SCENERY

Affected Environment:

Almost 100 percent of the Chattahoochee National Forest can be seen from adjacent or interior roads, trails, or waterways in or near the National Forest. The more scenic landscapes (Retention or Partial Retention Visual Management System Inventory and Very High or High Scenery Management System Inventory) are generally associated with, or occur, adjacent to lakes, rivers and streams, or highly developed recreation areas and National Trails. Elevations in the Chattahoochee National Forest range from high points over 4,750 feet to lower elevations of less than 650 feet along some rivers and streams. Views beyond the immediate foreground are influenced by terrain as well as vegetation type and density. The steep to rolling ridges and valleys characterizing the forest are covered with an almost-continuous canopy of soft- to medium-textured rounded tree forms, creating a natural-appearing landscape character. Since the late 1990s, as a result of the Southern Pine Beetle infestation that killed large numbers of introduced and native pines, part of the canopy has opened. Groups of tall, gray, defoliated stems, varying in size from less than an acre to more than 25 acres, eventually give way to an emerging deciduous and evergreen under story. This process is speeded by active salvage operations in areas where human health and safety is critical.

Fully 100 percent of the Oconee National Forest can be seen from adjacent or interior roads, trails, or waterways on or near the forest. The more scenic landscapes are generally associated with, or occur, adjacent to lakes, rivers and streams, or highly developed recreation areas. Elevations in the Oconee National Forest range from high points over 1300 feet to lower elevations of less than 400 feet along some rivers and streams. Views beyond the immediate foreground are influenced by terrain as well as vegetation type and density. The rolling to flat lands characterizing the forests are covered with an almost-continuous canopy of soft- to medium-textured rounded tree forms, creating a natural-appearing landscape character. Since the late 1990s, as a result of the Southern Pine Beetle infestation that killed large numbers of introduced and native pines, part of the canopy has opened. Groups of tall, gray, defoliated stems, varying in size from less than an acre to more than 25 acres, eventually give way to an emerging deciduous and evergreen under story. This process is speeded by active salvage operations in areas where human health and safety is critical.

Landscape Setting Descriptors

The Southern Appalachian Assessment used two systems to determine amounts and types of settings across the Southern Appalachians. The Recreation Opportunity Spectrum (ROS) (U.S. Department of Agriculture, 1990) provides settings descriptors that integrate physical, social, and managerial characteristics to classify the landscape. The Scenery Management System (SMS) (U.S. Department of Agriculture, 1995) accounts for natural and cultural systems and their influence on the landscape. By combining the two systems, landscape setting descriptors were

developed with recreation and scenery components. Descriptions of each Landscape Character Setting can by found in the *Southern Appalachian Assessment, Technical Report 4 of 5, page 140*. They are also listed below:

- PRIMITIVE, Natural Evolving (NE): This setting is characterized by a high degree of remoteness and relatively few contacts with other people. A naturally evolving landscape predominates.
- SEMI-PRIMITIVE, Natural Evolving: This setting is characterized by a high degree of remoteness and a naturally evolving landscape such as is found in designated wildernesses, wild and scenic rivers, or where human influence is minimal.
- SEMI-PRIMITIVE, Natural Appearing (NA) (non-motorized and motorized): This setting is characterized by a high degree of remoteness or the potential for a high degree of remoteness and a predominately natural appearing landscape. Some areas may by accessible by low-standard roads.
- ROADED, Natural Appearing: This setting is characterized by a predominately natural appearing forested landscape with access by moderate standard roads (sometimes a gravel surface). Some areas are classified as naturally evolving if they are within wildernesses or wild and scenic river corridors. This setting occurs primarily on public land but may also occur on private land.
- RURAL, Forested: This setting is characterized by a culturally influenced landscape with forest cover. Structures may be present but usually occur in clusters.
- RURAL, Partially Forested: This setting is characterized by an altered landscape that is partially forested. Structures may be present but usually occur in clusters.
- RURAL, Pastoral/Agricultural: This setting is characterized by an altered landscape that is partially open. Structures may be present but usually occur in clusters.
- TRANSITIONAL: This setting is characterized by emerging development patterns or roads with high traffic volume.
- SUBURBAN: This setting is characterized by residential and commercial development interspersed with some buffers of vegetation. Development may include communities and small towns that do not have an urban character.
- URBAN: This setting is characterized by a predominance of paved surfaces and large buildings. Trees and other vegetation offer some aesthetic relief and contrast.

Using the SARRWAG Teams' "Scenic Integrity Objectives and Landscape Character by Prescription" crosswalk table, and the SARRWAG Teams' matrix for Prescription-DFC-ROS-SIO-LC-Recreation Opportunities, each Prescription was assigned possible Landscape Setting Descriptors. This was used as a basis for deriving the existing percentage of land in each of the landscape settings proposed by Alternative.

Table 3- 205. Existing Landscape Settings for the Chattahoochee National Forest

Chattahoochee Landscape Settings	Semi-Primitive, Non-Motorized, Natural Evolving	Semi-Primitive, Non-Motorized, Natural Appearing	Semi-Primitive, Motorized, Natural Appearing	Roaded Natural, Natural Appearing	TOTAL
Acres	124,344	77,178	13,817	514,826	751,355
Percent Of Total	16.5%	13.1%	1.8%	68.5%	100%

Source: Plan Revision GIS Roads Model Data Layer as of 08/2003

Table 3- 206. Existing Landscape Settings for the Oconee National Forest

Oconee Landscape Settings	Semi-Primitive, Non-Motorized, Natural Evolving	Semi-Primitive, Non-Motorized, Natural Appearing	Semi-Primitive, Motorized, Natural Appearing	Roaded Natural, Natural Appearing	TOTAL
Acres	0	1,006	1,388	112,827	115,221
Percent Of Total	0%	0.9%	1.2%	97.9%	100%

Source: Plan Revision GIS Roads Model Data Layer as of 08/2003

Landscape Character:

The Landscape Character is an overall visual and cultural impression of landscape attributes; the physical appearance and cultural context of a landscape that gives it an identity and "sense of place." The following Landscape Characters can be found on the Chattahoochee-Oconee National Forests. They are discussed here in the context of Provinces and Sections, as described by Bailey and others (1994).

I. Provinces (broad vegetation regions and climate sub zones)

a. Central Appalachian Broadleaf Forest - Coniferous Forest - Meadow Province (M221) - subdued low mountains and open low mountains with valleys, includes the Southern Appalachian Mountains.

b. Southeastern Mixed Forest (231) - characterized by gentle slopes, includes the Piedmont and Ridge and Valley.

II. Sections (broad areas of similar topography, regional climate, and potential natural vegetation)

a. Blue Ridge Mountains (M221D) - includes the southern portion of the Appalachian Mountains in Georgia, North Carolina, and Virginia. Occurs only on the Chattahoochee NF, does not include the Armuchee RD, and the portion of the Chattooga RD east and northeast of Clarkesville, Georgia.

b. Southern Appalachian Piedmont (231A) - includes the Oconee RD and the Chattooga RD east and northeast of Clarkesville, Georgia. Represented by irregular plains, plains with high hills, open low hills, and tablelands of moderate relief.
c. Southern Ridge and Valley (231D) - located only on the Armuchee RD of the Chattahoochee NF and is characterized by parallel ridges and valleys.

Section M221D – Blue Ridge Mountains
Total Area in U.S: 21,000 square miles, 0.6 percent of U.S.
Area of Chattahoochee-Oconee NF: 640,448 acres, 73 percent of Forests

Existing Landscape Character: Southern Blue Ridge Mountains Subsection 221Dc.
The Southern Blue Ridge Mountains Subsection is a part of the Blue Ridge Mountains Section. It is characterized by low rugged mountains, isolated high peaks above 3000 feet, steep slopes, and bisected by narrow valleys with numerous rivers and creeks. Major drainages draining northward include the Hiawassee, Nottely, and Toccoa Rivers and their many tributaries. The southward drainages include the Chattahoochee, Chestatee, and Etowah. The southeastward drainages include the Tallulah, and Chattooga Rivers (Wynn 1996). The steep terrain on these drainages is mostly wooded with second or third growth hardwoods, pines, and rhododendron and mountain laurel (Wynn 1996). Elevations range from 1,000-4,784 feet above sea level with Brasstown Bald and Rabun Bald being the two highest peaks in Georgia. This subsection includes most of the Chattahoochee National Forest, including most of the Tallulah, Brasstown, Toccoa, and part of the Chattooga Ranger Districts. It is divided into nineteen land type associations.

The vegetation consists of oak-hickory on the upper slopes, yellow poplar, northern red oak in the coves, and pine and hardwoods on the dry ridges and southern slopes. Short leaf and Virginia Pine are found at lower elevations. Historically, the vegetation consisted of oak-hickory, and American chestnut, which was eliminated by the chestnut blight in the 1930s. The encroachment of white pine on the ridges has occurred because of the suppression of fire. Mountain laurel combined with rhododendron is a common under story also as a result of suppression of fire and grazing. The mountains were heavily logged, grazed, and cultivated around the turn of the century. Currently, the vegetation is from second and third growth forests since the Forest Service began acquiring and reforesting the land between 1911 to the 1930s. The Forest Service began managing the cutover, overused, exhausted land by planting trees, restoring soil with terraces and walls, built roads, trails, bridges, structures and fought forest fires. Historically, fire, logging, and clearing the land had brought about the biggest changes in the Southern Appalachians in the late 1800s and early 1900s (Ayers and Ashe 1902).

The mountains have been a scenic place bringing visitors to the area. The landforms are highly bisected with roads leading up, over, across, and through the mountains and its valleys. Scenic vistas along major roads are attractions in the area. As is typical in the southeast, large blocks of private land are next to National Forest, which creates a "patchwork of land ownership." Residences, farmland, pastureland,

and lakes, rivers, wetlands, and private land add to the diversity of the scenery. The scenic diversity made the mountains a choice place for second homes, increasing the historically low populations. Characteristic of the mountains is the pattern of land ownership whereby the private land is in the valleys and the National Forest land is on the ridges and mountains above. There is a pastoral setting while driving along the valley roads. Once the forest boundary is crossed there are forested, natural appearing, and modified types of landscape. A modification to the landscape along major roads is kept to a minimum, leaving it to a natural evolving and appearing landscape. During the fall color season, visitors flock to the mountains to view the colorful scenery.

Visitors to the area come to enjoy many types of recreation opportunities such as hiking, camping, backpacking, hunting, fishing, horseback riding, all terrain vehicle riding, mountain biking, and canoeing and kayaking, gold and gem mining, driving scenic byways, waterfall viewing, and if one desires, there are 114,127 acres of wilderness for more primitive experiences. Miles and miles of hiking trails abound in the Southern Blue Ridge Mountains subsection. The outdoor recreation opportunities are endless and the National Forest is becoming very popular. The Appalachian Trail and its side trails cover almost 95 miles of trails in this subsection.

Besides hiking trails, there are off-road vehicle areas, and numerous recreation areas, which include lakes, campgrounds, picnic areas, and waterfalls. Horseback riders can also ride on designated trails and roads through the forest. Numerous rivers, creeks and lakes are available for water enthusiasts. For hunters, there are thousands of acres to hunt, as well as nine wildlife management areas. Scenic areas are also popular spots to view wildflowers and wildlife; these would include Sosebee Cove, Desoto Falls, High Shoals Falls, and Cooper Creek. A visitor center and observation platform is on top of Brasstown Bald giving visitors a 360-degree view of the mountains, lakes, and surrounding towns. Hiking trails lead to Rabun Bald and an observation tower is located on top. Visitors can also see historic sites, such as Track Rock Gap petroglyphs, historic home sites, cemeteries, and old railroads beds; hike historic roads and trails; and visit CCC built recreation areas. Some of these are interpreted so visitors can learn more about the sites. The local economy is supported by tourism, especially in the fall when the bright orange, red, and yellow leaves dazzle the eyes and draw visitors to the mountains. Festivals are popular in most north Georgia communities during the fall.

Visitors who get away from the roads and walk into the forest will find a wide variety of wildlife. Songbirds, woodpeckers, buzzards, hawks, owls, eagles, beaver, turkey, deer, bear, fox, ducks and geese are just a few examples. Clear mountains streams and rivers are popular fishing destinations. An occasional opening with tall, broad crowned hardwoods, cedars, yellow daffodils and fruit trees may indicate the location of a historic house or cemetery site.

The visitor will see dramatic panoramic views along major roads. From these vantage points, the views of the forested mountain slopes are rich with hues of greens and grays, contrasting with the bright green farmland in the valleys below. Farming, agriculture, logging, as well as tourism add to the local economy. Large hydroelectric

lakes provide electricity to local communities as well as attracting fishermen and water sports enthusiasts.

Existing Landscape Character: Metasedimentary Mountain Subsection M221Dd
The Medasedimentary Mountain Subsection is a subsection of the Blue Ridge Mountain Section. Low, rugged mountains with a few high crests characterize it. The major rivers include the Jacks, Conasauga, Mill Creek, and Rock Creek with numerous creeks and streams flowing into them. Elevation ranges from 1000-4000 feet above mean sea level. The intensive folding, faulting, and uplift separates the Blue Ridge Mountains from the Great Valley, and Ridge and Valley Subsection to the west. The steep terrain is mostly covered with hardwoods and pines. This subsection contains parts of the Toccoa and Brasstown Ranger Districts and all of the Cohutta Ranger District. This subsection is divided into eight land type associations.

The vegetation consists of oak-hickory on the upper slopes, yellow poplar and northern red oak in the coves, and pine and hardwood on the dry ridges and southern slopes. Grazing, burning, and cultivation had an impact on the landscape prior to Forest Service acquisition beginning in 1911. It left the landscape barren and eroded. Historically, the Cohutta Wilderness in the late 1800s to the early 1900s was logged heavily by the Conasauga River Lumber Company, which built miles of roads, train tracks, and whole company towns. Remnants of these structures and trails can be seen in the forest today. Currently the vegetation is naturally evolving, such as in the Cohutta Wilderness, as well as natural appearing, modified, and pastoral types of landscape for the rest of the subsection. Scenic vistas appeal to visitors along major roads such as the Cohutta Overlook on Georgia Highway 52. Private land, including residences, farmland, pastureland, and lakes, rivers, and wetlands provide for a diversity of scenery. This scenic diversity has made the mountains a favorable place to live and work.

Visitors to this subsection can come to enjoy many types of recreation opportunities such as backpacking, hiking, and fishing in the Cohutta Wilderness. Off-road vehicle, horseback riding, and mountain biking are popular activities that occur here. The visitor who drives along Forest Road 17 can view many panoramic views of the Cohutta Wilderness and surrounding pastoral valleys below. Visitors can also see the Cohutta Mountains from the major highways, which go around these mountains. This rugged landscape evolves feelings of being in a remote and primitive setting. As is typical in the southeast, large blocks of private land are next to the National Forest, which creates a "patchwork of land ownership." Also characteristic of the mountains is the pattern of landownership whereby the private land is in the valleys and the National Forest land is on the ridges and mountains above. A modification to the landscapes along major roads is kept to a minimum, leaving it to a natural evolving and appearing landscape. During the fall, visitors flock to the mountains to view the fall color, which turns the trees from green to red, orange, and yellow. Festivals are also popular activities which draw visitors to many north Georgia towns in the fall.

