, reducing potential for ignition.

B): Prescribed burning is not part of this proposal because prescribed burning has been approved under previous NEPA analyses and decisions—two areas within the Globe Project analysis area have recently been prescribed burned and would continue to be burned according to prescribed rotation in the future: Rocky Knob in 2005 and Boyd Gap in 2006 (Table 3-1, Chapter 3).

C): Using controlled burning to achieve objectives disclosed in Section 1.4, Chapter 1 would not be feasible. Two-age harvesting produces early successional habitat many wildlife species prefer—to achieve similar results with prescribed fire would require very hot fires to consume enough standing material to meet objectives. Fires of this intensity are difficult to safely manage to ensure they did not grow too large and place lives, other resources, and private lands at risk.

Property Values

Representative Group of Comments Received

A): *It will also be a detriment to property values throughout Blowing Rock.*

B): *The resultant damage will devalue property values in all directions.*

C): *To destroy our view will also decrease our property values. More important is the fact that it will certainly take away our desire to come to these lovely mountains.*

D): *Millions of vacationers enjoy the views in this area. Cutting these acres will destroy the beautiful views; it will have an adverse affect on the wild life habitats now provided by these trees; it will markedly reduce property values in the surrounding communities and housing developments.*

E): *As President of our POA and as a property owner I would like to vigorously protest. To destroy our view will also decrease our property values. More important is the fact that it will certainly take away our desire to come to these lovely mountains.*

Agency Responses

A): Living within view of national forest lands of North Carolina contributes to the high value of real estate in this part of the state. In recognition of this fact, much of the project area lies with Management Area 4A which emphasizes managing for quality scenery while still allowing for timber harvest. The Globe project has been designed to meet these Forest Plan scenery standards. The last measurable timber harvesting on NFS lands in the analysis areas was the Frankum Creek Timber Sale (harvested from 1991-1995) with the predominant harvesting treatment being clearcuts (220 acres). Property values and tax assessments/collections overall in the Blowing Rock area have increased since 1990, which includes the time period when the Frankum Creek Timber Sale was harvested (pers. comm. Blowing Rock Properties, Inc.; Blowing Rock Realty; and Watauga County Tax Administrator 11/29/06). One real estate agent estimated that property values in the Blowing Rock area overall have doubled since 1990 and the Watauga County Tax Administrator stated tax assessments/collections overall in the Blowing Rock area and county-wide have steadily increased since 1990 between tax assessment periods, but may not have each year (assessments are not measured annually).

B) – C): See Comment A and Agency Response above.

D): See Recreation/Tourism and Scenery themes below along with Comment A and Agency Response above.

E): See Recreation/Tourism and Scenery themes below along with Comment A and Agency Response above.

Recreation/Tourism

Representative Group of Comments Received

A): *There is no analysis of the impact to recreational resources. The project is situated within prime recreational lands and there are several trails and waterways that recreational users enjoy. The impacts to these resources must be analyzed.*

B): *Since the 1800's the Town of Blowing Rock has been a tourist town with an economy dependent upon tourism-dollars. According to a recent study done by Appalachian State University for the Blue Ridge National Heritage Area, 83% of overnight visitors come to the High Country for outdoor recreation. On average, respondents in the survey that were interested in outdoor recreation stay 3.37 nights. Tourism is one of the largest industries in the state of North Carolina, and it is the largest in the Town of Blowing Rock. The Globe Project is situated within prime recreational lands, including several trails and waterways that recreational users enjoy. The impacts to these resources should be analyzed and noted before a project of this caliber is planned and implemented.*

C): *[a]nd impact seriously our areas tourism and recreational income.*

D): *I am writing as a concerned citizen of Blowing Rock and the State of North Carolina regarding the Globe Project in Pisgah National Forest. First let me say that my concern with the project is how it will affect tourism in one of the most beautiful areas in North Carolina.*

E): *Secondly, the town of Blowing Rock strives hard to rely on tourism for its economy. Many attractions like the Blowing Rock Horse Show bring in many new residents (myself being one of them) who rely on the serenity and scenic beauty of the Pisgah to soothe the soul. The Pisgah is a superb location for many recreational activities which would be eliminated by logging and clear cutting! I have hiked the Pope properties (logging areas) in the Pacific NW (outside Seattle). These imbue a sense of ARMAGEDDON and total loss of Nature. I have no desire to hike these areas pillaged by man.*

Agency Responses

A): The November 2006 EA (Section 3.10, Chapter 3) concluded: *“Under this alternative, there would be temporary impacts to dispersed recreationists primarily noise from logging operations and log hauling. Timber sale contracts are typically for a two year period, and the operating period is March 15th – December 15th. The area of impact would shift as the logging operations are completed and move to other roads (i.e., once logging is completed along Globe Road and FS Road 4071, operation would move to another area, such as Forest Service Roads 4111 & 188).*

[T]here are no expected adverse cumulative effects to dispersed recreation as a result of the proposal.” (Section 3.10.3, Chapter 3).

B): The Globe project has been designed to meet Forest Plan scenery standards, which fully recognize scenic values in the Thunderhole area. See also Comment A and Agency Response above. Tourism overall in the Blowing Rock area has increased every year since 1990, which includes the time period when the Frankum Creek Timber Sale was harvested (pers. comm. Town of Blowing Rock, 1/24/07). See also Comment A and Agency Response above.

C): See Comment B and Agency Response and the Economics theme above.

D) – E): See Comment B and Agency Response above.

Road Construction/Reconstruction

Representative Group of Comments Received

A): *I object to [t]he creation of any new logging roads, however temporary.*

B): *Why not put in access roads for fire control, public use, and likely trails?*

C): *Road building and spraying herbicides are two things which detract from watershed protection. Nor does it make economic sense to spend money to build roads so that the forests can be logged, thus ruining a portion of what people do come to see.*

D): *What is good for the vast majority of our citizens' interests ([u]sing taxpayer dollars to subsidize the private business interests of logging companies by building roads for them) is being sacrificed for the very narrow financial interests of a timber operation*

E): *The method of logging proposed involves making new roads and clear cutting. The roading and land clearing associated with clear cutting fragments existing stands of trees and is extremely disruptive to forest ecosystems.*

Agency Responses

A): Roads are necessary to meet objectives of the proposal as cost-efficiently as possible (Section 1.4, Chapter 1). Roads are developed following site specific reviews by Forest Service officials and must adhere to protections in timber sale clauses and Best Management Practices (Forest Plan standards).

B): Roads in the analysis areas are currently capable for use by members of the public and for fire control and other administrative uses. New trail development is not part of this proposal because new trails are not necessary to meet project objectives. Gated roads improved by the sale will be available for future dispersed recreation activities.

C): See Comment A and Agency Response above and Economic and Herbicide themes.

D): There is no new system (classified) road construction proposed with this project, but some existing but non-system, old woods roads will be improved and put on the system. The cost of new system roads is deducted from estimated timber revenue to account for necessary road maintenance and improvements. This rate is called the advertised bid rate (or base rates) and becomes the minimum acceptable bid for the timber sale. Any revenue above the base rate is available for resource improvements on the Grandfather Ranger District. While these system roads may be developed for timber harvesting, they would also be available for various future public uses including recreation, fire control access, etc.

E): See Comment A and Agency Response above along with Clear Cutting theme.

Road Use

Representative Group of Comments Received

A): *We learned from information released at a community meeting today in Blowing Rock that the Globe Project includes logging in Globe Valley, then moving the trees harvested up Globe Road (SR 1367) to be processed. We are especially concerned with the upper portions of Globe Road, between Upton and Blowing Rock. As residents of Watauga County living on Globe Road, we must tell you this will impose an undue burden on the local citizens, who*

use the road regularly. We would like to make an alternate suggestion. Instead of moving the trees north, up the mountain, you move the trees south, down the mountain, over the shorter, lower section of Globe Road (between Upton and Globe, where the roads are paved) to NC 90, and then to mills or other receivers in Caldwell, Catawba, McDowell or other counties.

B): In your report the presence of trespassers was mentioned. However, little was made of the safety issues associated with reopening and making new avenues into the Globe area. Several years ago, a fire was started by trespassers on Old Johns River Road. The area was accessed by logging roads built by the USFS. Fortunately, this area was not in close proximity to homes and neighborhoods. This is not the case with your proposed logging of the 231 acres adjacent to the Blowing Rock community. The USFS does not have the manpower to monitor illegal trespassers into this area. This invitation to illegal poachers, campers, ginseng poachers, illegal logging will not be stopped by a gate in a remote area. Four wheelers are an admitted problem in the USFS. This access will allow a dangerous situation for the safety of the residents located in the area. Any fire started in this close proximity to the homes surrounding the USFS, will quickly spread to the neighboring homes. As important as the wildlife and aquatic habitat is, serious consideration must be given to the safety of the taxpayers who border the subject property.

C): The proposal to put a gate on China Creek is a fallacy. When the existing Forest Service Road was bulldozed from the mountains, it was supposed to be closed to vehicles with foot travel being the only means to access the area. Within a few months the gate was obliterated with a few sticks of well-placed dynamite, and to date it has never been replaced. I surmise the same would happen if it were placed near China Creek. Why not put it where it was originally meant to be and replace it if it is destroyed? The use of remote wildlife cameras would assist in enforcement efforts and aid in closing the entire area to vehicles.

D): The condition of Globe Road from areas of cut south will be seriously destroyed by the logging trucks.

E): Use of lower China Creek Road/Thunderhole Road during the Globe Project – will it be closed?

F): My concern is the closing of the roads to our forest lands! We are losing so much hunting area to private development as it is. To lose access to the Thunderhole Road would be detrimental to a lot of our elderly and aging hunters, fishermen, and hikers. We are already dealing with being shut out at Frankum & Georges Creek by privately owned gates with no access. I oppose gating off any more Forest Service land.

Agency Response

A): The Globe Road is the preferred route for removing harvested timber. This was chosen because alternate routes would cause significant added expense and increased environmental impacts.

B): Safety of individuals and resources in the Globe area is important to the Forest Service, and we believe none of the actions proposed here would make the area less safe. Trespassing and unauthorized uses are investigated and acted upon.

C): The preferred alternative proposes to: “Re-install a gate on the Thunderhole Road just before China Creek that was damaged by members of the public and seed with a wildlife and wild flower mix (about 3 acres). The gate is proposed to reduce impacts to wildlife, recreation, aquatic resources, and water quality. Re-install a gate at the entrance to Thunderhole Road which would be seasonally closed for wildlife, non-motorized recreation, and road maintenance (January 1 – August 31). (Section 2.2.4, Chapter 2).” The Selected Alternative changed the seasonal road closure from January 1 – August 31 to January 1 – March 31 to better provide access for fishing and other appropriate recreational uses (Decision Notice, page 2). Law enforcement would continue to ensure compliance with road closures.

D): See Comment A and Agency Response to Road Construction/Reconstruction theme.

E): See Comment C and Agency Response above.

F): Reinstalling gates in the Thunderhole area is necessary to limit costs of road maintenance for other resource protections. The preferred alternative (D) would reinstall a gate at the entrance to Thunderhole Road, but the gate would remain open for vehicle access annually from Sept. 1 until December 31. Also see Comment C and Agency Response above.

Save Botanicals

Comment Received

A): *Because of my work experience in native botanicals I know there are a substantial number of species in the impacted area that have both ornamental and medicinal value. I also know that after this project the environmental changes may not be conducive for the survival of these species. Therefore I feel as a responsible representative it is your duty to allow for salvage and rescue of said botanicals.*

Agency Responses

A): The majority of medicinal plants collected by permit are found predominantly in rich coves – this project does not propose harvesting in rich coves and salvaging medicinal plants in the activity areas is not necessary. Species commonly collected through permits as ornamentals are widespread and are not in short supply.

Scenery

Representative Group of Comments Received

A): *The Globe project lies in the viewshed of Blowing Rock, NC and of Grandfather Mountain. Blowing Rock is a significant tourist destination and thriving community. Grandfather Mountain is also a significant tourist destination and economic driver for the local community that depends on the quality of its scenic viewshed. Near term and long term impairment of the scenic viewshed from Blowing Rock and Grandfather Mountain is a significant impact on the human environment warranting detailed analysis and consideration in the draft Environmental Assessment. The scenery analysis prepared for this project is inadequate. U.S. Forest Service viewshed analysis standards under the SMS system require viewshed impact analysis to be conducted after leaves have fallen from the trees for the season. See U.S.D.A. Landscape Esthetics: A Handbook for Scenery Management, Agricultural Handbook 701, page 4-10 (“Use the most sensitive situation for landscape visibility inventory, for example, any ‘leaf-off’ condition, clear air period, or season of high color contrast.”). The draft EA does not disclose when field surveys for the Globe timber sale were undertaken. If indeed field surveys were undertaken in leaf-on conditions, the draft EA should be withdrawn and a complete scenery analysis conducted according to SMS standards. Given the significant scenery impacts of this sale, full compliance with SMS standards is absolutely necessary. The draft EA failed to identify scenery impacts as a significant issue. Recent public comment in Blowing Rock should make clear that scenery impacts are of paramount concern to the community. Failure to consider scenery impacts in detail caused the Forest Service to ignore reasonable alternatives to the proposed action. Management area 4A is to be managed primarily for scenery values and this timber sale has unusually pronounced and controversial scenery impacts, yet the Forest Service failed entirely to consider an alternative to the preferred course of action in response to Forest Plan direction to choose a harvest method based on direction to emphasize visually pleasing scenery in management area 4A. Previous iterations of the Forest Plan directed for the use of shelterwood cuts in management area 4A with a minimum 40 sq/ft basal area leave. Applying that prescription under these circumstances would be a reasonable alternative to the preferred course of action that addresses the manifestly significant issue of scenery impacts. Finally, the draft EA offers no analysis of impacts to the local community and tourism industry from logging in this area. As the local tourism industry is an important issue for the local community that is intimately intertwined with the Forest Service’s scenery analysis, the Forest Service should analyze the impacts of its timber program on the local economy.*

B): *Blowing Rock is very fortunate to have the state widening Highway 321 to make easier access to Blowing Rock and areas further west for tourists to enjoy the beautiful scenic views. This road was very expensive for the state to build, I am sure with some federal funds. The impact of this forestry project will be visible from a large part of the Blowing Rock area, the Blue Ridge Parkway, and Grandfather Mountain and will ruin many scenic views.*

C): *We own a home along the rim of the John’s River Gorge along Wonderland Trail in Blowing Rock. This home is now in the fourth generation of my family and is valued at more than \$2.0 million. We recently spent over \$160,000 protecting our view of this beautiful National Forest. We adamantly object to any project that would desecrate this gorgeous view. We understand that objections must be specific, so our objection is to any action detrimental to the viewshed as it is a valuable scenic resource.*

D): *I am the owner of the original Greystone property, which most local folks refer to as The Castle. My wife and I spent nearly three years and a lot of money restoring this early 1900's vintage home to its' original quality and condition. This property has always enjoyed an undeveloped and unaffected view of the Pisgah National Forest property which borders the town of Blowing Rock. The Thunder Hole area where some of your work is intended is*

literally directly below some of the decks and back yards of our home and many others just like us around the Wonderland Trail and Laurel Lane area.

E): *My second point would be that if the project does take place, every effort is made to maximize the rba number in the 30 range (or a tad above) to lessen the visual impact. I noticed several areas were classified as 15-20 rba, one at 25 rba and another at 30 rba. Knowing that increasing the rba much above 30 defeats part of the beneficial aspects of the project, I would still request trying to get as high as possible a number (perhaps 30+ in all areas) to assuage the visual impact concerns of the Blowing Rock and surrounding communities. I felt at that meeting that the visual impact appeared to be the group's greatest concern.*

F): *The use of visual simulations [presented at the August 9, 2006, meeting in Blowing Rock city council chambers] was misleading as compared to existing views. I live adjacent to Canyons Restaurant will the same view shown on the simulation and I can assure you the simulation is misleading by assuming limited visibility and soft falls to wash out the impact of both existing cuts and the scar of previous efforts of NFS to improve the forest nature created.*

G): *Like the inadequate analysis of impacts to old growth, the brief analyses of impacts to scenery and recreation inadequately analyze the impacts to these resources and repeat the error of focusing solely on compliance with the Forest Plan. These analyses are particularly inadequate in light of the opposing resolutions passed by local legislative bodies and the voluminous comments from local residents opposing this project's impacts to these resources. The scenic analysis in particular focused entirely on meeting Forest Plan Visual Quality Objectives, and found that even the previous alternatives would meet these Forest Plan objectives. Revised Assessment at 40-42. Buried with this analysis, however, was the acknowledgement that these cuts will be visible for at least 3 to 5 years, and, in some cases, at least 8 to 10 years, id. at 39, and that the Forest Plan's Visual Quality Objectives need not be met for either two or three growing seasons, i.e., two or three years. Id. at 37.*

Agency Responses

A): A comprehensive scenery impact assessment was conducted using Visual Management System & Scenery Management System methodology; and included GIS viewshed analysis, 3D simulations, and field surveys. Field surveys were done during leaf-off season in early March 2006. Because of public concerns, we completed additional detailed studies of visual impacts which are documented in the project record. This included taking additional photographs of the project area in both leaf off and leaf on condition and comparing these actual photographs with previous computer simulations. We also visited and took pictures of three recent timber projects that are similar in size and design to the proposed Globe project units. Two of these units were in the viewshed of the Blue Ridge Parkway. This information was used to ensure that recent two aged timber harvest, with appropriate design features do in fact meet or exceed our planned visual quality objectives. Photos of these recent two aged units are available for viewing on our Forest web site at <http://www.cs.unca.edu/nfsnc/nepa>.

The following mitigation measures for units in the Thunderhole Creek portion of the project:, which are the units potentially visible from around Blowing Rock: 1) Maintain an un-cut 100 foot buffer from edge of state road-- Stands 35-1/35-23;37-5b; 37-9. 2) Maintain 30 rba/ac minimum in harvest area—all stands. 3) Locate unit boundary one tree height below ridge—Stand 33-11. 4) Burn or lop & scatter slash to within 2 feet of ground for 100 feet beyond edge of road or trail.—Stands 37-5a 38-7. 5) Feather upper unit boundary over a 100 foot distance—Stands 33-11; 37-9; 39-4/39-13; 39-15. 6) Maintain uncut vegetative screen at least one tree height below road—Stands 33-11; 39-4/39-13. 7) Screen log landings from view, and restore as close to original contour as practical—Stands 33-11; 35-1/35-23; 37-5a; 37-5b; 37-9; 38-7; 39-4/39-13; 39-15. 8) To extent practical, burn or lop & scatter slash to within 4 feet of ground for 150 feet below cable landings or utilize for firewood gathering—Stand 33-11. 9) For 50 feet beyond state road, restore temporary roads and bladed skid trails to original contour, and plant native shrubs at entrance to mask disturbance—Stand 37-9. (For more detail see Section 3.7.3.5, Chapter 3 in the EA.)

In addition, in recognition of the high level of public concern about potential impacts the following additional monitoring actions will be required during and after implementation of this project: 1) FS Landscape Architect to meet with District personnel to discuss tree marking specifications, and landing/cable corridor layout. This is to review leave tree density, and road, landing & cable corridor screening. 2) FS Landscape Architect to meet on site with sale administrator during harvest of stands 33-11, 35-1, & 35-23. This is to review leave tree density, screening buffers, and slash treatment. 3) FS Landscape Architect to conduct photo monitoring from analyzed viewpoints immediately after harvest, and 1, 2, & 5 growing seasons after harvest. This is to insure compliance with assigned Visual Quality Objectives, and to develop a remediation plan if VQO's are not met.

With the all of the above required design features, and with the recent monitoring and required future monitoring, we are confident that any impacts to the scenic values surrounding the Blowing Rock area will be limited and of short duration. See also Economics, Property Values, and Recreation/Tourism Themes above.

B): No management activities will be visible from Grandfather Mountain, the Blue Ridge Parkway, or downtown Blowing Rock. However, proposed treatments were designed to maintain scenic quality from all travel corridors, use areas, and water bodies in and around the project area.

C): See Comments A & B and Agency Response above as well as Property Values Theme above.

D): Views from residential areas in Laurel Park and Mayview Park were considered in the scenery impact analysis.

E): Alternative D was developed based on public comments, and does increase sq. ft. rba/ac to 30 in all treatment areas of Thunderhole Creek drainage. Alternative D also dropped a stand (35-11) and reduced the acres of another stand (33-11).

F): Simulations are a useful tool in determining potential scenery impacts, and in educating others to those impacts. Every effort was made to produce simulations which accurately depict existing and proposed treatments. Though simulations are a prediction of proposed impacts based on the best available data, the actual view will appear different with the varying seasons, sun angles, and atmospheric conditions. The simulations strive to replicate natural lighting and atmospheric conditions in a static image, this increases the realism and makes simulations more understandable to some viewers, but no attempt was made to soften impacts or mislead the viewer. Simulations can be viewed on the internet at: www.cs.unca.edu/nfsnc/nepa/grandfather/globe/globe.htm. To further validate these simulations, the Forest landscape architect took actual leaf on and leaf off photographs from each of the potential viewpoints and compared these to the earlier computer simulations. Additionally he went out and took photographs of recent similar timber harvest and was able to confirm that the actual on the ground visual impacts were the same as or less than what computer simulations had forecast for these recent sales.