Visitors who get away from the roads and walk into the forest will find a wide variety of wildlife including, songbirds, woodpeckers, buzzards, hawks, owls, turkeys, ducks and geese, beaver, deer, bear, and foxes just to name a few examples. Clear

mountain streams and rivers are popular fishing destinations. An occasional opening with tall, broad-crowned hardwoods, cedars, yellow daffodils, and fruit trees may indicate an old homestead or cemetery. Cashes Valley is an historic area. The now extinct community of Ai contained 200 or more homesteads, and an school/church, and post office. The church burned a couple of years ago. Also of historic interest, iron deposits were mined for ore in the late 1800s-early 1900s, and an iron furnace operated in the Alacusly Valley. CCC recreation areas were also built during the 1930s. Some, such as the Lake Conasauga Recreation Area, are still present and used today. The CCCs also built the Grassy Mountain fire tower, which is still standing as a fixture on the landscape today.

Section 231A – Southern Appalachian Piedmont
Total Area in the U.S.: 73,200 square miles, 2.0 percent of the U.S.
Area on the Chattahoochee-Oconee NF: 161,375 acres, 19 percent.

The Southern Appalachian Piedmont (231A) includes the Oconee RD and the Chattooga RD east and northeast of Clarkesville, Georgia. It is represented by irregular plains, plains with high hills, open low hills, and tablelands of moderate relief.

Existing Landscape Character on National Forest Land: Midland Plateau Central Uplands Subsection-231Aa
The Midland Plateau Central Uplands is a subsection of the larger Southern Appalachian Piedmont Section, composed of ancient granites, gneisses, marble and schist's. The subsection is characterized by rolling red sandy clay hills, rocky ridges and slopes. Elevations range from 300-650 ft. AMSL. The entire Oconee National Forest is found within this subsection.

The land is drained by two major rivers, the Oconee and the Ocmulgee, each with many major and minor tributaries, so that water is accessible nearly everywhere (Wynn, 1996). Slopes become steeper next to the broad and meandering rivers. These rivers become shallow in some spots, where granite outcrops in the river create small shoals and rapids. Currently, 72 percent of the Oconee NF is covered in primarily loblolly pine with some mixed hardwood, but historically the land once supported a primarily deciduous hardwood forest before it was cleared for intensive cotton farming, beginning about 1800 (Wynn, 1996).

For visitors to the Oconee, views are primarily the enclosed foreground type, due to minimal topographic relief. Much of the foreground along primary roads is of the rural - pastoral/agricultural landscape character. This includes loblolly pine of varying ages with dispersed hardwood breaks, harvest units, temporary roads, bridges, railroads, open pastures, individual residences and small towns.

Young loblolly pine stands are often thick, with a dense under story of briars, vines and young trees. Other areas are more open due to larger trees which block out sunlight retarding under story growth. Temporary openings and even-aged pine plantations due to timber harvests are common. On most ridge tops, less-traveled dirt roads branch off of more heavily used gravel and paved roads creating breaks in

the wooded texture of the forest. These secondary roads are hidden from most views year-round because of the limited sight distances and the thick pine vegetation. As is typical in the southeast, large blocks of private land next to Forest Service land creates a "patchwork of land ownership." Because of this patchwork pattern, private residences and businesses are located within the forest boundary. Pipelines and power lines access these private holdings, creating open green belts with greater visual perception across the forest. Homes, farmland, pastures and wetlands add to the diversity of the scenery along major roads. In addition, modern development appears in the form of railroad grades, bridges, quarries, and roads bisecting the forest cover and creating a fragmented landscape character.

Visitors who get away from the roads and walk into the forest will find a different view of a more modified forest type. Broad crowned hardwoods including hickory, oak, elm, yellow popular and dogwoods cap the upland hills. In the bottomlands sweet gum, ash, sycamore, birch, and willow conceal the many drainages and broad river bottoms. These hardwood areas attract a rich variety of wildlife including songbirds, raptors, waterfowl, beaver, turkey, deer and fox. Marshes and wetlands teem with croaking frogs, buzzing insects, and the cries of waterfowl as the visitor paddles the rivers or hikes along the riverside trails. Old field terraces are visible as evidence of the intensive cotton plantation era of the 19th century. An occasional clearing with tall broad-crowned hardwoods, cedars, yellow daffodils and fruit trees may indicate the location of a historic house or cemetery site. In the spring visitors enjoy the fragrance and sight of blackberries, muscadines, and honeysuckle vines draped between white dogwood blossoms and redbud trees.

Due to the minimal topographic relief, the visitor will not find dramatic panoramic views in this subsection. Instead, people come to enjoy other recreation opportunities such as hunting, fishing, water sports, hiking, horseback riding, ATV riding, wildlife viewing, camping and picnicking. The primary visitor attractions are the bountiful hunting opportunities this area offers. The Cedar Creek Wildlife Management Area attracts deer and turkey hunters from all over the state of Georgia. Water recreation areas such as the Oconee River Recreation Area, Lake Sinclair, Lake Oconee, plus the Redlands and Dyar Pasture boat areas receive high visitation. Hillsboro Lake and Miller Lake provide visitors with a more remote setting to enjoy boating and camping, and of special interest is the Scull Shoals mill village, where the ruins of a 19th century mill town are preserved for public interpretation and enjoyment on the Oconee River.

Existing Landscape Character for National Forest Land within the: Piedmont Ridge Subsection-231Ab

The Piedmont Ridge Subsection is part of the larger Southern Appalachian Piedmont Section based on metagraywacke/mica schist bedrock. Low, linear parallel ridges separated by narrow valleys characterize the Piedmont Ridge. The ridges are oriented northeast/southwest, with elevations ranging from 1400-1600 ft above sea level. Elevations and relief decrease toward the southwest. Some of the Chattooga Ranger District is located within this subsection. The Gainesville Ridges land type association is located here as well.

The land is drained by numerous waterways including: the Chattahoochee River, Davidson Creek, Horse creek, Panther Creek and Hazel Creek.

Currently, much of the Piedmont Ridge Subsection is covered with second and third growth oak, pine, and hickory. Much of the original timber was likely logged soon after the Civil War, and the bottomland valleys cleared and farmed. The presence of both basic and acidic soils and the variety of micro-sites due to relief and exposure makes this area very rich and diverse in vegetation species. The term "biological crossroads" has been used to describe it (Rightmyer and Stephens 1995). Piedmont and Blue Ridge Mountain species grow in close association here.

National Forest in this subsection tends to be in the gorges and on gorge slopes of the major streams and rivers. Landforms are highly bisected with roads leading through these ridges and valleys. Scenic views can be seen along major roads. In winter, the mixture of both hardwoods and pine on the mountain slopes creates a contrasting colored blanket of greens and grays. In the fall, bright orange, red, and yellow leaves dazzle the eye. As is typical in the southeast, large blocks of private land are adjacent to blocks of National Forest Land, which creates a patchwork of land ownership. Private land, including individual residences, farms, pastures, and small lakes combine with rivers, forest and wetlands to diversify the scenery. Most private holdings are in the valleys below, surrounded by National Forest on the mountains and ridges above. Visitors will see an open pastoral setting intermingled with private homes, barns, fences, livestock and small businesses while traveling through the valleys. As the visitor crosses the National Forest boundary, there is a change to forested natural appearing and modified types of landscapes. Modifications to the landscape along major roads are kept to a minimum, leaving it to a natural appearing landscape.

Visitors who get away from the roads will find a rich variety of wildlife: songbirds, woodpeckers, raptors, waterfowl, beaver, turkey, deer, bear and fox are just a few examples. Clear streams and rivers are popular fishing destinations. Old field terraces are visible as evidence of the intensive agricultural practices of the 19th century. An occasional clearing with old broad crowned hardwoods, cedars, yellow daffodils and fruit trees may indicate the location of an historic house or cemetery site.

The visitor will find dramatic panoramic views at overlooks along Tallulah Gorge. The visitor will also find recreation opportunities such as hunting, fishing, boating, canoeing, hiking, horseback riding, swimming, ATV riding, and wildlife viewing, camping and picnicking. Panther Creek Recreation Trail and Fern Springs Recreation areas are popular destinations for travelers wishing to explore more remote and primitive settings. Large hydroelectric projects nearby, along the Tallulah River and Tugaloo River such as Yonah Lake, Tallulah Falls Lake and Lake Rabun, attract water sport enthusiasts and provide power to local rural communities. High visitation to these water areas has created a need for tourist services and businesses. The local economy is agriculturally based but is balanced with this growing tourism, second home development and retirement communities.

Existing Landscape Character for National Forest within: Schist Plains Subsection-231Ac

The Schist Plains Subsection is part of the larger Southern Appalachian Piedmont Section composed of ancient granites, gneisses, and schist's. The Schist Plains are characterized by rolling plains of broad low ridges and scattered higher ridges particularly at the north end. The highest peak in this area is Mt. Yonah, 3156 ft above sea level. Other elevations range from 1250-2550 feet above sea level. Some of the Chattooga Ranger District and a small sliver of the Tallulah Ranger District fall within this area commonly referred to as the Dahlonega Plateau or Upland. This subsection has two LTA's (Land type Associations): Yonah Mountain and the Clarkesville Upland.

The land is drained by numerous waterways including: the Soquee River, the Tallulah River, Big and Little Panther Creeks, Shoal Creek, Oakey Creek, Raper Creek and Flat Creek. These waterways range from rushing rivers, falls and shoals to meandering streams with high banks and flood plains. Many streams have incised channels with terraces along them.

Currently, much of the Schist Plains subsection is covered with second and third growth oak, pine, and hickory. Much of the original timber was cleared along the stream bottoms and gently sloping ridges prior to 1830. The remainder of the forest was logged in the late 1800s and early 1900s.

The landforms are highly bisected with roads leading through the slopes and ridges into the stream and valley bottoms. Scenic vistas can be seen along major roads, which offer panoramic views of the landscape. Mt. Yonah, Skitts Mountain, Long Mountain, Wauka Mountain and Pine Mountain stand prominently above the surrounding plain. In the winter, the mixture of both hardwoods and pine on the mountain slopes creates a contrasting colored blanket of greens and grays coupled with brighter green patches of farmland in the valleys below. In the fall, brilliant orange, yellow and red leaves dazzle the eye. As is typical in the southeast, large blocks of private land are adjacent to blocks of National Forest land, which creates a "patchwork of land ownership." Private land, including residences, farms, pastures, and small lakes combine with rivers, forest and wetlands to diversify the scenery. Most private holdings are in the valleys below, surrounded by National Forest on the ridges above. Visitors will see an open pastoral setting intermingled with private homes, barns, fences, livestock and small businesses while traveling through the valleys. As the visitor crosses the National Forest boundary, there is a change to a forested natural appearing, and a modified type of landscape. Modifications to the landscape along major roads are kept to a minimum, leaving it to a natural-appearing landscape.

Visitors who get away from the roads and walk into the Forest will find a rich variety of wildlife: songbirds, woodpeckers, raptors, waterfowl, beaver, turkey, deer, bear and fox are just of few examples of the wildlife. Clear streams and rivers are popular fishing destinations. Old field terraces are visible as evidence of agricultural practices of the 19th century. An occasional clearing with tall, broad crowned hardwoods, cedars, yellow daffodils, shrubs, and fruit trees may indicate the location of an

historic house or cemetery site. The recessed remains of the Unicoi Trading Path, a heavily used Indian trail and later stagecoach road, can still be found in Habersham and White Counties. During the fall, visitors flock to the mountains to view the fall colors and to shop for fresh mountain apples available at roadside stands.

The visitor also comes to enjoy other recreation opportunities such as hunting, fishing, boating, hiking, horseback riding, ATV riding, wildlife viewing, camping and picnicking. Located nearby, Lake Rabun and Seed Lake are popular swimming destinations. Panther Creek Recreation area provides visitors with a more remote and primitive setting to explore.

Existing Landscape Character of National Forest Land within: Lower Foothills Subsection-231Ad

The Lower Foothills Subsection is part of the larger Southern Appalachian Piedmont Section composed of ancient granites, gneisses, and schists. The hills are characterized by low rolling hills and ridges separated by valleys. Elevations range from 700-2000 ft above sea level. Elevations and relief decreases toward the southwest. Approximately 10-11,000 acres of the Chattooga Ranger District is located within this subsection. The Broad River Land type Association is located within this subsection.

The land is drained by numerous waterways including: the Tugaloo River, Nancy Town Creek, Leatherwood Creek, the North and Middle Forks of the Broad River, Dicks Creek, Toccoa Creek, and Cedar Creek.

Currently, much of the Lower Foot Hills Subsection is covered with second and third growth oak, pine, and hickory. The potential natural vegetation is Appalachian-oak forest. Much of the original timber was likely logged soon after the Civil War, and the bottomland valleys cleared and farmed (Evans-Shumate and Bruce in preparation).

The landforms are bisected with roads leading through these foothills and valleys. As is typical in the southeast, large blocks of private land are adjacent to blocks of National Forest land, which creates a patchwork of land ownership. Private land, including individual residences, farms, pastures, and small lakes combined with rivers and forest provides diverse scenery. Most private holdings are in the valleys below, surrounded by National Forest land on the slopes and ridges above. Visitors will see an open pastoral setting intermingled with private homes, barns, fences, livestock and small businesses while traveling through the valleys. As the visitor crosses the National Forest boundary, there is a change to a modified forest and forested, natural appearing types of landscape. Modifications to the landscape along major roads are kept to a minimum, leaving it to a natural appearing landscape.

Visitors who get away from the roads and walk into the forest will find a rich variety of wildlife: songbirds, woodpeckers, raptors, beaver, turkey, deer, bear and fox are just a few examples. Clear streams and rivers are popular fishing destinations. Old field terraces are visible, evidence of the intensive agricultural practices of the 19th century. An occasional clearing with tall, broad crowned hardwoods, cedars, yellow daffodils and fruit trees may indicate the location of a historic house or cemetery site;

over 200 of which have been recorded in the Lake Russell Wildlife Management Area. Recent clearings due to Southern Pine Beetle spots have produces profound changes in this Management Area as well.

The visitor will see dramatic panoramic views along major roads especially from Currahee Mountain and Chenocetah. From these vantage points, the views of the forested mountain slopes are rich with hues of greens and grays, contrasting with the bright green patches of farmland in the valleys below. During the fall, bright orange, red, and yellow leaf color will dazzle the eye, attracting many visitors to the forest. The visitor also comes to enjoy hunting, fishing, boating, hiking, horseback riding, canoeing, swimming, ATV riding, wildlife viewing, camping and picnicking, or just simply driving through the area. The developed Locust Stake ORV area attracts riders from across the state. Large hydroelectric projects nearby such as the Tugaloo resevoir attract water enthusiasts and provide power for dispersed rural communities. The local economy is dependent upon tourism, agriculture, the poultry industry, second-home development and retirement communities.