G): The Forest Service Visual Management System, as incorporated into the Nantahala and Pisgah Land and Resource Management Plan, provides an objective and measurable method for assessing and managing scenic quality on National Forest System (NFS) lands. The system considers existing landscape character, viewer sensitivity, and viewing distance. These attributes are analyzed at a landscape level (Forest Plan) and at the project level (from each individual viewpoint). Use of the Visual Management System ensures a repeatable and definable qualitative and quantitative assessment of scenic conditions, and eliminates highly variable individual opinions about changes in scenery. Globe scenery analysis references the Forest Plan and its assigned Visual Quality Objectives because this is the benchmark by which scenic quality and changing scenic conditions are compared. Scenery inventories used in the Forest Plan rank Blowing Rock viewshed as Sensitivity Level 1; the most sensitive. Middleground views from Blowing Rock are assigned a Visual Quality Objective of Partial Retention; which means management activities must remain visually subordinate to the characteristic landscape. At a minimum, this objective must be met within two growing seasons; as specified in the Visual Management System. This is the same level of scenic protection given NFS lands seen from the Blue Ridge Parkway and Appalachian National Scenic Trail. Forest Plan inventories, guides, and standards define the maximum allowable change in scenic conditions for a specific landscape. All alternatives were designed to meet Visual Quality Objectives identified in these standards. Alternative D was added as a response to public comments, where requests were made to reduce harvest acres and increase leave-tree density. The Globe scenery impact analysis is a thorough and detailed assessment of existing conditions and effects of proposed actions. Advanced technological analysis using GIS and 3D simulations were used, in addition to leaf-off field reviews with map and compass supplemented with photographic documentation from each viewpoint. Every attempt was made to accurately identify scenery impacts; including detailed descriptions of how harvest areas would appear, and how that appearance would change over time. See also Old Growth and Recreation themes above.

Support (for proposal)

Representative Group of Comments Received

A): I owned 25 acres joining NF at Rocky Knob for almost 50 years and recently deeded it to my son. I also grew up there, working wild fires from the time I was 12 YO with my Ranger father and, I believe, fishing every stream on your District. I know the Grandfather. My Father and I, together, worked 74 years with USFS. The National Forest has been really neglectful of our lands for the past 18, or so, years by not managing the woodlands. We kept

the S.bark Beetles at bay for 50 years by cuts when small outbreaks cropped up. We kept the forest healthy with sales AND paid for our keep with receipts. YES Have the Globe sale and tell me how I can help.

B): We have no major objections to any of the possible alternatives, including the new preferred Alternative, Alternative D. As with our previous comments, based on the information provided in the EA and a review of our records, we concur with your assessment that none of the proposed alternatives will affect federally listed endangered or threatened species or critical habitat. Thus, the requirements under section 7 of the Act are fulfilled. (US Fish and Wildlife Service)

C): Early successional habitat (areas of newly established vegetative cover generally less than 10 years in age) is an essential component of the habitat spectrum required by a variety of game and non-game species. Timber stands open to the sunlight [p]roduce large quantities of insects, sprouts, shrubs, grasses and forbs. These areas provide ideal foraging for such game species as ruffed grouse, woodcock, rabbit, white tailed deer, black bear and eastern wild turkey (Litvaitis 2001, Dessecker and McAuley 2001, Hunter et al 2001). Newly created openings in the forest canopy also provide nesting and feeding opportunities for a number of disturbance-dependent non-game bird species (Hunter et al 2001). Under management, this habitat is created primarily by timber harvesting through clear-cutting, group selection or shelterwood cutting. Currently the Forest Service is cutting about 4% of the net annual growth on nearly a million acres of timberland on the Pisgah and Nantahala NFs. Prescribed fire also is an important tool in maintaining high quality wildlife habitat. In 2003 the Forest Service used fire to treat about 4800 acres (1/2 of 1% of the total area), primarily for fuel reduction, within these forests. Over the last decade, the mountain national forests in North Carolina have reduced timber management activities by some 85% and, as a consequence, the area of early successional habitat has declined by some 45%. It now totals about 31,000 acres (including 14,300 acres of brushland) or 3.1% of the total area. The ruffed grouse is considered an indicator species for wildlife requiring early successional habitat to maintain species vigor. It is the focus of attention here as a substantial body of information is available which allows an assessment of that species' health in North Carolina. The North Carolina Wildlife Resources Commission has been conducting grouse hunter surveys since 1989 (Seamster 2002). The survey data are segregated by private and public land with the latter consisting mainly of national forest lands within the Pisgah and Nantahala National Forests land. The data show that, as the timber harvest and the area of this critically important habitat has declined on national forest land, the ruffed grouse population, has suffered a parallel decrease. During the same period, while the grouse population on public lands dropped, the population on private lands, where timber resource management continued to be practiced, remained relatively stable. While the decline in ruffed grouse population and other disturbance dependent game species has been the primary concern of some forest users, the reduction in forest bio-diversity, with its attendant adverse impact on wide array of non-game species, is emerging as a major anxiety among other observers. These impacts and their implications were the subject of special coverage in the summer 2001 issue of the Wildlife Society Bulletin. In this peer-reviewed journal of the professional organization of American wildlife biologists, a series of 8 articles examined in depth the changes in habitat and population that have resulted from past land-use practices and are resulting from current non-management of wildlands in the eastern United States. In that series, Hunter et al (2001) list 39 bird species of eastern America that are associated with large (>12 acre) patches with shrub-scrub, early successional and forest edge conditions. The range-wide populations of 26 of these species are exhibiting a significant decrease while 8 are exhibiting a significant increase. Among the disturbance dependent species listing a significant decline whose range includes the Pisgah/Nantahala NFs are the mourning dove, black-billed cuckoo, whip-poor-will, least flycatcher, Bewick's wren, golden-winged, chestnut-sided and prairie warbler, common yellowthroat, yellow-breasted chat, American tree, field, and white crowned sparrow and orchard oriole. These authors point out that recent research demonstrates the importance of early successional habitat to species, such as the cerulean warbler and wood thrush that are dependent upon extensive areas of mature forest (Hamel et al. 1998, Pagen et al. 2000). They also suggest that managed disturbance, as proposed in this paper, has minimal fragmentation impact in largely forested landscapes as long as forest cover exceeds 70% of the land base. The Hunter article (pg 451) echoes the consensus of other biologists in stating "Allowing 'nature to take its course' cannot restore the disturbance-maintained ecosystems present prior to European settlement. These conditions are likely lost forever due to the permanent loss of land to human development, loss of keystone species, disruption of natural processes, and an ever-increasing array of exotics (Askins 2000)". Our proposal directly addresses the major issue defined by Hunter et al (2001:451): "The key forest bird management issue today lies in how best to protect, create, or restore an appropriate mix of frequently disturbed and infrequently disturbed forested conditions."

D): I would like to thank the Forest Service Employees for their thorough presentation(s) yesterday in Blowing Rock. I am not opposed to the proposal. Most all of my questions were answered in the meeting yesterday. Thank you as well for allowing my Cub Scouts to attend and observe the process.

E): (1) In general, we support the proposed activities outlined in Alternative B as they will vastly improve this area for wildlife, provide a more balanced age-class distribution of forest structure, and provide needed wood fiber for local forest product industries. It is clear that there are opportunities through regeneration harvesting and wildlife opening development to achieve the desired conditions described in the proposal. As pointed out in your analysis, there is little (less than 1%) early successional structure (0-10 yrs.) in the analysis area. (2) It is imperative to maintain a leave basal area below 20 sq.ft./acre in the two-age regeneration areas to allow for the development of quality early successional habitats for wildlife and promote a better mix of natural regeneration for future stands. We note that your target leave basal area is 15 – 20 good! (3) Were there opportunities to improve stand conditions in the analysis area by commercial thinning? We saw no discussion of thinning stands for forest health improvement, etc. (4) We support the efforts in the proposal to develop wildlife openings as they are very important for wildlife in the analysis area. We strongly urge you to go with an early successional edge (at least 100 feet deep around the openings) that will provide cover for numerous wildlife species that could take advantage of the opening's browsing and bugging opportunities. This improvement has been applied in other areas of the Pisgah and Nantahala national forests and promoted by wildlife biologists from the NC WRC and conservation organizations. We also support the proposed daylighting of roads to establish early successional/shrubby strips along the roads to allow protection for numerous wildlife species that will take advantage of the protection for access to the wildlife seeded roads (linear wildlife openings) as well as to help keep the roads dryer during periods of wet weather. We are disappointed to see that you are only seeking a 15 width on the daylighting project – it would more valuable to wildlife using a broader width. (5) We have no problems with the construction and reconstruction of the roads necessary to carry out the proposed actions. They are assets for all management activities and provide access for many recreation activities, forest health manipulations, wildlife habitat work, etc. (6) We also support the use of herbicides in pre/post harvest, TSI activities, exotic invasive species control and other management activities. From our perspective, using herbicides on post harvest treatments is much preferred to mechanical treatments – it leaves the stems standing at least for a couple of years providing more dense cover for wildlife purposes. (7) We support the proposed use of prescribed burning as a wildlife management tool. It is widely recognized by wildlife specialists the benefits of regular prescribed burning to a number of important wildlife species across the landscape. We encourage you to consider a recurring burning plan for the area. (8) We would also encourage you to consider clearly designating/restricting road uses (linear wildlife openings, bike riding, horseback riding, etc.) after the project is complete to reduce future conflicts.

F): I would like to register my support for the proposed project. As a property owner in the Globe I have seen the deer, turkey and grouse decline, due to what I see as a lack of diversity in the ecosystem. An overabundance of mature timber that stifles the growth of browse and cover for much of the local wildlife. Please do not allow the emotional and selfish goals of Blowing Rock seasonal residents to stand in the way of good science and it's benefits both to wildlife and recreation.

Agency Responses

A) – D): The Globe proposal is designed to meet objectives disclosed in Section 1.4, Chapter 1.

E): (1) – Comment is noted. (2) – Basal area retention depends on the location of harvest stand in the analysis areas and by alternative. Alternatives B, C, and D retain additional basal area as disclosed in Tables 3-10 – 3-12, Chapter 3.(3) – There were not opportunities for thinning due to the existing age class structure within this AA. (4) – New wildlife field development is part of each action alternative and the new fields are within proposed timber sale units and therefore would have 100+ feet of surrounding early successional habitat. Daylighting was proposed for two reasons—increased wildlife habitat and improved road maintenance. Daylighting widths greater than 15 feet along the Frankum Creek Road were considered but eliminated from detailed study (Section 2.3.3, Chapter 2). (5) – Comment is noted. (6) – Comment is noted. (7) – Prescribed burning is not proposed with this project (see Comment B, Prescribed Burning/Wildfires theme above). (8) – Current restrictions would be maintained following implementation of the proposal. However, the preferred alternative proposes to: *Re-install a gate on the Thunderhole Road just before China Creek that was damaged by members of the public and seed with a wildlife and wild flower mix (about 3 acres). The gate is proposed to reduce impacts to wildlife, recreation, aquatic resources, and water quality. Re-install a gate at the entrance to Thunderhole Road which would be seasonally closed for*

wildlife, non-motorized recreation, and road maintenance (January 1 – August 31). (Section 2.2.4, Chapter 2). See also decision notice for modified Selected Alternative.

F): The Globe proposal is designed to meet objectives disclosed in Section 1.4, Chapter 1.

Thinning

Comments Received

A): *Understanding the merits for thinning and clear-cutting to revitalize the natural forest creating healthier growth, we do not agree to this reasoning on this particular tract.*

B): *Our natural wooded forests are a treasure that should be maintained by selective thinning of old or damaged trees; not by clear cutting.*

C): *Were there opportunities to improve stand conditions in the analysis area by commercial thinning? We saw no discussion of thinning stands for forest health improvement, etc.*

Agency Response

A): The proposed two-age cut, leaving mostly hardwoods, would meet wildlife objectives better than thinning (Appendix D). Clear cutting is not part of the proposal.

B): See Comment A and Agency Response above.

C): See Comment A and Agency Response above.

Water Quality

Representative Group of Comments Received

A): *What right do you have to silt the streams from the resultant erosion from clear cutting, or erode away centuries of accumulated topsoil?*

B): *The only analysis of forest management impacts on water quality is to note that Forest Service best practices will be followed and that water quality will not be affected. Water quality is not identified as a significant issue in the draft Environmental Assessment.*

C): *On the other hand, the inevitable results of logging roads, new forest roads, and clear cutting (especially, on steep slopes) will create erosion and stream sedimentation which will adversely impact our trout population in the Globe area – streams known for good fishing.*

D): *The streams that flow through this area are headwater streams that flow into the Globe Valley just below where people have small fishing cabins and where their children wade in clear streams. It is very hard to imagine a logging operation that would benefit these pristine waters as much as “no action” would do.*

E): *Our water quality, air quality and temperature moderation all depend on our forests to act as reservoirs, filters and air conditioners.*

Agency Responses

A): Clear cutting is not part of the proposal. Water quality is not expected to be adversely impacted long-term as the EA disclosed: *The temporary road construction within stands 13-11 & 13-21 and 14-12 would involve the placement of a bridge over Frankum Creek. The placement of this bridge would directly impact approximately 20 linear feet of stream bank on each side of Frankum Creek. The access to stand 13-7 & 13-19 would require a bridge across the upper reach of Frankum Creek which would impact approximately 20 linear feet of stream bank on each side of Frankum Creek. These direct impacts come from the removal of streamside, or riparian vegetation which provides cover and nutrients for aquatic organisms. These impacts are expected to be minimal and would cease with site rehabilitation. Sediment control measures such as the use of silt fences and straw bales would be implemented at the site to avoid off site movement of soil at the crossings. These control measures trap sediments on-site and*

prevent most of the disturbed soil material from moving downstream. Riparian areas have been identified as 100 feet on either side of perennial channels and 30 feet on either side of intermittent channels. No activity, including the placement of log landings and skid trails, would occur in this area with the exception of access at stream crossings. As a result, no measurable direct adverse impacts to riparian areas are expected to occur within riparian areas other than the small areas impacted by the two crossings. The impacted area would be approximately 0.09 acres of the total 41.6 acres of riparian area in the Globe activity area (0.22% of the area). The road drainage on all temporary roads within the activity area would be designed so water flows off the road area and enters into vegetation rather than directly into activity area streams. Following harvest activities, disc and seeding of all unsurfaced temporary roads, skid roads and log landings would occur to reduce potential for erosion or sedimentation. (Section 3.1.2.2, Chapter 3).

B): Significant issues are identified when there is potential for an alternative to be developed around them. The action alternatives would protect water quality under all action alternatives and not less favorably under one alternative or another.

C): See Comment A and Agency Response along with Erosion/Soils Theme above.

D): See Comment A and Agency Response above.

E): See Comment A and Agency Response along with Air Quality Theme above.

Wilderness/Wilderness Study Area

Comments Received

A): *Also, I thought at one time the Globe area of the Pisgah Forest was declared a Wilderness Area by the President and Congress in 1964 and again later in 1984 and as such could not be harvested. I really would like more clarification on this as to whether or not this is true - appreciate.*

B): *When I first took my young baby into the forest, his vocalizations changed from their usual intonations. I could feel the exhilaration in his body movements, as he touched a glorious tree giant. Now that he is 3, he can tell you the scientific names of butterflies and identify numerous native plants, insects, and spiders. For our family, wilderness is CRUCIAL. I need for my son to be able to have a connection to this ancient forest which surrounds us. Little by little, it seems that people are encroaching on wild lands. Of course, where private property is concerned, people are free to purchase and log. But public lands are for all of us, and they have already been diminished in the interest of financial gain.*

Agency Responses

A): The Globe area is within neither a Congressionally designated Wilderness nor a Wilderness Study Area. The Linville Gorge area is designated as Wilderness on the Grandfather Ranger District and the Lost Cove and Harper Creek areas are managed as Wilderness Study areas.

B): See Comment A and Agency Response above.

Wildlife

Representative Group of Comments Received

A): *We have concerns about how this project will impact the populations of worm-eating warbler and wood thrush.*

B): *This project will impact numerous "Sensitive Species" and "Forest Concern Species". We believe that the sheer volume of these species is a "red flag" for this project and send a clear signal that this project will have negative impacts on biodiversity. These impacts are unacceptable.*

C): *We appear to be doing this to enrich a few logging companies and to sate the need of hunters to kill wildlife at the expense of property owners throughout this area. Also dangerous chemicals are to be used which will have lasting bad effects on the area. As you know many property owners, such as myself, live part time in other places. I was dismayed to read that part of the justification for this project was to grow the wild turkey population. In South Carolina other government agencies decided that SC needed more Canadian Geese. Some 7,000 were brought in a while back. This original group has grown to over 25,000 geese and they are ruining neighborhoods all over the state. The federal government now has to conduct roundups of geese which are being slaughtered to try to stop the*

huge damage they are inflicting on public and private property. The justification for bringing in these foul birds (no pun intended) was to help out hunters in the state of SC. What is truly unbelievable is that the official that made this awful stupid move now says that even knowing what he knows now he would do it all over. STUPID IS FOREVER. I don't think the US Forest Service wants to do things that will bring shame on its fine reputation for doing the right thing and following the will of the people.

D): This EA for the Globe Project is not a good idea.... It attempts to look like a plan to "help" wildlife and forest, but is a blow to all owners of property, or lovers of the views and perspectives around this gorge of the Pisgah forest. The 80 page document, perused and studied carefully, reveals only what can only be called "sneaky" wording to seemingly disguise that this is a LOGGING OPERATION. A friend working in the Panhandle national forest areas in Idaho told us a few years ago that she is ashamed to be in the forest service since the Reagan Administration-that the Forest Service no longer protects wildlife and forest, but has instead become an arm for the logging industry in the United States. This Globe Project seems to amply prove her concerns.

E): The displacement of wildlife was not adequately addressed. There are populated areas immediately adjacent to this proposed logging area which will be adversely impacted, as well as the animals. There is also a concern about the Virginia Big eared bat which has been identified by the NCNHF as an inhabitant of the region. Unfortunately, a study of all counties and their endangered species ongoing by the NCNHF has yet to be completed. However, Watauga County is identified as a site for the endangered bat. In your study you acknowledge rock outcroppings that could disguise caves used by this endangered species. More research into this species habitat should be completed prior to any decision being made.

F): The EA states that bird surveys of the proposed sites were conducted on a single day. (Appendix A page 42). No comprehensive list encountered species is provided. Results of existing Region 8 point count were not listed. Only eight species are mentioned at all in the EA. These are the Worm-eating warbler, Wood Thrush, Ovenbird, Eastern Towhee, Black-billed Cuckoo, Warbling Vireo, and Acadian Flycatcher. Only three of these (Worm-eating warbler, Wood Thrush, and Ovenbird) are listed as occurring on the proposed sites. Our survey efforts in the region found some 80 breeding species in the area. This included some other MIS listed in the Forest Plan (USDA, 1992. Final Supplement to the Final Environmental Impact Statement, Volume II, Appendix L, pages L-1 through L-13). These species include some commonly found species like Blue-headed Vireo (formally Solitary Vireo), Pileated Woodpecker, Cedar Waxwing, and Northern Parula Warbler. All of these species have been found commonly on surveys conducted in adjoining areas (Table 1) and likely occur in the treatment areas. Table 1 also lists the current conservation rankings for all of the species encountered on our surveys. This listing includes North Carolina Natural Heritage Rankings (including state status, state rank, and global rank) (LeGrand, 2004), National Audubon Society Watchlist Status (NAS, 2002), Partners in Flight conservation ranks for the Southern Blue Ridge Bird Conservation Plan (Physiographic Province 23) (Hunter et al, 1999). In the EA, a reference is made to the dropping of conservation status by USFWS and PIF for Worm-eating warbler and Wood Thrush but no citation is given for this change. To our knowledge, no such decrease in conservation status has been issued. Both of these species conservation status reflects their healthy populations in North Carolina, but also reflect the need for conservation within the region.

G): The failure to acknowledge the impacts of logging old growth forest communities and disrupting mature forest corridors undermined other environmental analysis in the draft Environmental Assessment and led the Forest Service to conduct inadequate population surveys. Like the draft Environmental Analysis, the Revised Assessment eliminated from analysis the impact of the proposed action on ovenbird and mature forest habitat. Management Area 4A, which encompasses the old network of old growth forest proposed for logging in the Globe project, is to be managed for "the large group of game and non game animals that benefit from a variety of mostly mature forest conditions and can not tolerate vehicular disturbance" primary emphasis on "black bear habitat." Forest Plan III-84. Black Bear is a Management Indicator Species for old forest communities. Decision Notice and Finding of no Significant Impact for Changing the List of management Indicator species, the Species Groups to be Monitored, and Associated Changes to Plan Direction, June, 2005 at 5. Ovenbird is an MIS species for species associated with large areas of contiguous mature forest. Id. The draft environmental assessment erroneously eliminates these habitats from further analysis on the ground that "old forest communities" and "large areas of contiguous forest" do not occur within the project area. Revised Assessment at 44-45. As demonstrated above and by attached survey results, however, old forest communities do occur within stand 33-11 and on the boundary of stand 38-7. In addition, each of these areas is part of a larger contiguous section of mature forest suitable for ovenbird habitat. Part of the stated purpose and need of this project is to "provide...travel corridors and foraging habitat for black

bear across the project area by dispersing early successional habitat across the landscape...” Revised Assessment at 7. Beyond this statement, there is no information or analysis of any kind concerning black bear in the Revised Assessment. These omissions are significant inadequacies in this Assessment, both because the project was hinged in part on its alleged benefits for black bear, and because this project in fact will cause significant and long-term negative impacts to bears while providing limited and short-term benefits at best. Statement of Roger A. Powell, Ph.D. (attached). To begin with, bears do not need human-created “travel corridors,” and it is misleading to suggest that they do or that logging will facilitate their movement through the forest. Bears move through forests quite well without human assistance, especially mature forests. Powell Statement at 1. Second, the issue of “foraging habitat” is more complex, and the impacts to bears more mixed, than is suggested by the agency’s statement of purpose and need. Bears need different foods at different times of the year. In the spring and early summer, bears need soft mast, such as berries, which post-logging conditions will provide for a few years. However, 10-20 years or so after logging, the canopy closes and the logged land provides no food resources for bears until the forest matures at around 80 years of age, leaving approximately 60 years of no food resources for bears at all. Similar soft mast resources also are provided by the understory in mature forest, such as huckleberries, and in canopy gaps created by natural events like storms and tree falls. Powell Statement at 1-2. In the late summer and fall, bears need hard mast, such as acorns. Mature forests provide these resources in abundance, whereas post-logging conditions do not provide them at all. Thus, the mature forests that the agency is proposing to log provide all the food resources the bears need, year after year, whereas the logged-over land will provide only soft mast, and only for a limited period, after which there will be a much longer period of providing no food at all. Thus, from the perspective of “foraging habitat” for bears, logging carries significant negative impacts that are not mentioned or addressed in the Revised Assessment. Id. Finally, this project includes several miles of temporary roads, and a proposal to convert an unauthorized road into a permanent road. Revised Assessment at 14. All roads and the greater access they provide are known to have significant negative impacts to bears, yet none of these impacts are addressed in the Revised Assessment. The available data and information establish that black bears with home ranges that include gravel roads have a lower survival rate. Bears in the Pisgah National Forest specifically are known to avoid roads. For these reasons, any proposed road building carries negative impacts to bears, and the proposed conversion of 0.8 miles of existing unauthorized roads to permanent roads (Environmental Assessment p. 14) specifically would be detrimental to bears. Id. Because the Forest Service has attempted to justify this project as benefiting bears, the Revised Assessment failure to address this project’s negative impacts to bears violated NEPA.