Existing Landscape Character for National Forest Land within: Schist Hills Subsection-231Ag

The Schist Hills Subsection is a subsection of the larger Southern Appalachian Piedmont Section composed of metagraywacke/mica schist's and hornblende gneiss or metamorphosed mafic rocks. The Schist Hills are characterized by rounded, open, high hills. Ridges decrease in height from north to south. Elevations range from 1300 to 2000 ft above sea level. Part of the Chattooga District is located within this subsection. There is one Land type Association for this subsection: the Nacoochee. Also included within this subsection is the Nacoochee Indian Mound, which is privately owned.

The land is drained by numerous waterways including: the Chattahoochee River, Chestatee River, Tesnatee Creek, Turner Creek, Thurmond Creek, lower part of Dukes Creek, Smith Creek, Davis Creek, Dodd Creek, Sautee Creek, and Bean Creek. Many of these have been altered by gold mining activity of the 19th century.

Currently, much of the Schist Hills subsection is covered with second and third growth oak, pine, chestnut and hickory but historically the 1876 Geologic Survey reported virgin timber of oak and pine within this area. Much of this "virgin timber" was cleared when necessary in order to support the gold mining days of 1828-1860. The remaining forest was logged soon after the Civil War through the early 20th century.

The landforms are highly bisected with roads leading up and over the hills into the valleys. Scenic vistas along major roads offer panoramic views of the landscape. As is typical in Georgia, large blocks of private land are adjacent to blocks of National Forest System land creating a patchwork of land ownership. Private land, including residences, farms, pastures, and small lakes combine with rivers, forest and wetlands to diversify the scenery. Most private holdings are in the valleys below, surrounded by National Forest land on the mountains and ridges above. Visitors will

see an open-pastoral setting intermingled with private homes, barns, fences, livestock and small businesses while traveling through the valleys. As the visitor crosses the National Forest boundary, there is a change to a forested natural appearing, and modified types of landscape. Modifications to the landscape along major roads are kept to a minimum.

Visitors who get away from the roads and walk into the forest will find a rich variety of wildlife: songbirds, woodpeckers, raptors, waterfowl, beaver, turkey, deer, bear and fox are just a few examples. Clear streams and rivers are popular fishing destinations. Old field terraces are visible as evidence of the intensive agricultural practices of the 19th century. An occasional clearing with tall broad crowned hardwoods, cedars, yellow daffodils and fruit trees may indicate the location of an historic house or cemetery site.

The visitor will find dramatic panoramic views along major roads. This subsection could be characterized as the "Blue Ridge Foothills" (Stephens, 1997). Views of the Blue Ridge Mountains to the north are common and scenic. From these vantage points, the view of the forested mountain slopes is rich with hues of greens and grays, contrasting with the brighter green farmland in the valleys below. The scenic drive through the Sautee-Nacoochee valley provides the visitor a sense of history and prehistory while passing by the Nacoochee Indian Mound and through the historic community of Sautee. During the fall, bright orange, red, and yellow leaf color dazzles the eye and pulls many visitors to the forest. Dramatic waterfalls at Dukes Creek Falls, along the Russell-Brasstown Scenic Byway, and Anna Ruby Falls Recreation Area are popular stopping points. Unicoi State Park, although not managed by the Forest Service, attracts visitors who then explore the surrounding National Forest. The visitor can enjoy recreation opportunities such as hunting, fishing, boating, hiking, horseback riding, swimming, canoeing, gold panning, and wildlife viewing, camping and picnicking. The Raven Cliffs and Mark Trail Wilderness Areas, on the edge of this subsection, offer the visitor a chance to explore a more remote and primitive landscape. Because of the wide range of recreation opportunities and the high visitation rates, the local economies of such towns as Cleveland, Dahlonega and Helen are heavily dependent upon tourism.

Section 231D – Southern Ridge and Valley
Total Area in the U.S.: 6,700 square miles, 0.2 percent of U.S.
Area of Chattahoochee-Oconee NF – 64,656 acres, 8 percent of Forests

Southern Ridge and Valley (231D) is located only on the Armuchee RD of the Chattahoochee NF and is characterized by parallel ridges and valleys.

Existing Landscape Character: Sandstone Ridge Subsection 231Dc
The Sandstone Ridge Subsection is in the Southern Ridge and Valley Section. Long, narrow ridges and wide valleys characterize it. It is composed of parallel ridges and valleys, strongly dissected by streams and rivers. Elevation ranges from 650-2000 feet. The ridges are typically narrow with bedrock outcrops or boulders on the western edge where the ridge drops off to the steep west-facing slope. These long ridges are oriented northeast/southwest. East facing ridges contain "finger ridges"

which are oriented along an east-southeasterly direction. There are five land type associations within this subsection. All of this subsection is on the Armuchee Ranger District.

The vegetation in general consists of oak-hickory-pine, oak-pine-hickory. Wharton (1978) calls this an Armuchee Ridge Forest containing chestnut oak, short leaf pine, post oak, and Virginia pine. As a result of the dry, stony, and infertile soils on the ridges, yellow pine and dry site oaks are the common species. On lower slopes vegetation is mainly hardwood with some loblolly pine. Major streams in the valleys are Little Armuchee Creek, West Armuchee Creek, Dry Creek, East Armuchee Creek, Dick's Creek, Concord Creek, Hurricane Creek, and Mill Creek. Low gradient, and wide gravel or cobble bottoms characterize them. Logging on the finger ridges has created a modified forest landscape character.

Visitors to this subsection can drive across the ridges and though the pastoral valleys where many farms and agricultural fields are characteristic. This area is rural with small communities and towns. Visitors can enjoy a variety of recreation opportunities, such as sightseeing along the Ridge and Valley scenic byway, and camping at the Pocket Recreation Area and Hidden Creek. Hiking the Keown Falls trail gives visitors a scenic view of the ridge and valley below. The 59-mile Pinhoti Trail (although under construction) will be a shared use trail, which will enable visitors to see the entire area while passing along the ridges and through the valleys. Fishing is popular at Pilcher pond, and hunting is popular in the Johns Mountain WMA. The Johns Mountain Observation Deck is also available for visitors to see panoramic views of the surrounding area. Off-road vehicle use is available at the Houston Valley ORV area. Visitors can see remnants of civil war activities, such as breastworks, and trenches near Dalton. Remnants of iron mining can also be seen in mines, tunnels, pits, tailings, building foundations, and tramways. The CCC in the 1930s had a camp at the Pocket, where there is now a recreation area for camping, picnicking, and hiking. Remnants of the camp can be seen around the Pocket.

Scenic Integrity

Scenic Integrity is a measure of the degree to which a landscape is visually perceived to be “complete.” The highest scenic integrity ratings are given to those landscapes, which have little or no deviation from the character, valued by constituents for its aesthetic appeal. Scenic Integrity is used to describe an existing situation, standard for management, or desired future conditions.

The scenic resource management direction in the current Forest Plan consists of Visual Quality Objectives (VQOs), which were determined by the Visual Management System (VMS). The scenic resource has been re-inventoried to comply with the Visual Management System (SMS), which replaced the VMS in 1995. See *Landscape Aesthetics, A Handbook for Scenery Management, Agricultural Handbook Number 701* for description of the SMS system.

Table 3- 207. SMS Inventory[1]

Existing Visual Quality Objectives (VQO)	Chattahoochee		Oconee	
	Acreage	Percent Base	Acreage	Percent Base
Preservation (P)	151,947	20.2%	1,217	1.1%
Retention (R)	241,463	32.1%	32,087	27.8%
Partial Retention (PR)	264,722	35.2%	66,975	58.1%
Modification (M)	93,223	12.4%	14,942	13.0%
Maximum Mod. (MM)	0	0%	0	0%
Total	*751,355*	*100%*	*115,221*	100%

1. The crosswalk between Visual Quality Objectives (Visual Management System) and Scenic Integrity Objectives (the updated Scenery Management System) is as follows:

Visual Quality Objective (VQO)	***Scenic Integrity Objective (SIO)***
Preservation (P)	*Very High (VH)*
Retention (R)	*High (H)*
Partial Retention (PR)	*Moderate (M)*
Modification (M)	*Low (L)*
Maximum Modification (MM)	*Very Low (VL)*

Special places

Special Places are those specific locations and expanses in outdoor settings that have attractions and features that are identified as unique, different, distinctive, and extraordinary to people. Special Places are not part of the Special Areas. A comprehensive inventory of constituents' special places was conducted as part of the Scenic Management System Inventory of 1994. Drawing from places listed with high concern levels in the Forest's Scenery Inventory and constituents' comments to project analysis the following categories and numbers of sites was developed:

Table 3- 208. ARMUCHEE DISTRICT: Special Places:

Type of Special Places	Descriptor	Summer-ville Quad	Sugar Valley Quad	Sublingna Quad	Villa-now Quad		Totals:
Natural (NZ): 7							
	Water-fall		Keown Falls				1
	Water Feature		Pilchers Pond; Johns Cr	Dispersed Recreation Area	Two Dispersed Rec Areas		5
	Trail		Johns Mnt.				1
Cultural (CZ): 2							
	Cultural	Fire Tower			Civil War Site		2
Cultural and /Natural (CN): 2							
	Water		Pocket Rec Area	Dispersed Rec Area			2
Totals:		1	5	2	3		11

Table 3- 209. COHUTTA DISTRICT: Special Places:

Type of Special Places	Descriptor	Crandall Quad:	Dyer Gap Quad:	Hemp Top Quad:	Ram-hurst Quad:	Tennga Quad:	Totals:
Natural (NZ): 20							
	Water-fall	Mill Creek WF	Crenshaw; Barnes Creek	Murray Ck Jacks River; **Jacks River Branch;** Panther Cr		L. Jigger Cr.; S. Jigger Cr; L. Mill Ck; L. Rough Ck	11
	Geologic (GF)				Rock Ck Canyon	Doogan Rock Cliff	2
	Water Feature					Conasauga Gorge	1
	Botanical Site (BS)	High Elev Cove; Song Bird Area	Emery	Hemlock; Mid Hemlock; S. Hemlock;			6
Cultural (CZ): 5							
	Cultural Site (CS)		Dyer Cemetery		Rock Creek Cemetery	Baxter Cemetery; Fouts Cemetery	4
	Water-fall	Emery Cr					1
Cultural and /Natural (CN): 5							
	Geologic (GF)			Cowpen Mtn.			1
	Water	Holly Cr					1
	Botanical Site		Gennett Poplar				1
	Cultural Site		Beech Bottom	Brayfields			2
Totals:		5	6	9	2	8	30

Table 3- 210. TOCCOA DISTRICT: Special Places:

Type of Special Places	Descriptor	Blue Ridge Quad	Camp-bell Mnt.	Cashes Valley Quad	Mulky Gap Quad	Nimble-will Quad	Sub-Totals
Natural (NZ): See next sheet							
	Waterfall (WF)	Falls Branch WF	Black Falls, Etowah Rv		Sea Creek Falls, Cooper Cr	Jones Cr; Cochran's; Bearden	6
	Geologic (GF)	Boulder field					1
	Water Feature (WA)	Stanley Cr; Toccoa Rv Rapids; ASKA Rd.					2
	Botanical Site (BS)	Blackwell Cove					1
	Trail (TR)	Rocky Mnt; Lake Blue Ridge		Benton MacKaye; Boardtown	Cooper Creek Valley		4
Cultural (CZ): See next sheet							
Cultural and /Natural (CN): See next sheet							
Totals:		7	1	1	2	3	14

TOCCOA DISTRICT – Additional Quads

Type of Special Places	Descriptor	Noontootla Quad	Suches Quad	Wilscot Quad	Sub- total	Totals:
Natural (NZ): 29						
	Waterfall (WF)	Noontootla WF; Noontootla High WF; Rock Creek Lake WF; Rock Creek Cascades; Long Creek WF (AT);			5	11
	Geologic (GF)	Jones Creek View; Springer Mountain		Rhodes Mountain	3	4
	Water Feature (WA)	Chester Creek Brook Trout Habitat; Rock Creek Lake; Rock Creek fishing; Mill Creek WF & Cascades; Three Forks (AT)	Toccoa River fishing hole at Hwy 60 & Cavender Gap Rd		6	8
	Botanical Site (BS)	Stover Creek Hemlocks			1	2
	Trail (TR)					4
Cultural (CZ): 0						
Cultural and /Natural (CN): 4						
	Waterfall	Rock Creek Dam WF			1	1
	Water Feature (WA)	USDI- CFN Fish Hatchery: Deep Hole fishing deck; Toccoa River swinging bridge;			3	3
Totals:		17	1	1	19	33

Table 3- 211. BRASSTOWN DISTRICT: Special Places:

Type of Special Places	Descriptor	Blairsville Quad	Coosa Bald Quad	Hiawassee Quad	High- tower Bald	Jacks Gap Quad	Sub Totals:
Natural (NZ): subtotal 9							
	Waterfall (WF)		Helton Creek WF			Cross Mnt. Branch WF; Gurley Cr WF;	3
	Geologic (GF)	Rock face on Poplar Knob			Hightower Bald	Blue Bluff	3
	Water Feature (WA)			Lake Chatuge Rec Area			1
	Botanical Site (BS)		Sosebee Cove	Plott Cove RNA			2
Cultural (CZ): subtotal 3							
	Cultural Site (CS)	Trackrock Gap			Dicks Creek Gap	Brasstow n Bald	3
Cultural and /Natural (CN): Subtotal 0							
Totals:		2	2	2	2	4	12

BRASSTOWN DISTRICT – Additional Quads

Type of Special Places	Descriptor	Macedonia Quad	Mulkey Gap Quad	Neels Gap Quad	Suches Quad	Tray Mnt. Quad	Sub Totals:
Natural (NZ): 9 + 39 = 48							
	Waterfall (WF)	Falls Branch; Hall Creek Falls; Scataway Cr Falls	Bryant Creek Falls	Four waterfalls; DeSoto Falls (3); Nottley Falls;	Walden Cr; Canada Cr; Upper Canada Cr WF (2);	Pheasant Branch; Mill Ck; Sorrels Br; Corbin Ck; High Shoals; Mossy Cove; Rogers Br; Maple Springs	30
	Geologic (GF)	Boulder Fields; Cedar Cliff; Bell Knob; Eagle Mnt;		Chestatee Overlook; Rock face; Rocky Ridges			6
	Botanical Site (BS)	Milksick & Ramp Cove	Coopers Creek				3
Cultural (CZ): 3 + 6 = 9							
	Cultural Site (CS)			Hwy 60 Quarry; AT Shelter;	Garrett Farm; Black Mnt Tower;	Cheese Dairy	5
	Water			Dockery Lake			1
Cultural and /Natural (CN): 0 + 2 = 2							
	Waterfall			LWS			1
	Cultural			LWS			1
Totals:		10	2	20	6	9	47

Table 3- 212. CHATTOOGA DISTRICT: Special Places:

Type of Special Places	Descriptor	Clarkesville Quad	Cow-rock Quad	Helen Quad	Jacks Gap Quad	Tallulah Falls Quad	Tray Mnt Quad
Natural (NZ): 8							
	Waterfall (WF)		Dukes Creek WF: Dodd Creek		Horse Trough WF;	Panther Creek WF;	Anna Ruby; Spoilcane Cr
	Geologic (GF)		The Raven Cliffs	Yonah Mountain			
Cultural (CZ): 1							
	Cultural Site	Chenoce-tah Tower					
Cultural and /Natural (CN): 0							
Totals:		1	3	1	1	1	2

Table 3- 213. TALLULAH DISTRICT: Special Places:

Type of Special Places	Descriptor	Dillard Quad	High-tower Bald Quad	Lake Burton	Rabun Bald Quad	Satolah Quad	Sub Totals:
Natural (NZ): subtotal 29							
	Waterfall (WF)	Unnamed WF (2)	Flat Branch WF; Falls Branch WF; Denton WF;	Bad Br; Crow Cr; Horse Br; Sliding Rk; Hemlock; Upper Mocassin Ck	Becky Br; Martin Cr; Holcomb Cr; Ammons Cr; Darnell Upper; Tuckaluge Cr;	Reed Cr; Overflow Cr; Low Big Cr; Up Big Cr; Hi Fall Big Cr; Heddon Cr; 3 Forks;	24
	Geologic (GF)				Pinnacle Cliff	Buzzard Rock cliffs; Hanging Rock cliffs; Cedar cliffs	4
	Botanical Site (BS)	Unnamed BS					1
Cultural (CZ): subtotal 7							
	Cultural Site (CS)		Tate Mine	CCC Remnants	Blueridge RR; CCC remnants; Rabun Bald Tower	Laurel Cr Mine; Splash Dam	7
Cultural and /Natural (CN): subtotal 0							
Sub Totals:		3	4	7	10	12	36

TALLULAH DISTRICT – Additional Quads

Type of Special Places	Descriptor	Tallulah Falls Quad	Tiger Quad	Whet-stone Quad			Sub Totals:
Natural (NZ): 29 + 5 = 34							
	Waterfall (WF)	Minnehaha WF	Panther; Angel; Stonewall	Dicks Cr WF			5
Cultural (CZ): 7 + 1 = 8							
	Cultural Site		CCC Remnants				1
Cultural and /Natural (CN): 0 + 0 = 0							
Sub Totals:		1	4	1			6

Table 3- 214. OCONEE DISTRICT: Special Places

Type of Special Places	Descriptor	Barnett Shoals Quad	Berner Quad	Dames Ferry	Eatonton Quad	Gray Quad	Sub Totals:
Natural (NZ): subtotal 8							
	Waterfall (WF)	Two No name					2
	Water Feature		Wise Creek Shoals	Hichiti Trail, Falling Cr		Miller Creek Lake	3
	Botanical Site (BS)		FS Rd 1019 fall foliage		Burgess Mnt; Murder Creek RNA		3
Cultural (CZ): subtotal: 0							
Cultural and /Natural (CN): subtotal 0							
Subtotals		2	2	1	2	1	8

OCONEE DISTRICT – Additional Quads

Type of Special Places	Descriptor	Gresham-ville Quad	Haddock Quad	Resseaus Cross-roads	Rock Eagle Quad	Smithboro Quad	Stanford-ville Quad
Natural (NZ): 8 + 7 = 15							
	Waterfall (WF)			Murder Creek Falls			
	Water Feature (WA)	Dyar Pasture; Oconee Rv	Miller Creek Lake	Lake Sinclair			Hillsboro Lake
	Botanical Site (BS)					Murder Ck RNA	
Cultural (CZ): 0 + 3 = 3							
	Cultural (CS)	Scull Shoals			Oconee Office		Cox-Mathis House
Cultural and /Natural (CN): 0 + 0 = 0							
Subtotals:							

Table 3- 215. Summary of Special Places on the Chattahoochee and Oconee

General Category	Armuchee	Cohutta	Toccoa	Brass-town	Chat-tooga	Tallulah	Oconee	Total
Natural	7	20	29	48	8	34	15	161
Cultural	2	5	0	9	1	8	3	28
Natural/ Cultural	2	5	4	2	0	0	0	13
	11	30	33	59	9	42	18	202

Environmental Consequences

Scenic Integrity Objectives (SIO)

Based on issues and concerns identified during the public scoping process, a set of prescriptions were created, which included the visual quality objective or scenic integrity objective of each acre of land. This information was known for existing conditions from the Scenery Management System Inventory conducted forest-wide beginning in 1994. During this inventory, National Forests lands were inventoried to identify Scenic Classes from 1 (highest level) to 6, and with that came Scenic Integrity Objectives. This information was projected for the new prescriptions from use of a matrix prepared by the SAARWAG Team during Plan Revision process. These prescriptions were used to build different "alternatives" to the issues and concerns. Desired future conditions were described for each prescription. Every Scenic Class was assigned Scenic Integrity Objectives by prescription. When prescriptions vary, scenic integrity is impacted and changed to match the desired future conditions.

The scenic resource is affected by management activities altering the appearance of what is seen in the landscape. Short-term scenic effects are usually considered in terms of degree of visual contrast with existing or adjacent conditions that result from management activity. The scenic landscape can be changed over the long term or cumulatively by the alteration of the visual character. Management activities, which result in visual alterations inconsistent with the assigned SIO, even with mitigation, affect scenery. Management activities that have the greatest potential of affecting scenery are road construction, vegetation management, insect and disease control, special use utility rights-of-ways, and mineral extraction. Other management activities that also can effect the scenic resource at a lesser degree are threatened and endangered (T&E) species habitat management, prescribed burning, fire suppression, land exchange, old growth forest management, recreation, and administrative site facility construction, and wildlife management. See Table 3- 216 and Table 3- 217 for SIO allocations by alternative.

Table 3- 216. SIO Acres for the Chattahoochee National Forest by Alternative

Scenic Integrity Objective	A	B	D	E	F	G	I-m
Very High	171,968 23%	170,492 23%	173,882 23%	237,566 32%	151,947 20%	309,523 41%	196,040 26%
High	267,723 36%	253,293 34%	243,105 32%	204,246 27%	241,463 32%	319,417 43%	246,583 33%
Moderate	255,784 34%	250,782 33%	267,684 36%	290,808 39%	264,722 35%	113,841 15%	249,673 33%
Low	55,527 7%	76,437 10%	66,417 9%	17,673 2%	93,223 12%	8,311 1%	58,705 8%
Very Low	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Total Acres	*751,002*	*751,004*	*750,998*	*750,293*	*751,355*	*751,092*	*751,001*

Source: Scenery Matrix for Landscape Setting & SIO by RX as of 10/24/2003

Table 3- 217. SIO Acres for the Oconee National Forest by Alternative

Scenic Integrity Objective	A	B	D	E	F	G	I
Very High	1,327 1%	1,848 2%	1,029 1%	4,456 4%	1,217 1%	2,062 2%	2,340 2%
High	34,814 30%	32,531 28%	40,618 35%	31,758 28%	32,087 28%	45,353 39%	34,272 30%
Moderate	65,019 56%	66,859 58%	59,416 52%	66,113 57%	66,975 58%	55,860 48%	65,394 57%
Low	14,062 12%	13,983 12%	14,157 12%	12,894 11%	14,942 13%	11,945 10%	13,217 11%
Very Low	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Total Acres	*115,222*	*115,221*	*115,220*	*115,221*	*115,221*	*115,220*	*115,223*

Source: Scenery Matrix for Landscape Setting & SIO by RX as of 10/24/2003

Areas assigned a Very High SIO in all Alternatives (A<B<D<E<G<I-m):
Chattahoochee:
1.A: Designated Wilderness/Wilderness Study Areas
1.B: Recommended Wilderness Study Areas
2.A: Wild & Scenic Rivers
2.B.1: Recommended Wild Rivers
6.A Old Growth with Natural Process Emphasis
12.B: Remote Backcountry Recreation, Non-motorized
Oconee:
4.B: Research Natural Area
6.A: Old Growth with Natural Process Emphasis

Areas assigned a Very High and High SIO in all Alternatives (A, B, D, E, G, I-m):
Chattahoochee:
2.B.2: Recommended Scenic Rivers
3.A: National Scenic Areas
3.C: National Recreation Areas
3.D: Proposed National Recreation Areas
4.F.2: Regional Forester Scenic Areas
12.A: Remote Backcountry Recreation with Few Open Roads
Oconee:
2.B.2: Recommended Scenic Rivers
4.D: Botanical and Zoological Areas

Areas assigned a spectrum of high/medium and Low SIO in all alternatives:
Chattahoochee:
7.C OHV Use areas
8.A.1 Mid to Late Successional Forest Emphasis
8.B Early-successional Habitat Emphasis

10.A Sustained Yield Timber Management
10.B High Quality Forest Products Emphasis
Oconee:
3.B Experimental Forest
8.D Red-Cockayded woodpecker habitat
8.D.1 Red-Cockayded woodpecker habitat
9.G Piedmont Hardwoods
9.H Manage/Maintain and restore plant associations to ecological potential

In contrast to the No Action (F) alternative on the Chattahoochee:

All alternatives would increase in Very High SIO
All alternatives, except E, would increase in High SIO
Only alternative E would increase in moderate SIO
All alternatives would decrease in Low SIO

In contrast to the No Action (F) alternative on the Oconee:

All alternatives would increase or stay the same in Very High SIO
All alternatives, except E, would increase or stay the same in High SIO
All alternatives, except D and G, would increase or stay the same in Moderate SIO
All alternatives would decrease in Low SIO

Alternatives that receive the highest acreage to Very High, High and Moderate SIO on both the Chattahoochee and the Oconee would be alternatives E and G. These alternatives would result in more protection and enhancement to the scenic resources than alternatives having fewer acres assigned to the higher SIO. Using a Low SIO as a guide, the least acres in Low on the Chattahoochee and the Oconee would be with alternatives E and G. The most acres in the Low SIO on the Chattahoochee would be Alternative B, and the Oconee would be Alternative D. A medium amount of Low SIO could be found on the Chattahoochee in Alternatives D, A, and I; the Oconee would be the A, B, and I.

Negative impacts to scenery from road construction, vegetation management, insect and disease control, special use utility rights-of-ways, and mineral extraction would be the greatest in Alternative B on both the Oconee and the Chattahoochee. Impacts would be the lowest in Alternative G on both the Oconee and Chattahoochee because of the timber management practices. Many of these impacts would be avoided by implementing mitigation measures.

Environmental Consequences

Landscape Settings
The Southern Appalachian Assessment used two systems to determine amounts and types of settings across the Southern Appalachians. The Recreation Opportunity Spectrum (ROS) (U.S. Department of Agriculture 1990) provides settings descriptors that integrate physical, social, and managerial characteristics to classify the landscape. The Scenery Management System (SMS) accounts for natural and cultural systems and their influence on the landscape. By combining the two

systems, landscape setting descriptions were developed with recreation and scenery components. The table below describes how many acres will be in each Alternative given the current proposed direction. For descriptions of each Landscape Character Setting, please see *The Southern Appalachian Assessment, Technical Report 4 of 5*, page 140.

Table 3- 218. Landscape Setting Direction for Acres for the Chattahoochee NF by Alternative

	A	B	D	E	F*	G	I
SPNM, NE	137,263 18%	147,704 20%	145,825 19%	161,427 22%	124,344 17%	185,479 25%	133,641 18%
SPNM, NA	53,997 7%	49,570 7%	72,377 10%	77,178 10%	98,368 13%	64,662 9%	83,178 11%
SPM, NA	6,272 1%	5,023 1%	11,193 1%	8,210 1%	13,817 2%	6,685 1%	8,174 1%
RN, NA	553,471 74%	548,708 73%	521,608 69%	503,476 67%	514,826 69%	494.268 66%	526,011 70%
Total	751,003	751,005	751,003	750,291	751,355	751,094	751,004
	100%	100%	100%	100%	100%	100%	100%

Source: Scenery Matrix for Landscape Setting & SIO by RX as of 10/24/2003

Table 3- 219. Landscape Setting Direction for Acres for the Oconee NF by Alternative

	A	B	D	E	F*	G	I
SPNM, NE	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
SPNM, NA	1,004 1%	1,004 1%	1,004 1%	1,004 1%	1,006 1%	1,004 1%	1,004 1%
SPM, NA	1,755 2%	800 1%	1,645 1%	2,041 2%	1,388 1%	1,811 2%	2,216 2%
RN, NA	112,463 98%	113,417 98%	112,571 98%	112,175 97%	112,827 98%	112,406 98%	112,002 97%
Total	115,222	115,221	115,220	115,220	115,221	115,221	115,222
	100%	100%	100%	100%	100%	100%	100%

Source: Scenery Matrix for Landscape Setting & SIO by RX as of 10/24/2003

Prescribed Fire

All alternatives propose prescribed burning on an annual cycle. The Chattahoochee National Forest provides for more burning in Alternatives B and D. The Oconee National Forest provides for more burning in Alternatives A and D. Drifting smoke and blackened vegetation and charred tree trunks would be the main negative visual effect. Visual contrast from fire line construction would also be evident. The contrast levels and duration vary with fire intensity. Blackened vegetation usually lasts a short time but charring of trees may be evident for many years. Repetitive burning reduces overall visual diversity. It often results in loss of valued mid- and under story species such as flowering dogwood, but tends to promote herbaceous flowering species.

Prescribed fire repeated over time produces stands with open under stories allowing views farther into the landscape.

On the Chattahoochee, Alternatives C, G, and E will produce the lowest impact from burning. Alternatives I, A, and H will produce a more moderate program of burning. On the Oconee, Alternatives C and G will produce the lowest impact from burning. Alternatives H, E, B, and I will produce about the same amount of burning.

Insect infections and diseases:
Insect infections and diseases can cause strong, unattractive contrasts in the landscape. Management efforts to control insect infestations and diseases can minimize or reduce effects. Control efforts that include removal of infected trees and buffer areas often appear as clear cutting to forest visitors. These impacts can occur in areas of high scenic value.

On the Chattahoochee there are more insects and diseases (eleven) to be dealt with than the Oconee. A summary of Pest Trends by alternative provides a prediction of the response of the pests/health issues to the alternatives. Pests were rated for increasing or decreasing or for no change. Those Alternatives that show pests increasing, or getting worse over time, would be C, E, G, and H. The alternative that shows a stable disease trend would be F. The alternatives that would show a decrease in disease trend (getting better over time) would be B and D.

On the Oconee, there are about seven pest/health issues. The alternatives that show pests increasing, or getting worse over time, would be B, C, G, and H. Those alternatives that show a stable disease trend would be A, E, and F. Those alternatives that would show a decrease in disease trend (getting better over time) would be D.

Utility Rights-of-Way (ROW)
ROWs have a high potential of affecting the scenic resource for a long duration. Cleared ROWs and utility structures contrast and may be incongruent with existing landscape. Cleared ROWs contrast in form, line, color, and texture when compared to the natural appearing landscape.

Minerals
Mineral management and development activities can involve major landform alteration, as well as form, line, color, and texture contrasts, causing substantially adverse scenic impacts. There are no known cumulative effects of mineral activity on the visual quality of the forests.