Agency Responses

A): Several research studies (Rivera et al. 1999, Vitz and Rodewald 2006) found that interior bird species utilized regenerating clearcuts during the post-breeding season. In their research, Vitz and Rodewald (2006) found that although clear cuts have been widely regarded as detrimental to birds associated with mature forests, their study demonstrated the regeneration areas (early successional habitat) are heavily used by mature forest birds during post breeding season. Their data showed a high diversity and abundance of mature forest and forest interior bird species during post breeding season suggests that regenerating clearcuts contain important resources for post breeding birds. They concluded that forested landscapes containing a mosaic of successional stages may hold the most conservation promise for mature forest bird species. Rivera et.al. (1998) found that wood thrush post fledglings dispersed to early successional deciduous shrub habitat (59.4%), insect damaged deciduous forests (24.4%), and Virginia pine forest with heavy deciduous understory (12.8%).

B): The Biological Evaluation disclosed: *This proposal would not affect (directly, indirectly, or cumulatively) any proposed or listed Federal threatened or endangered botanical, aquatic or wildlife species. Consultation with the USDI Fish & Wildlife Service is not required. This proposal may impact individuals of Regional Forester's Sensitive species white leaf sunflower (*Helianthus glaucophyllus*) and Carolina hemlock (*Tsuga caroliniana*). These impacts would not lead towards federal listing or loss of Forest viability. The current records for Regional Forester's Sensitive dragonfly species *Macromia margarita* and *Ophiogomphus edmundo* are within larger, more riverine type habitats than what is present within the aquatic activity areas. These species could be present within the aquatic AA of the Johns River which is well away from the bridge installations on Frankum Creek. Since the stream crossings are located in Frankum Creek, which is a tributary to Mulberry Creek, *Macromia margarita* and *Ophiogomphus edmundo* would not be impacted by the project proposal. According to personal communication with Sarah McRae, North Carolina Heritage Program Freshwater Ecologist, the record of *Macromia margarita* for Caldwell County is unclear but most likely is from the lower reaches of Wilson Creek or the Johns River. Based on activity area surveys and habitat preferences, there would be no impacts to *Macromia margarita* or *Ophiogomphus**

edundo as a result from the implementation of the proposal. This proposed action is not likely to cause a trend toward federal listing or loss of viability across the Nantahala and Pisgah National Forest for either species. Alternative D would have an indirect beneficial effect to nectar species habitat for the Regional Forester's Sensitive species, Diana Fritillary (Speyeria Diana) on 222 acres while there would be negative indirect effects to one acre of habitat. Overall, the proposal is expected to benefit the Diana Fritillary and its habitat across the AAs throughout the next 10 years. Past actions and foreseeable future actions, both on private and public lands may have had negative direct effects on individual larvae however; there have been positive indirect effects to habitat over the AAs. This proposal is not likely to cause a trend toward federal listing or loss of viability across the Nantahala and Pisgah National Forest. No further botanical, aquatic, or wildlife Regional Forester's sensitive species would be affected by the proposed action. (Section IX, BE). Potential impacts to Forest Concern species were disclosed in Table 3-16, Chapter 3.

C): Eastern wild turkey has been re-introduced to their historic range in Western North Carolina, with many years work, by the North Carolina Wildlife Commission. As the turkey is a native species, predators such as bobcats depend on this food resource. Hunting this game species helps control the population where native predators are low in number. The survival rate of turkey broods is very dependent on grass/forb habitat while the adults require acorns for much of their winter food resource. Cold, early spring rains, aerial predators and nest-robbing raccoons often greatly limit brood survival. Heavy snow falls and long periods of below freezing winter weather, greatly limit the adult bird survival. Introduction of non-native species is not part of the proposal.

D): As over 10,400 acres (93 percent; Table 3-4, Chapter 3) of the analysis areas would remain mature and old forests throughout the foreseeable future, creating two percent early successional habitat would help to ensure native wildlife in the area are at least maintained at their current population levels. This harvest would also ensure that acorn production would continue, for at least a limited extent, over the next 50 years. Sinclair et.al. (1995) concluded that while continued emphasis needs to be placed on setting aside protected natural areas, habitat renewal is also required. They further stated that habitats can only be preserved if they are treated as a renewable resource and that without renewal, habitats set aside as preserves will not result in the conservation of biodiversity. Litvaitis et.al. (1999) found that as a result of the vast majority of forested lands maturing, populations of insects, birds, mammals, and reptiles that are obligates of thicket habitat (early successional) are among the most threatened taxa. They concluded that in all regions, restoration and management of early successional habitat should increase.

E): A search of the NC Natural Heritage database of known element occurrences of Threatened, Endangered, Regional Forester's Sensitive and Forest Concern species was completed for each of the resources; botanical, aquatic, and wildlife. The US Fish & Wildlife Service (USFWS) responded to the project scoping notice mailed in January 2006 with those species it has listed for Caldwell and Watauga Counties. Together with records the Forest Service has of the area the specialists begin their surveys, checking habitat for any species on record in the area. The Virginia big-eared bat is known from the area of the Linn Cove Viaduct and the USFWS was informally consulted during the Old House Gap analysis. The Old House Gap analysis area proposed to harvest a stand within a mile of this cave location. Bob Currie, USFWS, concluded that harvest of this stand would not effect the big-eared bat as his monitoring of this cave population has shown the bats utilize the cave as a winter hibernaculum and leave the area from early spring to late fall. Forest Plan standards for cave protection would be adhered to if a cave was missed during surveys of the proposed action areas.

F): There are no R8 Bird points within either the Upper John's River or Upper Mulberry Analysis Areas which would have provided five years of bird data to work with. The bird points were taken in May within stands proposed for harvest to determine potential effects to species present. There are four habitat types proposed for harvest, all of which average 70-90 years of age. These stands are in a closed canopy condition with very little structural diversity other than the rhododendron shrub layer. The wildlife analysis does not include lists of all species found during surveys such as snails, salamanders, and birds but only lists threatened, endangered, Regional Forester's Sensitive, Forest Concern, and Management Indicator Species or their habitat known to occur or found during surveys. The reference made regarding the wood thrush and worm-eating warbler and the USFWS priority rating is based on personal conversations with Keith Watson (past USFWS Region 4 Migratory Bird Biologist) in 2003 when he indicated that the species list for the Southern Blue Ridge was outdated and several species were not really conservation concern for Western North Carolina. The December 2002 USFWS Birds of Concern for the Appalachians/Western North Carolina table lists species, the USFWS Priority, Nesting Niche, feeding, and Significant Habitat. This table does not prioritize the worm-eating warbler or wood thrush and several other species. Mr. Watson indicated that as the Southern Blue Ridge region is largely forested; those species of the guild that are often considered area sensitive or forest interior were to be monitored, but not a specific species of concern. The

exceptions were the black-billed cuckoo and olive-sided flycatcher which were a species specific concern. This reduced species concern is further reflected in the August 2005 USFWS Migratory Bird Program Focal Species list which does not list the worm-eating warbler and had not selected the wood thrush as a species for their initial campaign effort. See also Comment A and Agency Response above.

G): The proposal does not harvest within Forest Plan designated old growth communities or Forest Plan initial inventory old growth communities. The estimated 5,100 acres of old growth communities designated within the AAs; 3,400 acres of bird patch #38; the extensive, connected riparian communities; combined with areas not proposed for harvest under any alternative, represent 91% of the mature forest community within the 11,225 acre AAs—approximately 2% of this mature forest community would remain post-harvest under each action alternative. This large amount of mature forest community maintains corridors for black bear around state roads. Black bears have been shown by the North Carolina Wildlife Resource Commission (NCWRC) to utilize closed Forest Service roads extensively for travel and soft mast feeding. The majority of the NCWRC black bear bait stations used to monitor and estimate bear populations are found along closed roads and trails. The 1.5 miles of temporary road proposed by the Globe proposal are needed to access landings within fourteen proposed timber units. As stated in the EA, these short road segments would be shaped, waterbarred, and seeded post harvest for erosion control purposes. Grass/forb openings are proposed for construction on landings developed by timber harvest activities. Road segments leading off of developed roads provide access for bird and butterfly enthusiasts but do not allow vehicle traffic, except for primarily tractors required to mow and maintain the openings every two to three years. The proposed reconstruction of 0.8 miles of roads is two existing roads leading into proposed timber units. To access these roads two temporary bridges would be placed across Frankum Creek and removed post harvest. Therefore, these roads would be shaped, waterbarred, seeded and maintained as closed and could be used for the next entry in approximately 10-15 years. These road proposals would have no adverse effect on the black bear utilization of the area.

Black bear was selected by the Forest Plan as a Management Indicator Species (MIS) for old forest communities (100+ years old), hard mast-producing species (>40 yrs), and large contiguous areas with low levels of human disturbance, although the FEIS, Vol. 1, page III-5 states that black bears utilize many parts of the forest that do not meet the criteria of ideal habitat. The main fall and winter food for black bear is hard mast which would continue to be provided over 89% of the AAs where hard mast species are a component of the stand. Acorns are generally produced by oak species at around 40 years of age, although scarlet oak species have been shown to produce acorns by 25 years of age. The three percent of the area representing 21-50 year old forests are or will be producing hard mast over the next ten years. Soft mast is the main food source for black bear during the summer and early fall. Soft mast is most prevalent in areas less than ten years of age where the canopy removal allows sufficient sunlight to the forest floor. The 11-30 year old stands exhibit considerable grape arbors which would persist to some extent into stand maturity. Another source of soft mast species is prevalent around grass/forb openings and road shoulders. This habitat is being increased by the proposal; however, temporary roads are generally not open enough to provide sufficient sunlight to the forest floor. As a result the soft mast component would be concentrated surrounding the closed portion of Thunderhole Road, as well as Frankum Creek and George's Creek Roads. Pockets of soft mast, such as huckleberry and grape, may be found within mature forests where rhododendron is not highly prevalent. Upper Mulberry AA has many sites without dense rhododendron where soft mast may be found within mature stands. Naturally occurring openings caused by wind events or insect and disease, create soft mast for a short period of time as the surrounding canopy quickly expands to block sunlight from reaching the forest floor and shrub layer.

During years of acorn failure where oak trees do not produce acorns, alternative food must be found to maintain the black bear populations throughout the winter. Maintaining 89% of mature forests ensures other foods are available, such as fungi and roots. Often during years of hard mast or acorn failure, black bears rely on recently harvested areas where logging slash, young root growth, and brambles, provide an abundance of invertebrates and high protein food. These years also produce an increase in black bear "nuisance phone calls" from residents who border large tracts of forests. Black bears are opportunists that forage at home owner's bird feeders, dog food storage, and grease residue on barbecue grills.

The Forest Plan selected the ovenbird as the MIS to represent large contiguous areas of mature deciduous forest communities. This species is recorded throughout every age group of forest and has been found during surveys of these AAs in a stand bordering an open state road and private land development. The ovenbird is usually recorded across the thirty-seven regional bird points and was recorded at 16 points during the 2006 spring bird survey. Interior forest patch #38 represent the large forest community this species can be found throughout, as well as

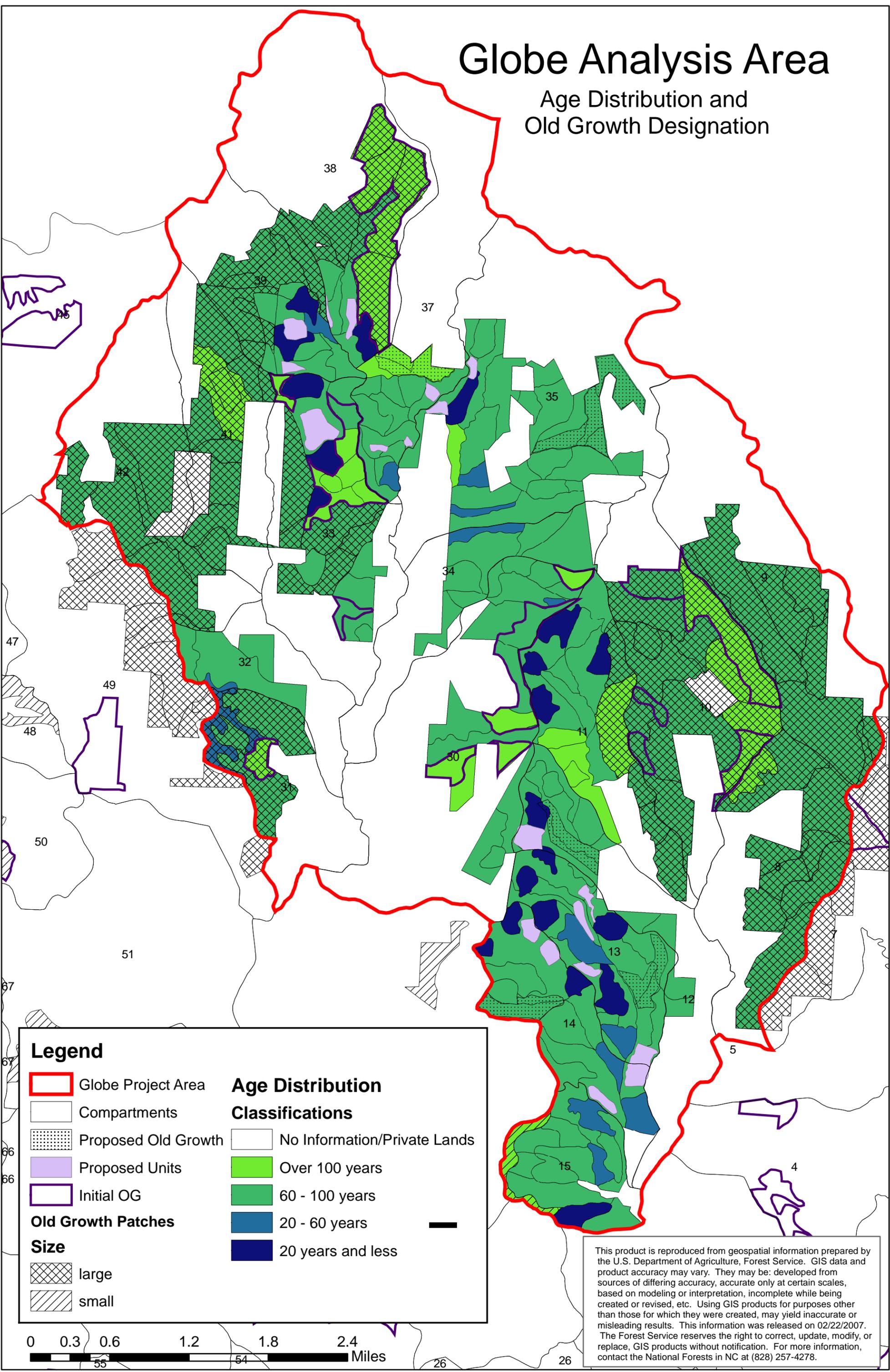
designated old growth and riparian forest communities. None of these ideal habitats of large, contiguous forests are proposed for treatment with any alternative in this proposal.

Section 1.2, Chapter 1 disclosed that the land base within the AAs analyzed contain both Management Areas 4A and 3B and pages 9 and 10 in the Wildlife Analysis (WILDA) outlines the multiple habitats found within the AAs. Management Area 3B lands are managed to provide forests with a range of forest ages and wildlife habitat for a multitude of wildlife species, including black bear (Forest Plan, page III-71). Management Area 4A lands are managed to provide for species that prefer low levels of disturbance where the preferred habitat for black bear is listed as some areas of older forest, a sustained supply of hard mast and den trees, and small widely dispersed openings providing soft mast, typically found in very young forest (Forest Plan, page III-77). These AAs currently exhibit 91% mature forest (which includes Forest Plan designated old growth communities) and <1% early successional (WILDA, Page 9). Alternatives B, C, and D propose to increase and disperse the early successional habitat to 2% and reduce the mature forest by 2% over the 11,225 acre area. This proposal would provide a mix of habitats for various wildlife species while not affecting either designated old growth or Forest Interior patch #38 as further explained in the WILDA (pages 10-14).

GLOBE PROJECT MAPS

Globe Analysis Area

Age Distribution and Old Growth Designation



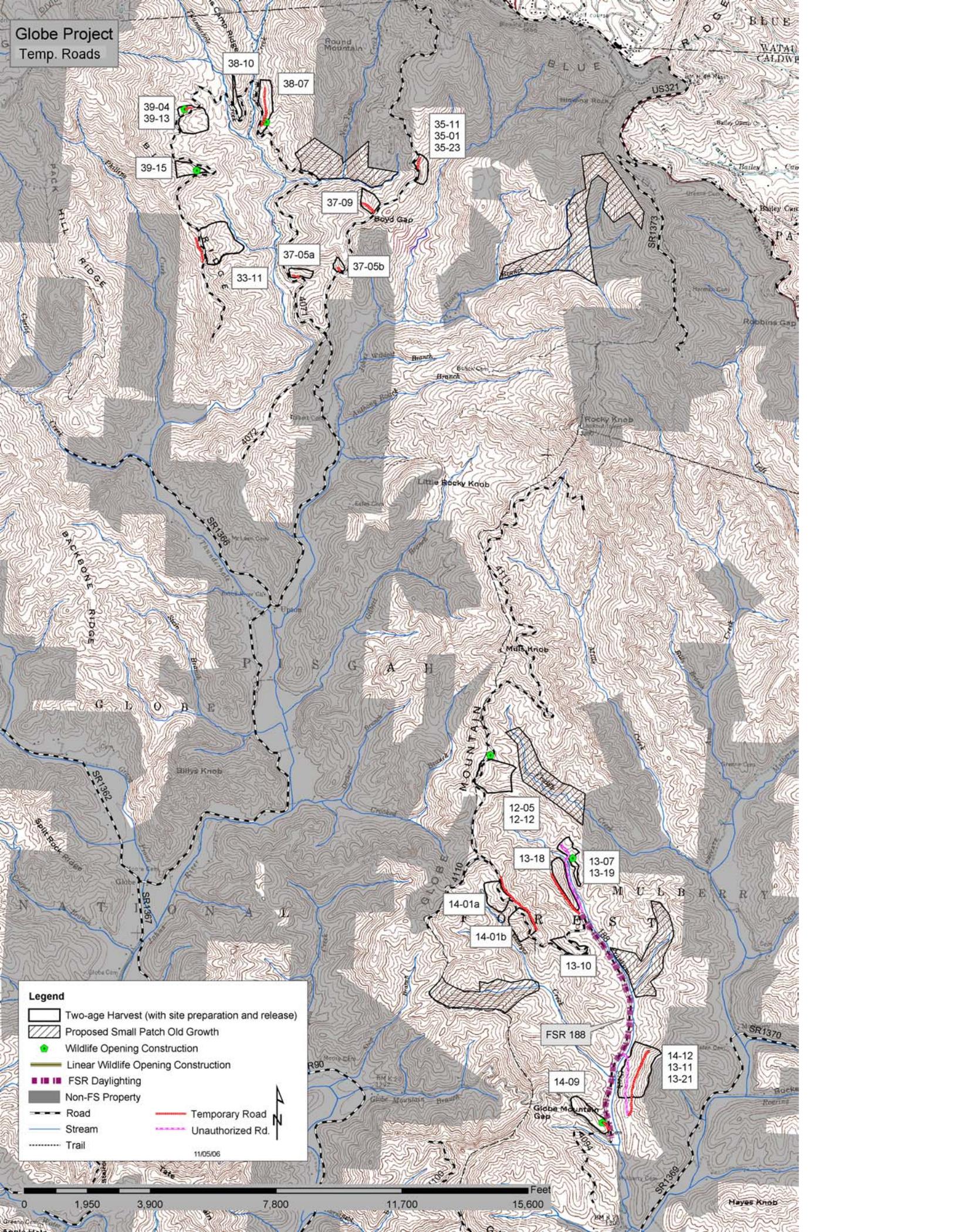
Legend

- | | |
|---------------------------|------------------------------|
| Globe Project Area | Age Distribution |
| Compartments | Classifications |
| Proposed Old Growth | No Information/Private Lands |
| Proposed Units | Over 100 years |
| Initial OG | 60 - 100 years |
| Old Growth Patches | 20 - 60 years |
| Size | 20 years and less |
| large | |
| small | |