Travel Management
Road maintenance, especially rights-of-way maintenance, affects scenery. Mowing frequency and timing alters the appearance of the landscape. Road construction introduces unnatural visual elements into the landscape and causes form, line, color, and texture contrasts. Road management controls how much of the landscape is seen by having roads open or closed. Alternatives B, F, E, G, and I would likely require the least amount of new road construction, while Alternatives A and D would have more new road construction due to timber management.

Vegetation Management:
Vegetation management has the great potential to alter the landscape and impact the scenic resource. Timber harvest practices can cause long-term effects on scenery by altering landscape character through species conversion, reduction in species diversity, manipulation of the prominent age class, and alteration of opening size, location, and frequency. The potential effects may be positive or negative, depending on their consistency with the desired future condition of the landscape.

Of the management applications, even-aged management may be the most impacting. Among the even-aged regenerations methods clear cutting and seed-tree harvest produces the highest visual contrasts because they remove the most forest canopy and create openings. These openings would vary in their effects on scenery depending on size, shape, location, and nearness to other openings. Openings that repeat the size and general character of surrounding natural openings and the landscape character would impact scenery the least. On the Chattahoochee, Alternative B and D have the greatest vegetation management (65 percent), and Alternative E has the least at 17 percent. On the Oconee, Alternatives D, A, and I all have over 79 percent suitable acres, while the alternative with the least would be G (still having 66 percent). Singletree selection and group selection harvest are normally less evident because they do not cause large openings in the canopy. Uneven-aged regeneration methods can affect scenery, causing contrasts in form, line, color, and texture from slash production. All impacts as a result of timber harvest are short-term because of rapid vegetation growth.

Site preparation activities affect scenery by exposing soil and killing other vegetation. These effects are generally short-term. Site preparation usually improves the appearance of the harvest area by removing the unmerchantable trees and most of the broken stems. Stand improvement work can affect scenery by browning the vegetation, reducing visual variety through elimination of target species.

Forest wide prescribed burning and midstory manipulation in Red-cockaded Woodpecker cluster sites are common wildlife management practices. Midstory removal and prescribed burning reduce over story diversity, often resulting in the loss of valued scenic resources such as flowering dogwoods. Midstory removal and prescribed burning in time produces stands with open under stories allowing views into the landscape. Only the Oconee will be involved in the restoration of Red-cockaded woodpecker habitat.

Recreation facilities are deviations to the natural landscape. Forest Service recreation facilities are designed to blend into the landscape without major visual disruption. Alternatives A and E emphasize recreation opportunities. Alternatives B, D, G, and I emphasize other values on National Forest land and therefore provide less recreation opportunities.

Designation of wilderness will generally cause positive effects to the scenery. Old-growth forest character will be created over time.

For the most part, Special Places are not affected across Alternatives. However, the inventory list is not exhaustive, and will change over time as more sites are inventoried. Buffers needed to protect the character of each individual special place will vary by site.

Special Areas

Each of the alternatives considered includes a set of 'special areas' of various kinds. Some of these are Regional Forester designations that were first made in the 1960's, including several scenic areas. Other designations are botanic or zoologic areas, cultural resource areas, and developed recreation sites of the 1985 plan. Early in the planning process, the interdisciplinary team adopted as a convention in all alternatives that these special areas would continue to receive equal or greater protection than under the 1985 plan.

Generally, these areas are included in the series of management prescriptions beginning with a "4." For example, the Botanical/Zoological areas are in prescription 4.D. In some alternatives, all of these areas receive equal or greater protection than under the 1985 plan, and the land area involved is expanded. In other alternatives, the land area may just stay the same. In other alternatives, there may be a shift in management emphasis toward a different resource.

These 'special areas' are not treated as an effects topic in their own right. Rather the allocations of Alternative F show the situation before the plan revision began, and the various alternative maps and tables show changes for these areas.

WILD AND SCENIC RIVERS

Affected Environment

The Wild and Scenic Rivers Act *(Public Law 90-542: 16 USC 1271-1287, October 2, 1968)* and its amendments provide for the protection of selected rivers and their immediate environments. To be considered for designation, rivers must possess one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Designation preserves rivers in free-flowing condition, protects water quality and protects their immediate environments for the benefit and enjoyment of present and future generations.

Most rivers are added to the National Wild and Scenic Rivers System (National System) through Federal legislation after a study of the river's eligibility and suitability for designation. The Forest Service is required to consider and evaluate rivers on lands they manage for potential designation while preparing their broader land and resource management plans under *Section 5(d)(1) of the Act*.

According to the Southern Appalachian Assessment (SAA), the national forests in the Southern Appalachians were established early in the 20th century primarily to protect the headwaters of major rivers from land uses that encouraged flooding, erosion, and stream sedimentation. Some would argue that clean water for the surrounding cities is the region's most important product. The Southern Appalachians contain parts of 73 major watersheds; 29 are wholly within the SAA region, 18 have more than one-half within the region. Nine major rivers that rise in the Southern Appalachians provide drinking water to the major cities in the Southeast.

The Southern Appalachians currently have 5 Wild and Scenic Rivers totaling 191.1 miles. All but 45.3 miles are managed by the national forests. Of the 145.8 miles of designated river managed by the forest service, 80.8 miles are classified as wild, 34 miles as scenic and 31 miles as recreational.

Previously Designated Stream (Chattooga River)

On May 10, 1974, the Chattooga River was designated as one of the original streams in the Wild and Scenic River System (WSR). It is the premier whitewater stream of the eastern United States, and at present, is the only WSR stream on the Chattahoochee-Oconee NF. Its 57 designated miles begin in North Carolina and become the state boundary between South Carolina (Sumter NF) and Georgia (Chattahoochee-Oconee NF). The Chattooga is managed under the WSR Act, and more specifically, Management Area 8 (1985 plan direction).

The Sumter NF has the lead for administrative duties on the Chattooga WSR, and is analyzing three alternatives for additional uses on the river. The three specific alternatives analyze input about allowing or not allowing whitewater boating north of the Highway 28 bridge (between Sumter NF and Chattahoochee NF) into North Carolina, and stopping at NC road 1107. At present, no boating is allowed on this river segment. The analysis covers approximately 20 river miles. Whitewater boating has not been

allowed on this river segment since the Chattooga's designation. Safety is the main concern. Table 3- 220 describes the Chattooga WSR segments on the Chattahoochee-Oconee National Forest.

Table 3- 220. Chattooga Wild and Scenic River (Chattahoochee–Oconee)

Classification	Acres	Miles
Wild – 2.A.1	5,998	38
Scenic – 2.A.2	468	2
Recreational – 2.A.3	1,551	8

Streams Found to be Eligible

Of the streams on the Chattahoochee-Oconee NF, 88 were suggested and reviewed for eligibility. Of these, 25 were found to have outstandingly remarkable values to make them eligible for suitability consideration. These streams were classified according to Section 2 of the WSR act *(PL 90-542, Appendix D)*. No streams were under study, review, or in recommended status in the 1985 Plan.

On the Oconee NF, the eligible Piedmont section streams are:

1. Ocmulgee River – 11.1 miles.
2. Murder Creek – 10.7 miles.
3. Little river – 9.7 miles.
4. Falling Creek (Ocmulgee watershed) – 6.6 miles.
5. Cedar Creek – 9.1 miles.
6. Oconee River – 8.5 miles.

On the Chattahoochee NF, the eligible Blue Ridge section streams are:

1. Overflow Creek – extension of the existing West Fork of the Chattooga River WSR, 3.0 miles (Tallulah Ranger District).
2. Panther Creek/Davidson Creek – 8.0 miles Panther, 4.5 for Davidson that flows into Panther. (Chattooga Ranger District).
3. Tallulah River/Coleman River – 5.5 for Tallulah, and 5.0 for Coleman. (Tallulah Ranger District).
4. Chattahoochee River – 8.0 miles (Chattooga Ranger District).
5. Toccoa River – 12.9 miles (Toccoa Ranger District).
6. Conasauga River/Jacks River – 13 miles for Conasauga within the Chattahoochee NF, and 5 miles within the Cherokee NF. The Jacks River flows into the Conasauga and is 14 miles (Armuchee-Cohutta Ranger District).
7. Dukes/Dodd/Davis Creeks – 4.2 miles (Chattooga Ranger District).
8. Cooper Creek – 11.7 miles (Brasstown Ranger District).
9. Cochran's Creek – 3.7 miles (Toccoa Ranger District).
10. Left Fork Soquee – 6.2 miles (Chattooga Ranger District).
11. Corbin Creek – 2.9 miles (Brasstown Ranger District).
12. High Shoals Creek – 2.75 miles (Brasstown Ranger District).
13. Canada Creek – 1.6 miles (Toccoa Ranger District).
14. Moccasin Creek – 5 miles (Tallulah Ranger District).

The mileage for the 25 streams includes either both or one stream bank federally owned, and mileage and acreage doesn't include any private land intermingled along the stream course. See Appendix D, Eligibility, for total miles of private land and National Forest.

Streams that were found suitable for further study

Of the 25 eligible streams, all were studied for suitability for inclusion in the National Wild and Scenic River System. The streams on the Oconee are located within the Georgia Piedmont Ecoregion. The streams on the Chattahoochee are located within the Georgia Blue Ridge Ecoregion.

Table 3- 221. WSR Streams Recommended for further Study for Suitability

Suitable Study Streams	Federal Miles	Corridor Study Acres
OCONEE NF		
Ocmulgee River	11.1	2141
Little River	9.7	2096
CHATTAHOOCHEE NF		
Overflow Creek	3	318
Chattahoochee River	8	1573
Tallulah/Coleman Rivers	5.5/5.0	1760/458
*Conasauga/Jacks Rivers	13/14	1096/80

**Does not include miles/acres on the Cherokee N of which its 5 miles are wild.*

Environmental Consequences – Direct and Indirect

The identification of a river for study through the forest planning process does not trigger any protection under the Act until designation by Congress. Importantly, identifying rivers as eligible, or eligible and suitable, does not create any new agency authority; rather, it focuses the management actions within the discretion of the Forest Service on protecting identified river values. The recommended classification is to be maintained throughout the duration of the forest plan.

In all alternatives, streams not recommended or pending approval by Congress will be allocated to Management Prescription 4.H, Chattahoochee-Oconee Outstandingly Remarkable Streams. This allocation allows a wide range of management for terrestrial plants and animals; threatened, endangered or Forest Service sensitive species; rare communities; aquatics; and riparian habitats while protecting the streams' outstandingly remarkable values. Streams recommended in the plan will be allocated to the 2.B.1, 2 or 3 management prescriptions until designated by Congress. As designation occurs, allocation will change to 2.A.1, 2 or 3.

In all Alternatives (except Alternative F where all streams are recommended for MRx 4.H.) various suitable streams are recommended for further study for inclusion into the WSR System. Those streams' total potential allocations are approximately 9,522 acres.

Increasing visitor uses of the landscape put high stresses on aquatic systems in many areas through non-point source pollution and riparian habitat degradation. Population density in the Southern Appalachians increased from 80 people per square mile in 1970 to 102 people per square mile in 1990, and the area's population is expected to grow an additional 12.3 percent by the year 2010. The SAA was not able to adequately estimate the impacts of increasing population on aquatic resources. However, they did report that land covers, which represent human activity, occupied over 50 percent of the land area at the time of publication (1996) on many large watersheds. Historically, riparian zones were largely forested, but human activities have reduced forestland cover to less than 60 percent in many large watersheds. Development along rivers and streams is not only reducing water quality and habitat on many rivers, but limiting public access for fishing and other river related activities. Protection of rivers and streams through the forest planning process helps to assure high quality, free flowing rivers and streams, as well as river related recreation opportunities.

Sections of rivers classified as wild, would have the highest level of protection. Most impacts to wild rivers would come from upland activities outside of the river corridor. These include vegetation management, construction or removal of recreation facilities, road construction, and sedimentation from soil runoff, visual intrusions, or noise from nearby activities. Overuse within a wild segment corridor would impact the outstandingly remarkable values and the condition of the riparian corridor. Monitoring of use would be necessary to keep overuse from becoming a resource problem.

Fire management within the corridor, prescribed fire, and fire suppression actions, may result in smoke impacts, noise from aircraft, chainsaws and engines, or lasting visual effects from charred vegetation. Search and rescue operations may cause some impact from the use of equipment in the river corridor, but these are predicted to be minimal. Increased public interest and use may result in development of additional trailheads, and trails and access points to the river to accommodate additional public interest and use of the river. However, increased recreation use due to designation may also result in more river related activities (boating, fishing, etc.) and cause localized increases in soil compaction and erosion of stream banks, and the need for limited public access.

River sections classified as scenic or recreational are managed with a wider variety of activities allowed within the river corridor. However forest management would be subordinate to recreational needs and the river's outstandingly remarkable scenic values. Classification as scenic or recreational would therefore be expected to have a wider range of effects from activities outside and within the river corridor. Visual quality, while preserved at a higher level of visual quality objectives than in those alternatives where rivers are not eligible for WSR designation, would be less than the

wild rivers. Sights and sounds of man's activities would be more apparent. Activities that have the greatest potential of affecting rivers and their potential suitability for WSR designation are: over use by river recreationists; road construction; vegetation management; insect, disease and wildfire control; and new special use utility right-of-ways.

Other management activities that also can affect the river to a lesser degree are: threatened and endangered (T&E) species habitat management, wildlife, fisheries management, and recreation facility construction (trails, campgrounds and canoe ramps) and maintenance of those and any existing support facilities.

Cumulative Effects Common to All Alternatives

Water based recreation would increase along any of the streams recommended for further study. Outfitter/guides could be considered on the Ocmulgee River. Streams such as the Ocmulgee and Little River on the Oconee NF, would get more visitors floating these streams, camping within riparian corridors, and generally more use up and down the streams within federal ownership. Restricting, prohibiting or encouraging use on streams could have many different effects.

Lands adjustment (consolidation) of national forest ownership would improve the recreational opportunities along the stream corridor. This could also help the protection of the stream values (ORVs) through more efficient management. Focusing the highest priority for acquisition on lands within stream corridors would benefit recreation and management. Trespassing may occur more often along streams that do have private land ownerships intermingled along their length.

Wildlife habitat improvement activities would be consistent with river management objectives. Vegetation management would focus on protecting and enhancing river values. This could include wildlife habitat improvement, improving aesthetics, removing hazard trees, diseased trees, or controlling insects.

Fire management could affect the scenic ORVs of the rivers by altering visual quality. Mainly, color and texture would be altered by prescribed fire. Smoke could cause short-term effects.

Recommendation and/or designation of the Wild and Scenic River candidates would not have a substantial affect on any commodity output for any alternative.

See other resource areas (soil, water, aquatics, botanical, recreation, etc.) for other potential cumulative effects WSR allocation may have on other resources.

Alternatives

The Conasauga river flows into the Cherokee National Forest (Tennessee) and is approximately 5 miles in length before leaving the Cherokee NF on the west side. From that point the river flows southward on private land back into Georgia. The Chattahoochee NF is the lead forest for studying, analyzing, and carrying through

plan revision, the Conasauga-Jacks River WSR process on both national forests (not private land). This is the same for all alternatives.