0 0.3 0.6 1.2 1.8 2.4 Miles

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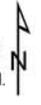
**Globe Project
Temp. Roads**



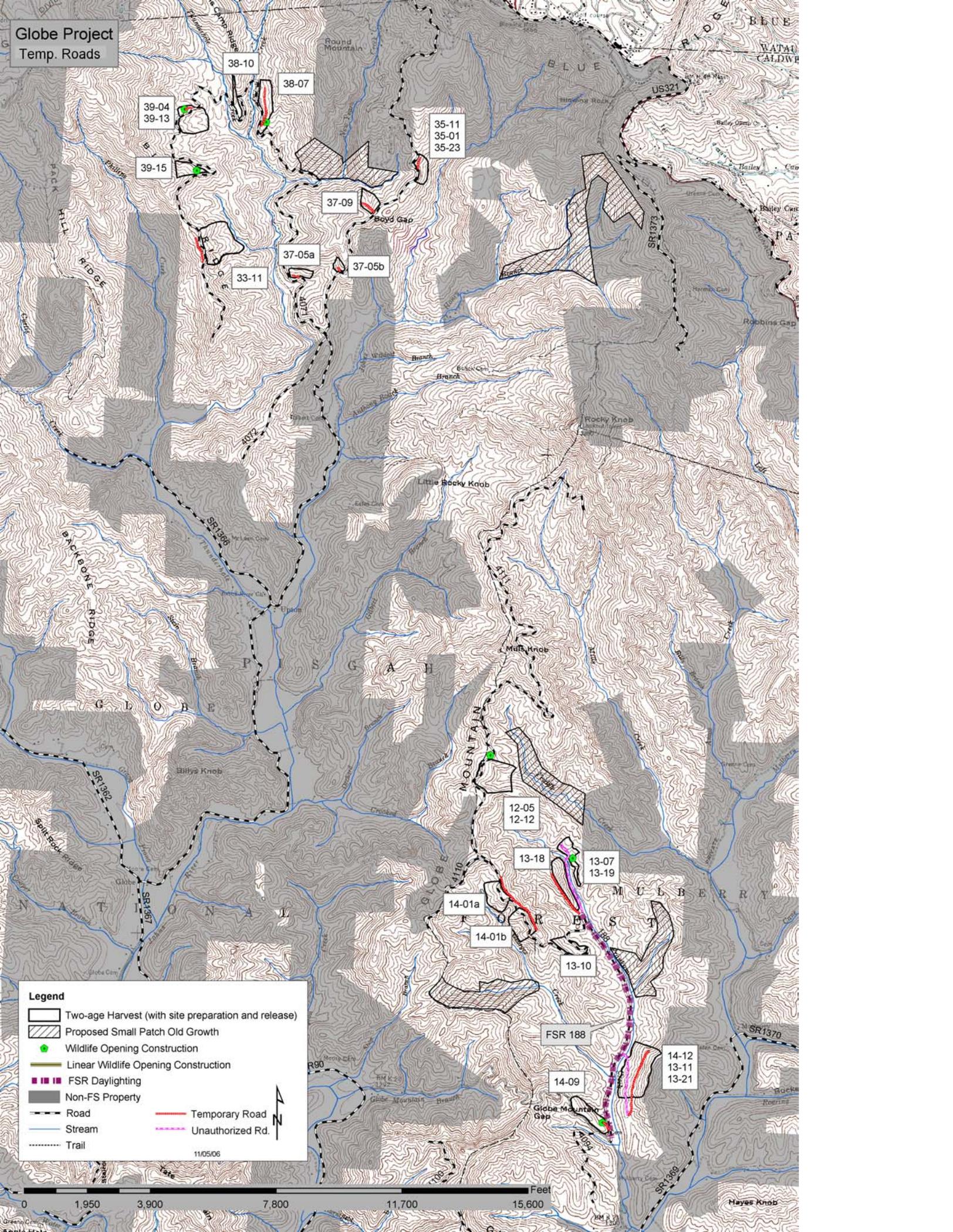
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- Two-age Harvest (with site preparation and release)
- Proposed Small Patch Old Growth
- Wildlife Opening Construction
- Linear Wildlife Opening Construction
- FSR Daylighting
- Non-FS Property
- Road
- Temporary Road
- Stream
- Trail
- Unauthorized Rd.

11/05/06



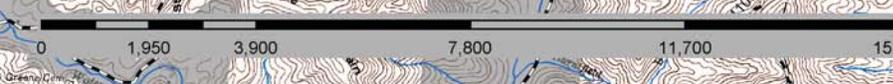
**Globe Project
Temp. Roads**



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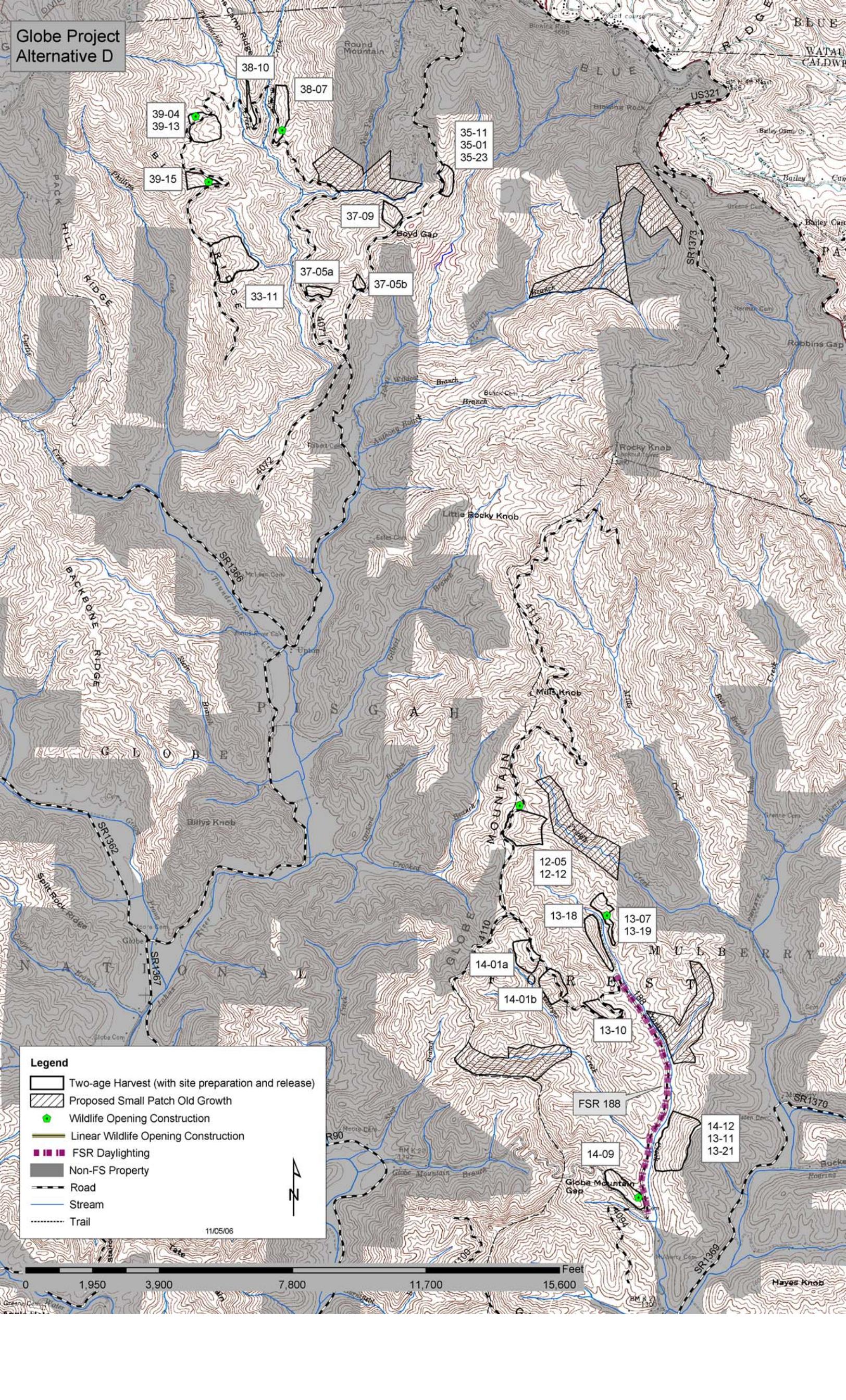
- Two-age Harvest (with site preparation and release)
- Proposed Small Patch Old Growth
- Wildlife Opening Construction
- Linear Wildlife Opening Construction
- FSR Daylighting
- Non-FS Property
- Road
- Temporary Road
- Stream
- Unauthorized Rd.
- Trail

11/05/06



Hayes Knob

**Globe Project
Alternative D**



Legend

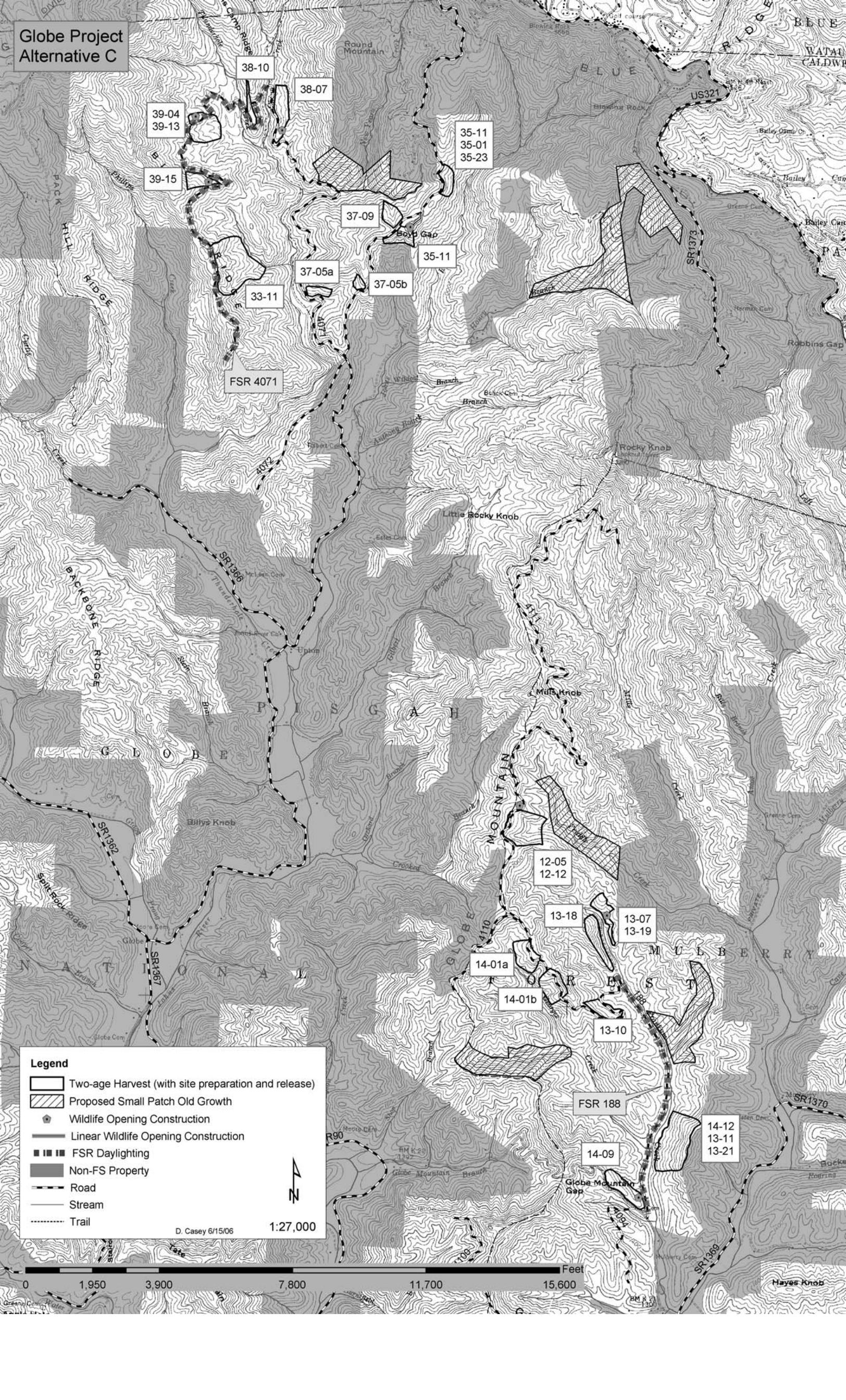
- Two-age Harvest (with site preparation and release)
- Proposed Small Patch Old Growth
- Wildlife Opening Construction
- Linear Wildlife Opening Construction
- FSR Daylighting
- Non-FS Property
- Road
- Stream
- Trail