Alternative A

The Conasauga River/Jacks River; Ocmulgee River; Chattahoochee River; Overflow Creek, and Little River; are recommended for further study for suitability as National Wild and Scenic Rivers, with a combined allocation of 7,304 acres. The segments of each stream are classified as shown in Table 3- 222.

Table 3- 222. Alternative A –Recommended Study Streams/Segments

Stream	Segments	Segment classes
Ocmulgee River	1	Scenic
Conasauga/Jacks	4	Wild, scenic/Wild, recreational.
Chattahoochee River	4	Wild, recreational, wild, recreational
Overflow	1	Wild
Little River	1	Scenic

A wide range of management for terrestrial plants and animals, T&E, sensitive species, rare communities, aquatics and riparian habitats would be allowed by the classifications of the various corridors in these suitable streams. More active management may occur on recreational segments than on wild or scenic segments. These management activities would be subordinate to the wild, scenic, and recreational values.

Most users at present are from the north Georgia/Atlanta area. There could be some increase to the local economy as people from the southeast come to canoe or recreate on a designated National Wild and Scenic River. Frequently, designation brings with it increased public pressure and interest. Local and state pride (social) could increase, as these rivers add to Georgia's natural attractions as destinations. Increased recognition and pressure (use) could have effects upon the riparian corridors in certain locations. Recognizing these rivers as wild and scenic may help keep the rivers in their present natural conditions and could promote management activities that emphasize and enhance their outstanding remarkable values. The Tallulah/Coleman Rivers are allocated to management prescription 4.H.

Alternative B

The Conasauga River/Jacks River; Ocmulgee River; Chattahoochee River; Tallulah River/Coleman River; and Overflow Creek; are the suitable streams that are recommended for further study for inclusion into the National Wild and Scenic Rivers System. There is a combined allocation of 7,426 acres. The segments of each stream are classified as shown in Table 3- 223.

Table 3- 223. Alternative B –Recommended Study Streams/Segments

Stream	Segments	Segment classes
Ocmulgee River	1	Scenic
Conasauga/Jacks	4	Wild, scenic/Wild, recreational.
Chattahoochee River	4	Wild, recreational, wild, recreational
Tallulah/Coleman	4	Recreational/Wild, scenic, wild
Overflow	1	Wild

Effects of this alternative would be similar to Alternative A. Tallulah/Coleman Rivers have been recommended and Little River is allocated to Management Prescription 4.H.

Alternative D

The Conasauga River/Jacks River; Ocmulgee River; Chattahoochee River; Tallulah River/Coleman River; Overflow Creek; and Little River; are recommended as suitable for further study for National Wild and Scenic Rivers, with a combined allocation of 9,522 acres. The segments of each stream are classified as shown in Table 3- 224.

Table 3- 224. Alternative D –Recommended Study Streams/Segments

Stream	Segments	Segment classes
Ocmulgee River	3	Recreational, scenic, recreational
Conasauga/Jacks	4	Wild, scenic/Wild, recreational.
Chattahoochee River	4	Wild, recreational, wild, recreational
Tallulah/Coleman	2	Recreational/Wild
Overflow	1	Wild
Little River	1	Scenic

Effects of this alternative are similar to alternative A. Only one mile of the Coleman River is recommended for further study that is the wild segment from the confluence with the Tallulah River north one mile to private land. The remaining national forest mileage is allocated to management prescription 4.H.

Alternative E

The Conasauga River/Jacks River; Ocmulgee River; Chattahoochee River; Tallulah River; Overflow Creek; are recommended for further study as National Wild and Scenic Rivers, with a combined allocation of 6,968 acres. The segments of each stream are classified as shown in Table 3- 225.

Table 3- 225. Alternative E –Recommended Study Streams/Segments

Stream	Segments	Segment classes
Ocmulgee River	1	Recreational
Conasauga/Jacks	4	Wild, scenic/Wild, recreational.
Chattahoochee River	4	Wild, recreational, wild, recreational
Tallulah	1	Recreational
Overflow	1	Wild

Effects of alternative E are similar to alternative A except the Ocmulgee River is classified as recreational. Of the Tallulah/Coleman system, only the Tallulah River is recommended for further study. The Coleman River is allocated to management prescription 4.H. This is due to the potential of heavier recreational pressure which the Coleman River could not withstand as the Tallulah is capable of withstanding.

Alternative F

No streams would be recommended for WSR, all suitable streams are allocated into MRx 4.H., 9,522 acres.

Alternative G

The Conasauga River/Jacks River; Ocmulgee River; Tallulah River/Coleman River; Overflow Creek; Little River, are recommended for further study as National Wild and Scenic Rivers, with a combined allocation of 7,949 acres. The segments of each stream are classified as shown in Table 3- 226.

Table 3- 226. Alternative G –Recommended Study Streams/Segments

Stream	Segments	Segment classes
Ocmulgee River	1	Recreational
Conasauga/Jacks	4	Wild, scenic/Wild, recreational.
Tallulah/Coleman	4	Recreational/Wild, scenic, wild
Overflow	1	Wild
Little River	1	Scenic

Effects of alternative G are similar to alternative A except that Little River from the Oconee NF has been included for consideration. The Ocmulgee River has a classification of recreational. The Chattahoochee River is allocated to management prescription 4.H.

Alternative I

The Conasauga River/Jacks River; Ocmulgee River; Chattahoochee River; Tallulah River/Coleman River; Overflow Creek; and Little River are recommended as suitable for further study as National Wild and Scenic Rivers, with a combined allocation of 7,304 acres. The segments of each stream are classified as shown in Table 3- 227.

Table 3- 227. Alternative I – Recommended Study Streams/Segments

Stream	Segments	Segment classes
Ocmulgee River	1	Scenic
Conasauga/Jacks	4	Wild, scenic/Wild, recreational.
Chattahoochee River	4	Wild, recreational, wild, recreational
Overflow	1	Wild
Little River	1	Scenic

Effects of alternative I are similar to alternative A, except that Little River on the Oconee NF is included for further study. The Tallulah and Coleman Rivers are allocated to management prescription 4.H.

HERITAGE RESOURCES

Affected Environment

Heritage resources are areas containing remnants of past human behavior that provide information about how people used and adapted to their environment over time. The Chattahoochee Oconee National Forest is rich with heritage resources that provide a vast information base on the history and prehistory of northern Georgia. These resources range from 10,000 year-old artifacts to Civilian Conservation Corps camps of the 20th century. All heritage resources are fragile and non-renewable, meaning they cannot be rebuilt or remade. Once damaged, the information they contain becomes irretrievable. Therefore, the Heritage Resource Program provides a critical role in preserving our nation's history by identifying, evaluating, protecting, and enhancing heritage sites for future scientific research and public enjoyment.

Humans have occupied Georgia for over 12,000 years. Prehistoric occupations roamed nomadically at first, hunting and gathering for survival. Populations increased and became more settled in permanent villages as people adapted to the warmer climate and changing resource base. The domestication of plants and animals altered the landscape dramatically as people began clearing and maintaining fields for food crops. Complex social organizations flourished as towns grew and interacted with each other.

Prehistoric sites in Georgia represent the following time periods: Paleo-Indian (10,000 – 8,000 BC), Archaic (8,000 – 1,000 BC), Woodland (1,000 BC – 1,000 AD), and Mississippian (1000 AD to 1540 AD). While Paleo-Indian sites are known in adjacent counties, none have been identified on the Forest. Prehistoric site types identified on the Chattahoochee-Oconee National Forest include: (1) lithic scatters, primarily consisting of local quartz, with occasional cherts from the Tennessee River Valleys, Piedmont and Coastal Plain representing a broad range of prehistoric time periods and activities; (2) scatters of plain and decorated pottery sherds and stone implements from Woodland and Mississippian contexts; (3) enigmatic stone piles, isolated or in clusters; (4) rock shelters or caves; (5) petroglyphs; (6) soapstone quarries; (7) remains of prehistoric trails; (8) Indian mounds; and (9) large villages.

The role of fire during the prehistoric period is a well-debated subject. Multiple theories exist in the scientific community concerning when, why, and how often fire was introduced into the environment by humans. Agreement may never be reached as to the specifics, but it is widely accepted that the arrival of aboriginal people to the southeast also brought the arrival of fire as an environmental management tool.

Some scientists believe the use of fire also grew as an important part of the culture as populations increased and became more settled during the Middle Archaic period (+/- 6,000 years ago). Stanturf et al. (2002) maintain that cereal grasses were fired annually, basket grasses and nut trees every 3 years, and grassy savanna hunting areas annually. Brush and undergrowth in forests were burned for visibility and game every 7-10 years. Even in areas of the Southern Appalachian Mountains that were

sparsely settled and not prime hunting ground, major trails that followed rivers were kept open by burning, and escaped camp fires probably caused large areas to also burn (Stanturf et al., 2002).

The historic period begins in the 16th century when Hernando DeSoto and other European explorers marched through the southeast in search of wealth. European contact dramatically altered Native American cultures. Contact brought new technology, religion, and new diseases. Diseases such as small pox and measles devastated the Native Americans who had no natural resistances to them. (Contact period sites are known to exist in adjacent counties, but none are known on the Forest at this time). European colonization gradually spread from the northern and coastal areas, as fur trappers and traders made their way inland. Historic tribes in the area include Creek and Cherokee peoples. The struggle for land began, and after more than a century, ended when the majority of Native Americans were forced to leave their Georgia homes in the 1830s. Nineteenth century Europeans flooded into the area claiming land, expanding Native American fields, and setting up homesteads along water sources. Early settlers moved into the coves and steep slopes of the mountains in search of fertile soil farmed steeper and steeper country As populations increased. Farming (dominated by cotton in the southern Piedmont areas), iron ore and gold mining (in the Ridge and Valley and northern Blue Ridge Mountains), and then logging (Forestwide) became the major occupations until the government obtained the exhausted land in the 20th century. The Civilian Conservation Corps (CCC) helped reclaim the land by planting trees, terracing slopes, fighting wildfires, and building roads and bridges in the 1930s. The CCC is also responsible for the high quality rockwork seen at several recreation areas across the forest.

Historic site types on the Forest include: (1) farmsteads, including building clusters of houses, barns, corn cribs, shed, root cellars, privies, well, and cisterns, terraces, walls and field clearing stone piles; (2) mills and dams: sawmills, shingle, textile and grist mills; (3) mining remains, including tunnels, pits, and heavily washed gullies resulting from hydraulic mining; (4) transportation routes: bridges, trestles, early roads, toll roads, trails, and narrow gauge railroad beds; (5) liquor stills; (6) Civilian Conservation Corps camps and structures, many of which are still in use as recreation areas; (7) Civil War trenches and breastworks; (8) fire towers; (9) extinct towns including mill villages and other white and black settlements; (10) logging remains such as sawdust piles, trenches, canals, and flumes; and (11) cemeteries.

Fire played an important role during the historic period, stimulating the production of forage for livestock and maintaining open agricultural fields. Fire may have also played a role in maintaining the open mountain ecosystems by retarding the advance of woody undergrowth. Agricultural fields and open timber noted in the earliest of European settlements such as the Mulky Creek settlement in the north Georgia mountains suggests the use of frequent burning. The use of woods fires increased with cotton farming to control the bole weevil. This burning was generally an annual event, even though these fires did little to halt the spread of the weevil. (Van Lear and Waldrop 1989).

The Forest Plan identifies Management Prescription 4.E.1 (previously MA 6) for areas of archaeological, cultural or historical significance. Currently there are 174 acres allocated to this management area, including such areas as the Blood Mountain site, Scull Shoals Indian Mounds, Scull Shoals Historical Mill Village Site, Track Rock Gap Petroglyphs, and Chenocetah Fire Tower.

Heritage resource inventories are conducted to consider the effects of the proposed activity on historic properties within the project area prior to any planned management undertaking. These inventories are carried out in consultation with the Georgia State Historic Preservation Officer (SHPO), interested federally-recognized tribes, and Tribal Historic Preservation Officers (THPOs).

The Chattahoochee Oconee National Forest has been conducting heritage resource surveys since 1976. As of 2002, we have surveyed approximately 157,257 acres (18%) of the 865,043 acres total, with 4,306 sites recorded in 26 counties. Of these, 6 are listed on the National Register of Historic Places, 26 are eligible for the National Register, and approximately 3,674 sites are ineligible to the National Register of Historic Places. The remaining 600+ sites are protected until their eligibility can be evaluated.

Table 3- 228. Acres Surveyed on the Chattahoochee-Oconee National Forest 1976-2002

Year	Chattahoochee	Oconee	Total
1976-1992	53,472	50,287	103,759
1993	11,381	1506	12,887
1994	6882	4868	11,750
1995	5765	1276	7,041
1996	7493	2168	9,661
1997	3843	1665	5,508
1998	1021	1422	2,443
1999	105	1294	1,399
2000	227	517	744
2001	1061	143	1,204
2002	804	57	861
TOTAL ACRES	92,054	63,526	157,257
% Surveyed	12% of the Chattahoochee	55% of the Oconee	18% of both Forests combined
Sites Recorded	2,465	1,841	4,306 sites

Sites on the National Register of Historic Places

1. Hoojah Branch: Archaic Site
2. Chenocetah Tower; WPA Fire Tower
3. Site 57: Early Archaic Lithic Workshop
4. Copeland Site, Lamar Site
5. Penfield NR District, Historic Town
6. Wallace Reservoir NR District around Lake Oconee

Sites Eligible to the National Register of Historic Places

1. Cox-Mathis House (Cedar Creek Check Station), Putnam Co.
2. Scull Shoals Mound Complex, Greene Co.
3. Scull Shoals Mill Village, Greene Co.
4. Caroll Site, Prehistoric Lamar Homestead
5. Warwoman Dell Recreation Area
6. Fern Springs WPA Recreation Area,
7. Middle Broad River Archaeological District: Historic communities
8. Rock Mound Complex, C-166
9. Blue Ridge/Black Diamond RR line
10. Rabun Bald CCC Fire Tower
11. Track Rock Petroglyph Site
12. Hickorynut Mountain Petroglyphs
13. Hightower Bald Soapstone Quarry
14. Archaic Lithic Workshops
15. Logan Turnpike, prehistoric/historic trail/road
16. Drop Zone Site, Archaic Site
17. Brown Bottoms Prehistoric Site
18. Dug Gap Confederate Breastworks
19. Hickory Flats-Long Creek Community
20. Mulky Creek Community
21. Brasstown Rock Shelter
22. Tweedel and LaFollette Iron Mines
23. The Pocket CCC Camp
24. Marked Rock Shelter
25. Cedar Creek Mound, Swift Creek period village
26. Hillsboro Saw Mill Kiln: WPA era

Operational site location strategies based on previous experience and prior surveys help predict the locations of sites in the three different physiographic regions of the Forest: Piedmont, Blue Ridge, and Ridge and Valley. Past survey results have determined that sites are not distributed randomly across the landscape. Rather, prehistoric and historic sites concentrate on flat ridges, saddles and gaps, upland flats and knolls, stream river bottoms, terraces and benches, coves, along old trails and roads, and near stream confluences. Rock shelters and rock art, such as petroglyphs are located on steep slopes, often with over 60 percent relief.

Overall, slope and proximity to water emerge as the two primary variables in site probability models. While these variables are major predictors in determining site probability across the Forest, the degree of site prediction effectiveness of each varies from one physiographic region to another. Simply put, it appears slope remains a strong factor in predicting site probability even as distance to the nearest water source increases in areas of steep and rugged terrain.

Future integration of locational and environmental survey data using the Forest's geographic information system (GIS) will lead to revising and updating the site

predictive model. In addition, intensive survey of all probability zone areas will be required for validation.

The current site predictive model allows for three site probability zones: high, moderate, and low. Surveys are conducted on 100% of the high and moderate areas, and between 20% and 100% of low probability areas for each project.

1) High: slopes of 0-10%, and/or close to permanent water sources (floodplains and stream terraces), and slopes of 60+%,
2) Moderate: slopes of 11-20%, farther from permanent water sources, and
3) Low: 21-59% slopes, and far from permanent water sources.

Direct And Indirect Effects

This discussion of direct and indirect effects is based on the assumption that although required inventories are conducted, a previously unknown site could be revealed during, or subsequent to project implementation.

Direct effects could result from both natural and human-caused events that disturb, transfer or increase use pressure of the land, such as:

- Soil disturbance to varying depths
- Burning
- Soil compaction or rutting
- Alteration of a site's immediate or proximal setting (for example — intrusive visual or auditory components)
- Diminished jurisdiction, as in the case of land exchange

Indirect effects may include looting or vandalism due to increased access, or degradation or silting of a historic property resulting from an off-site project.

Cumulative effects to heritage resources from all management activities should be extremely low due to inventory, assessment, protection, and mitigation measures prior to project implementation. Natural processes such as erosion, weathering, and wildfire could have a cumulative effect on sites and artifacts over time.

Direct And Indirect Effects By Activity

Wildfire

High-temperature wildfire could directly affect surface or shallow archeological sites, standing structures, or cemetery markers. Studies show that wildfire - and in some cases, hot prescribed burns - may alter the character and condition of surface artifacts, resulting in melted glass, "crazed" ceramics, and burned wood. Sites of the historic period are most subject to damage because many of these properties exhibit surface artifacts.

Surface components of shallow prehistoric sites may also be damaged because surface temperatures may further alter, or heat treat, chert and flint artifacts. This

alteration could skew laboratory analyses, distorting the percentages of prehistorically heat treated vs. non-heat treated materials, thus reducing their value as indicators of measurable prehistoric activities represented at specific locales. Indirect effects could include erosion due to burned vegetation cover, or further deterioration of artifact or feature condition following damage by high temperatures.

Fire control lines (firelines) constructed using tractor-plows would physically displace artifacts down to roughly 30 cm below ground surface (bgs). The nature of displacement is primarily laterally, as the plow folds soil to each side of the fireline over a swath about 1 meter wide. Multiple parallel lines are used for wildfire control, and may possibly disturb larger portions of small sites. Under normal conditions heritage surveys do not precede emergency fireline construction, thus there is high potential for damage to unknown properties during wildfire suppression. Firelines constructed using a disc harrow would have less impact than those made with a tractor-plow. In these cases lateral soil displacement would be minimal, but some fragile surface or shallow artifacts (up to 15 cm bgs) may be broken. Indirect effects may include erosion losses due to burned vegetation cover, or further deterioration of artifact or feature condition following damage by high temperatures.

Prescribed Fire

Prescribed fire tends to be much cooler in temperature and less intense overall because it is conducted under specific conditions. Prescribed fire could directly affect surface artifacts and features, or very shallow sites, but to a much lesser degree than wildfire because of reduced temperatures at the surface. Wooden structures or cemetery markers may still be physically distorted and damaged.

Cumulative effects may occur as a site or artifact is repeatedly burned in subsequent cycles of prescribed fire management. However, the number of past wildfire and prescribed fire on the Forest has likely made future affects to surface archeological sites other than wooden structures negligible.

Land Exchange

Exchange of federal land containing heritage resources to a non-federal agency or private ownership is considered to have a high potential for adversely affecting heritage resources because protection under federal law would no longer apply to the heritage resources contained within an exchanged tract.

Special uses

The potential direct effects in special use areas would be low in most cases. This is partially due to the frequency of small acreages involved in special uses, and the limitations imposed upon special uses for the purpose of resource protection. Indirect effects in special use areas, however, can occur through erosion and vandalism of historic properties resulting from increased access and use of permit areas.

Recreation

In general, direct effects from recreation and public use could result from facility development or increased human access by moving, breaking, compacting, or

otherwise altering the soil, artifacts, and features at sites. Facility development could severely affect unknown sites as concrete slabs or footing construction disturbance could extend into or below soils strata containing archaeological deposits. Lighter facilities, such as boardwalks, piers, or structures located on pier foundations, would present less potential for damage. The construction of structures could introduce a visual effect that conflicts with or diminishes the setting and nature of a historic property. Indirect effects could include erosion or vandalism of significant historic properties facilitated by public access following construction of structures in the immediate vicinity.

Dispersed recreation activities provide some of the highest potential for impact to significant heritage sites. The majority of the forest (99.9 percent-) is open for dispersed non-motorized recreation activities such as hiking, bird watching, backpacking, camping, etc. Heritage resources are especially vulnerable to dispersed recreation uses because of the repetitive human dynamic; where people want to recreate today, is where people have wanted to be for thousands of years. In wilderness areas for example, popular camping areas are often concentrated where prehistoric and historic camping areas were once located. Easily traversed landscape routes such as trails and roads were used repetitively over hundreds of years. Therefore, there is high potential for direct effects to significant heritage sites by dispersed recreation use. Direct effects could include soil compaction due to increased foot travel or artifact displacement and damage from heavy activity use. An indirect effect may be that increased access to a given locale could increase archeological site vandalism and/or looting in that area.

Watershed/Plant Restoration Activities

Watershed restoration and plant association restoration projects could result in direct effect, depending on the treatments proposed. Restoration activities typically concentrate in overused and/or illegally created recreation areas. Closing roads and trails would have no impact, but vegetative restoration activities (e.g. grading, seeding and mulching eroded areas) could disturb the surface and shallow subsurface features of heritage sites. Intact artifacts and features could be physically displaced, compacted or destroyed. In cases where fill is added, a site may be buried deeper.

Road Construction

New road construction could totally impact unknown sites, given variables specific to each portion of construction. Disturbance within a construction corridor may remove soil containing cultural deposits to depths exceeding a meter. A site may be buried in cases where fill is added. This could protect the site from compaction or rutting, while at the same time essentially precluding additional scientific study using conventional technology. Maintenance or reconstruction of an existing road presents less potential for the disturbance of intact archeological sites because the majority of damage to an unknown site likely occurred during the initial road construction. Indirect effects may include erosion immediately after construction due to severe weather. Artifact exposure during construction could also encourage site vandalism.

Vegetative Management

Tree harvests may affect unknown resources as heavy machinery and vehicles disturb soil. Site preparation using a heavy drum chopper may penetrate the ground surface, and crush surface or shallow cultural deposits. Shearing and windrowing would offer more potential for adverse effects than any site preparation method because pushing stumps and slash into windrows for subsequent treatment displaces a substantially deeper amount of soil, often exceeding 30–40 cm in depth.

Mid-story tree removal for red-cockaded woodpecker management may cause minimal impacts to unknown sites. This would be reduced if removal is accomplished manually rather than using heavy equipment, and trees are left in place rather than skidded to log landings.

Wildlife Opening Construction

Construction of new wildlife openings using heavy machinery to cut and remove trees, plow and then plant seed, has a high potential to directly affect significant heritage sites, as artifacts within shallow sites may be physically altered, moved, or crushed. Once established, routine maintenance (plowing and planting) should have minimal effects. Indirect effects may occur if artifacts are exposed each time the area is plowed, thereby increasing sun/wind/rain exposure and increasing the potential for looting.

Southern Pine Beetle Suppression Treatments

Cut and Remove, and Cut and Leave suppression treatments could directly affect sites by varying degrees. Cut and Remove direct effects could be severe as trees are cut and skidded to log landings for removal. Effects would be similar to tree harvest effects. Cut and Leave impacts would be minimal, as trees are cut (often manually using chainsaws) and left in place. There could be potential negative impacts if trees are felled on above ground features such as house sites and cemeteries, or if temporary access roads are constructed through a site.

Direct And Indirect Effects By Alternative

The effects of land exchanges and special uses would be similar among all alternatives. Analysis of effects on significant heritage resources located on lands to be exchanged out of Forest Service ownership, or on lands placed under special use permits, is performed programmatically in compliance with existing laws and regulations (*36 CFR 296, 800* and future MOUs with the Georgia SHPO and interested federally recognized tribes) and occurs on a case-by-case basis apart from alternatives. As such, the potential for effects on heritage resources resulting from land exchange from federal jurisdiction, or special use actions would be minimal.

Also unaffected by alternatives are the protected riparian zones. The Chattahoochee-Oconee site predictive model indicates that streamside riparian area zones are high site probability areas. In all alternatives, ground-disturbing activities would not be allowed in these riparian zones (within 100 feet of a stream). The numbers in the chart below represent the riparian acres as modeled through GIS on the larger blue-line streams. This translates to an estimate of high site probability acres that offer

greater site protection and less potential impact from ground disturbing activities in all alternatives.

Riparian/ High Probability Acres on the Forest

Piedmont	8,598 acres
Ridge and Valley	5,792 acres
Blue Ridge	51,844 acres

In all alternatives, increases in recreational use – especially in key areas on rivers and streams, knolls and coves – would require increased archaeological inventory and evaluation to locate unknown resources and assess potential impacts.

Sixteen management prescriptions in four program areas (Recreation, Wildlife, Watershed Restoration and Timber) have the greatest potential for effects on heritage resources. These management prescriptions vary in magnitude (acres) by alternative. The management prescriptions include:

Recreation
- 7.C: OHV Use Areas
- 7.D: Concentrated Recreation Zones
- 7.E.1: Dispersed Recreation Areas
- 7.E.2: Dispersed Recreation Areas with Vegetation Management

Wildlife
- 8.A.1: Mid to late-Successional Forest Emphasis
- 8.B: Early-Successional Habitat Emphasis
- 8.D: Red-cockaded Woodpecker Habitat Management Areas
- 8.D.1: Red-cockaded Woodpecker Sub-Habitat Management Areas
- 8.E.1: Ruffed Grouse Habitat Management Areas
- 8.E.3: High Elevation Early-successional Habitat

Restoration
- 9.A.3: Watershed Restoration
- 9.G: Restoration
- 9.H: Management, Maintenance, and Restoration of Plant Associations

Timber
- 10.A: Sustained Yield Timber Management
- 10.B: High Quality Forest Products Emphasis
- 10.E: Timber Management with Recreation Emphasis

Acres by alternative for each high ground disturbing management prescription are presented in Table 3- 229 below:

Table 3- 229. High Ground Disturbing Management Prescription Acres by Alternative

	High Ground Disturbing	Alternative					
		A	B		E	G	I
	RECREATION						
7.C	OHV Use Areas	18224	-	6255	2730	2730	-
7.D	Concentrated Recreation Zones	4706	1723	5862	2532	2959	-
7.E.1	Dispersed Recreation Areas	62127	2518	4027	279469	5526	77745
7.E.2	Dispersed Recreation Areas with Vegetation Management	5	5	5	5	5	29734
	Recreation total	**85062**	**4246**	**16149**	**284736**	**11220**	**107479**
	WILDLIFE						
8.A.1	Mid- to Late-Successional Forest Emphasis	33588	186459	164	29171	14279	65884
8.B	Early-Successional Habitat Emphasis	13764	17266	-	46645	-	-
8.D	Red-cockaded Woodpecker Habitat Management Areas	30154	30154	30743	30154	30154	31412
8.D.1	Red-cockaded Woodpecker Sub-habitat Management Areas	15922	15874	15922	15874	15922	15969
8.E.1	Ruffed Grouse Habitat Management Area	-	2556	-	-	-	-
8.E.3	High Elevation Early-successional Habitat	-	-	-	-	-	6875
	Wildlife total	**93428**	**252309**	**46829**	**121844**	**60355**	**120140**
	RESTORATION						
9.A.3	Watershed Restoration Areas	7898	18516	-	7263	1405	17767
9.G	Restoration	26082	25946	26671	21403	21878	
9.H	Management, Maintenance, and Restoration of Plants	3034	215896	13465	1002	30026	213472
	Restoration total	**37014**	**260358**	**40136**	**29668**	**53309**	**231239**
	TIMBER						
10.A	Sustained Yield Timber Management	17331	135	210064	-	-	-
10.B	High Quality Forest Products Emphasis	198479	-	138337	6815		-
10.E	Timber Management with Recreation Emphasis	15187	-	68658	-	-	-
	Timber total	**230997**	**135**	**417059**	**6815**	**0**	**0**
	TOTAL ACRES BY ALTERNATIVE	**446500**	**517049**	**520172**	**443064**	**124885**	**458858**

Source: GIS stands data layer.

GIS modeling using slope indices as the primary probability criterion, provides a comparison of high site probability areas within each alternative that could be directly affected by proposed ground disturbing actions. High site probability areas within the Oconee Piedmont region were determined by proximity to a permanent water source. Areas 500 feet or less from a permanent water source were rated high; areas 500-1,000 feet from a permanent water source were rated moderate; and all other areas low. Determination of slope within the three areas at the project level would lead to some adjustment of acreage within each probability zone. Table 3- 230 presents an estimated acreage per alternative of high probability areas within the sixteen high ground disturbing management prescriptions mentioned above. The data are presented for the three separate physiographic regions, and also by a forest-wide total at the bottom.