11/05/06



Feet

Globe Project Alternative C



38-10

38-07

39-04
39-13

39-15

35-11
35-01
35-23

37-09

35-11

33-11

37-05a

37-05b

FSR 4071

SR1366

12-05
12-12

13-18

13-07
13-19

14-01a

14-01b

13-10

FSR 188

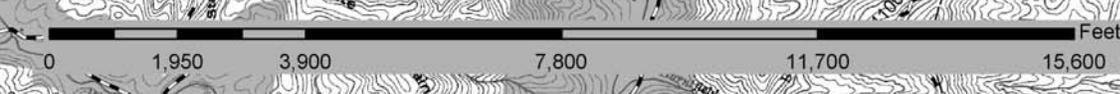
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13-21

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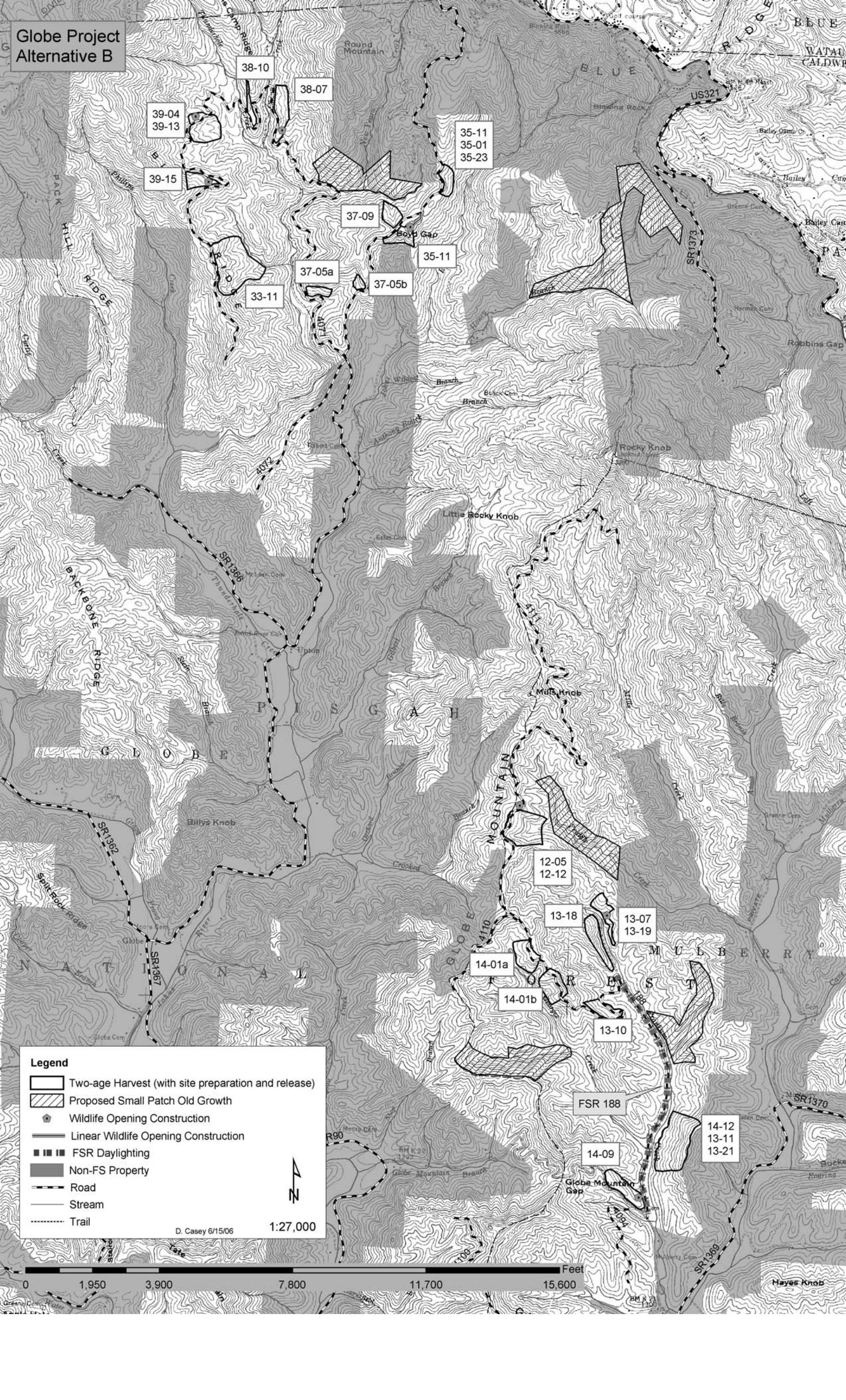
- Two-age Harvest (with site preparation and release)
- Proposed Small Patch Old Growth
- Wildlife Opening Construction
- Linear Wildlife Opening Construction
- FSR Daylighting
- Non-FS Property
- Road
- Stream
- Trail

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Hayes Knob

**Globe Project
Alternative B**



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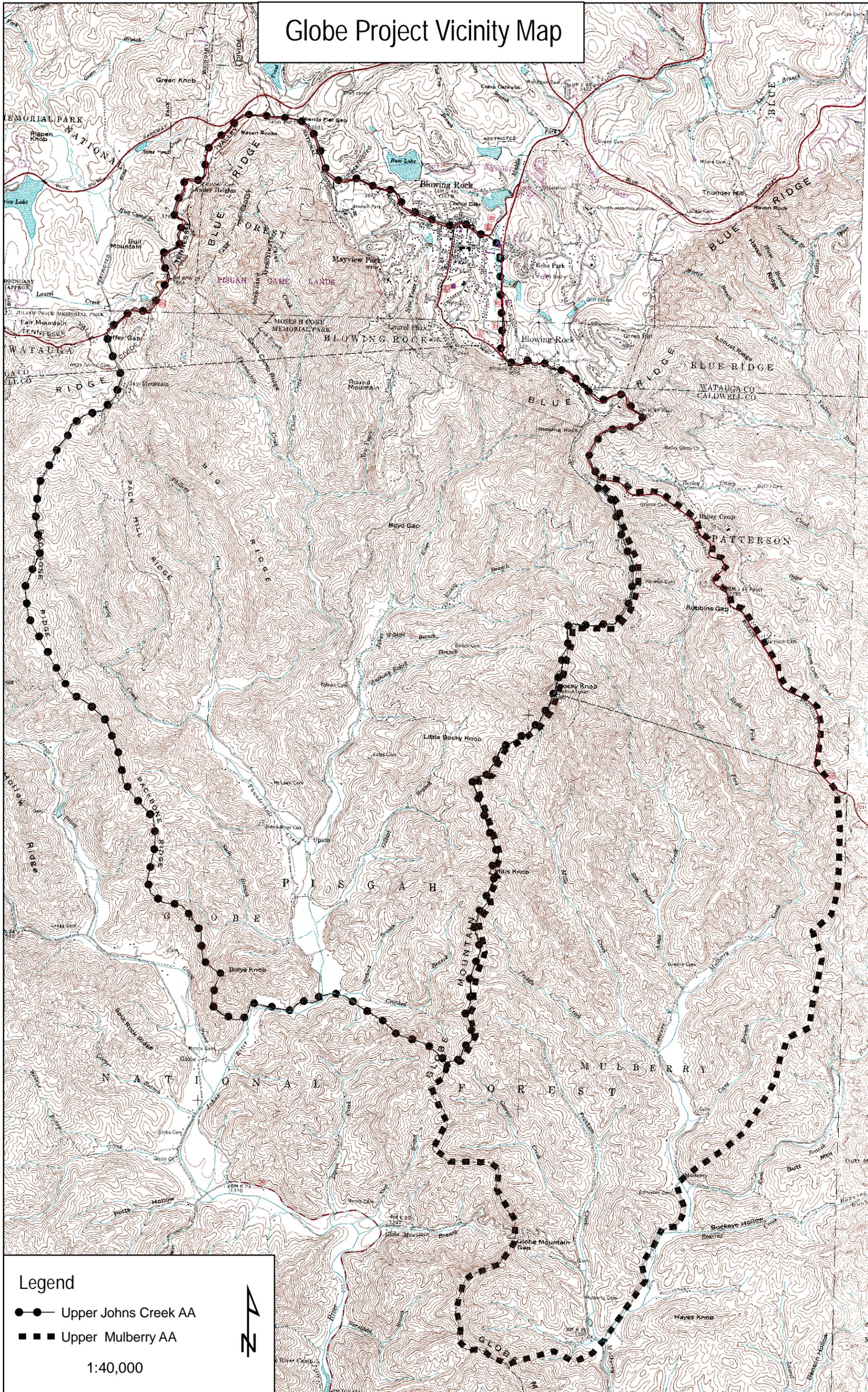
- Two-age Harvest (with site preparation and release)
- Proposed Small Patch Old Growth
- Wildlife Opening Construction
- Linear Wildlife Opening Construction
- FSR Daylighting
- Non-FS Property
- Road
- Stream
- Trail

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Hayes Knob

Globe Project Vicinity Map



Legend

- ● ● Upper Johns Creek AA
- ■ ■ Upper Mulberry AA

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