Table 3- 230. Site Probability Acres within High Ground-Disturbing Management Prescriptions

Key: HP: High Site Probability Acres: 0-10% slope, 61%+ slope
MP: Moderate Site Probability Acres: 11-20% slope
LP: Low Site Probability Acres: 21-59% slope

Oconee Piedmont
Key: HP: High Site Probability Acres: 0-500 ft from permanent water source and 0-10% slope, 61%+ slope
MP: Moderate Site Probability Acres: 500-1,000 ft from permanent water source and 0-20% slope
LP: Low Site Probability Acres: 1,000+ ft from permanent water source and 0-59% slope

RIDGE AND VALLEY (ARMUCHEE)
ALTERNATIVES

A	B		E		I
HP: 7,904 MP: 8,530 LP: 23,879	HP: 8,781 MP: 9,338 LP: 1,220	HP: 9,438 MP: 10,359 LP: 33,321	HP: 5.340 MP: 4,787 LP: 13,256	HP: 687 MP: 703 LP: 1,859	HP: 7,626 MP: 8,316 LP: 23,639

BLUE RIDGE FOREST ACRES (CHATTAHOOCHEE)
ALTERNATIVES

A	B	D	E	G	I
HP: 45,774 MP: 50,708 LP: 200,428	HP: 54,524 MP: 55,017 LP: 248,290	HP: 56,906 MP: 61,711 LP: 252,121	HP: 44,243 MP: 50,657 LP: 196,621	HP: 8,571 MP: 10,026 LP: 26,639	HP: 50,136 MP: 56,932 LP: 215,192

PIEDMONT FOREST ACRES (OCONEE)
ALTERNATIVES

A	B		E	G	I
HP: 35,837 MP: 30,294 LP: 26,883	HP: 35,669 MP: 30,256 LP: 26,752	HP: 35,964 MP: 30,384 LP: 26,987	HP: 38,048 MP: 25,395 LP: 23,518	HP: 28,551 MP: 24,485 LP: 23,306	HP: 33,727 MP: 29,961 LP: 27,794

TOTAL: FOREST-WIDE ACRES
ALTERNATIVES

A	B	D	E	G	I
HP: 89,575 MP: 89,532 LP: 251,190	HP: 98,974 MP: 94,611 LP: 276,262	HP: 102,308 MP: 102,454 LP: 312,429	HP: 79,631 MP: 80,839 LP: 233,395	HP: 37,809 MP: 35,214 LP: 51,804	HP: 91,489 MP: 95,209 LP: 266,625

Source: GIS analysis

Alternative A

Alternative A ranks fourth out of the six alternatives in terms of overall acres of potential high ground disturbing activities with 430,297 acres or 49 percent of the total forest. Of these, 89,575 acres fall within high site probability areas.

Timber management activities under Alternative may be as high as 230,997 acres. Potential risk for direct effects to heritage sites from timber management activities is high.

Prescribed burn acres for Alternative A is estimated at 24,800-acres/per year with approximately 82 miles of control lines needed. The majority of burn acres for all alternatives would occur on the Oconee District. The Oconee has the highest density of sites on our forest, requiring increased levels of survey and potential resource mitigation measures. Potential risk for impact to unknown heritage resources from prescribed fire and control line construction would be relatively high for this alternative.

Alternative A recommends the largest number of Remote Backcountry Recreation areas with few open roads (42,312 acres).Potential risk to sites from ground disturbing activities in backcountry areas would be extremely low, while potential impacts from dispersed recreation use would be relatively high. Dispersed recreation uses often concentrate in high probability site areas, as people tend to use the same locales over thousands of years. Sites impacted in remote backcountry areas with few roads may go unnoticed for long periods. Site monitoring and assessments may be limited.

Alternative B

Potential ground disturbing activities areas include 469,847 acres, or 54 percent of the forest. Of these acres, 98,974, or 11 percent occur in high site probability acres. Alternative B has the second highest potential for adverse effects to heritage resources.

While timber management is not emphasized in this alternative, the acres of ground disturbing activities remain high due to proposed wildlife management activities (225,309 acres) and watershed and plant restoration activities (260,358 acres). Wildlife activities cover a broad range of activities including prescribed burning, and various forms of vegetative management to encourage a variety of succession stages. Restoration activities may occur in site locales, and would require extensive site mitigation and monitoring. Surface and shallow sites would be most threatened by these types of restoration activities.

In Alternative B, 4,246 acres are proposed for possible recreation development activities. The potential for direct and indirect effects is low in this alternative, as recreation facility development would be supported only if compatible with wildlife requirements. Also, the acreage proposed for recommended wilderness study areas, and remote backcountry recreation areas would be limited.

Prescribed burn acres proposed total 300 acres, and 77.6 miles of control line. Potential effects from prescribed burn activities would be relatively moderate for this alternative.

Alternative B could have the highest adverse affects to sites from OHV access. This alternative proposes the highest acreage (445,754 acres) allowing and promoting OHV access. Cross-country travel could be allowed on roads, increasing the potential risk of damaging heritage sites adjacent to roads by user-created trails. User-created trails have a high potential to directly affect sites through artifact and feature displacement or indirectly through erosion from trails adjacent to sites.

Alternative D

Alternative D could have the highest potential for direct and indirect effects to heritage resources. This alternative proposes the highest number of ground disturbing potential acres, 517,191 or 59 percent of the forest, primarily based on the highest number of proposed timber management acres (417,059 acres). This alternative also proposes the highest number of high site probability acres within those management areas (230,878 acres, or 44 percent of the forest). Because significant sites are most likely to occur within high probability areas, this alternative poses the highest potential impacts overall to heritage resources.

Alternative D proposes the highest number of prescribed burn acres (26,400 acres) and control lines (82.49 miles), and the least amount of wilderness and backcountry recreation areas (134,164 acres) of all alternatives.

Alternative D also proposes increased road construction/access, thereby posing the highest risk for impacts to heritage sites from road construction. Increased road construction and human access to most areas of the forest could result in increased potential for indirect effects such as looting and vandalism of heritage sites.

Alternative D could have a high potential for adverse effects from OHV access. This alternative proposes 439,461 acres allowing and promoting OHV access. Cross-country travel may be allowed on roads, increasing the potential risk of damaging heritage sites adjacent to roads by user-created trails. User-created trails have a high potential to directly affect sites through artifact and feature displacement or indirectly through erosion from trails adjacent to sites.

Alternative E

Alternative E ranks fifth out of the six alternatives in overall ground disturbing acres, by proposing 393,865 or 45 percent of the forest, but provides the highest potential for recreation management impacts to heritage sites of all alternatives (see Table 3-229). Recreation activities proposed total 284,736 acres, or 33 percent of the forest. Dispersed recreation uses often concentrate in high probability site areas, as people tend to use the same locales over thousands of years. Dispersed recreation activity and proposed recreation development impacts to heritage sites could be relatively high in this alternative. Conversely, developed recreation locales could be highly conducive to interpretive activities, thereby benefiting and promoting heritage resource values.

Alternative E ranks fourth out of all alternatives in acres proposed for remote backcountry and wilderness study areas. Sites impacted in remote backcountry areas with few roads, could go unnoticed for long periods. Site monitoring and assessments could be limited.

Prescribed acres proposed for this alternative rank fifth of six alternatives at 21,300 acres and 74 miles of control line. Potential risk for impacts to unknown sites for this alternative are relatively low.

Alternative G

Of all the alternatives, Alternative G would have the least potential to impact heritage sites from ground disturbing actions. This alternative proposes the lowest number of high ground disturbing acres, 124,827 or 14 percent of the forest, thereby providing the least risk to heritage sites.

Prescribed burn acres for Alternative G rank lowest of all alternatives and are estimated at 17,100 acres/per year with approximately 61 miles of control lines needed. Potential risk for impact to unknown heritage resources from prescribed fire and control line construction would be relatively low in this alternative.

Alternative G could have the lowest potential for adverse affects to sites from OHV access. This alternative proposes 57,684 acres acreage allowing and promoting OHV access. Cross-country travel could be allowed on roads, increasing the potential risk of damaging heritage sites adjacent to roads by user-created trails. User-created trails have the potential to impact sites through artifact and feature displacement, or indirectly through erosion from trails adjacent to sites.

The one area where Alternative G proposes the highest risk to heritage sites is in the large number of recommended wilderness study areas and remote backcountry recreation areas (43,420 acres). While this designation protects sites from proposed ground disturbing projects, it does not protect sites from concentrated dispersed recreation use and abuses such as looting and vandalism. Restricted access to sites could increase, thereby making monitoring and assessment difficult.

Alternative I

Alternative ranks third out of the six alternatives for high ground disturbing acres (453,321, or 53 percent of the Forest). Of these acres, approximately 20 percent or 91,489 acres, fall within high site probability areas. Restoration activities are emphasized (231,239 acres), with wildlife management second (120,140 acres) followed by recreation management activities (107,479 acres). Timber management activities are not emphasized in this alternative. Prescribed burn acres are estimated at 22,450 acres per year with approximately 74 miles of control lines proposed. Potential risk for impact to unknown heritage resources from prescribed fire and control line construction would be relatively moderate in this alternative.

Remote areas with limited proposed road construction could limit human access to the forest, and translate into low risk for potential effects to heritage sites from

ground disturbing activities. Conversely, this may increase the potential for adverse effects to sites occurring in un-monitored and inaccessible environments.

Overall, potential risk for effects to unknown heritage resources in Alternative I would be the least of all alternatives.

Cumulative Effects

The degree of cumulative effects to known heritage sites from all management activities should be slight as inventory, assessment, protection, and mitigation measures would be implemented prior to initiation of management action.

The degree of cumulative effects to unknown heritage sites may be high as implementation of ground disturbing projects is repeated, causing the degradation of sites, a reduction in the number of intact historic properties/significant sites, and potential increases in site vandalism and looting.

Erosion, natural weathering, wildfire, or other ongoing natural processes, could contribute to site deterioration through time. Cumulative effects from repeated illegal activity, primarily archeological vandalism, could occur on certain sites or site types unless perpetrators are apprehended and prosecuted.

FOREST PRODUCTS

Background

This topic concerns the sale from National Forest lands to private sector buyers of 'timber,' that is, woody stems of a size and quality desired by wood industries. Commercial timber harvest is a management tool to create plant and animal habitat, offset costs of National Forest operations, and support local economies.

Timber is produced from National Forest through applied forest ecology called 'silviculture.' Appendix F of the Plan gives an overview of the practice of silviculture, the available methods, and a brief review of current forest conditions relating to their use. In addition, the 'Forest Cover' topic gives a much more detailed analysis of forest species composition, age class structure, and ecological dynamics.

Procedural requirements for inventory, NEPA compliance, reaching the decision to have a sale, complying with forest plan standards in design, marking and tallying trees to be cut, estimating the volume, appraising the fair-market value, compiling the contract using National and Regional standard clauses, advertising the sale, awarding the contract, and receiving payments are very detailed, complex, and voluminous. Only after all of these procedures are complete and only under Forest Service contract administration can purchasers cut and remove trees from National Forest and deliver them to primary wood processors. The entire process of a timber sale, from proposing it to 'closing' the sale when the purchaser has met all contractual obligations, may take years. The process is also vulnerable to administrative appeals of the decision to have a sale and litigation of the sale after it is sold. When they occur, the process takes even longer or is aborted.

In the Forest Plan alternatives there are three possibilities of wood products production from individual management prescriptions. They are: (1) none, (2) un-planned but permitted, and (3) planned for a regular and periodic harvest. On each Forest, the decision about which of the first two possibilities will apply has already been made for some lands by a decision authority higher than the Regional Forester. These lands are identified later within this topic. Their management status is not being re-considered in any alternative.

The general approach in formulating each of the alternatives was that timber harvest was planned on the lands 'left over' after other issues had first been addressed to some degree with appropriate management prescriptions. With respect to the wood products issue, alternatives differ primarily by the amount of land suitable for timber harvest in each. Variation among the alternatives considered occurred by; (a) changing the set of prescriptions used, (b) changing the acres allocated to a prescription, or (c) a combination of these two.

Regular, periodic timber harvest, i.e. "sustained yield," is associated in the proposed Forest plan with an early-successional wildlife habitat objective within each management prescription. (Generally speaking, "early-successional" indicates forest

cover less than 10 years old.) The wildlife habitat objectives are: (1) no early-successional habitat, (2) a range of 0 through 4 percent per decade, (3) a range of 4 through 10 percent per decade, and (4) a range of 10 through 17 percent per decade. These quantitative and time based objectives provide the regular, periodic need for early-successional habitat creation or maintenance. This, in turn, provides a framework for a regular, periodic timber yield, provided that timber harvest is the tool selected to create the habitat.

Within each alternative, management prescriptions with early-successional wildlife habitat objectives of none were not modeled for an estimate of timber yields. Much of these lands were withdrawn from that consideration by a decision made at authority higher than the Regional Forester. Timber harvest was modeled for some but not for all management prescriptions with a 0 to 4 percent early-successional habitat objective. These lands are within the Regional Forester's decision authority. Within this group, those prescriptions not modeled, and the acreage of each for each of the Chattahoochee and the Oconee, are identified as 'not appropriate' in Appendix F of the plan for Alternative I . All management prescriptions with a 4 to 10 or an 10 to 17 percent objective were modeled for harvest. Individual management prescriptions modeled in each alternative are identified later.

In addition, the timber modeling effort was constrained in various ways even within suitable management prescriptions. On the Oconee, the red-cockaded woodpecker habitat management area (management prescriptions 8. D. and 8. D. 1) had only 'irregular shelterwood' regeneration harvest. (This term is explained in Appendix F of the Plan.) On the Chattahoochee NF, neither the 'river floodplain forest' (old growth community type 13) nor the 'eastern riverfront forest' (old growth community type 28) was modeled for timber yields in any prescription. On the Oconee, the 'seasonally-wet oak-hardwood woodland' (old growth type 27) was not modeled for timber yields. Finally, a varying percentage of the acres in each old growth type in each suitable prescription were not modeled for timber yield because the embedded riparian management prescription applied. None of this is intended to mean that harvest ***may not*** occur, but rather that no planned, regular, periodic yield is being estimated as output from those acres.

The complete timber yield modeling effort is too complex to be explained in detail here. A description of the analysis is attached as Appendix B of this EIS and those wishing an in-depth understanding of the analysis process and tools are referred to it. In general terms, the process was:

(1) analyze forest cover data to group National Forest acres by old growth community types and age;
(2) use a computer program called PreSuppose to select Forest Inventory and Analysis (FIA) plots to match each group of National Forest conditions;
(3) use a computer program called the Forest Vegetation Simulator (FVS) to simulate both growth only and also various harvest types and timings on these selected plots through 200 years;
(4) use a computer program called FVSSTAND to produce dynamic estimates of yield;

(5) use the yields in another computer model called SPECTRUM to generate estimated harvest volumes by decade by alternative and also a comparison of costs and revenues.

The objective in the SPECTRUM model for each alternative was achieving the largest possible positive revenue-to-cost ratio for the entire time period modeled. However, the model was also constrained to achieve the early-successional wildlife habitat objective in each decade, even if doing so caused costs to exceed revenue. Early-successional objectives were met by 'regeneration harvests' of various kinds in which most of the tree canopy is removed. The earliest age at which the model was permitted to harvest varied with each suitable management prescription within the alternative. For example, the emphasis of Alternative D is both wood production and revenue. Growing sawtimber takes longer than growing pulpwood but sawtimber is more valuable. Therefore the earliest regeneration harvest age in Alternative D was in the '10' series of prescriptions (which emphasize wood production) but was set late enough to have large sawtimber as the primary product. The overall timber emphasis of an alternative was achieved by how prescriptions were combined within it.

The range in earliest permitted age for regeneration harvest among prescriptions was based upon a technical forestry concept called 'culmination of mean annual increment' (CMAI). The CMAI is the age at which the increase in wood volume reaches its greatest annual value. This increase is usually the average across the stems in a stand, not an individual tree basis. The CMAI for total wood production volume occurs first and can be as early as age forty or so. The CMAI for sawtimber volume occurs later, at around sixty to eighty years. The earliest age at which regeneration harvest was permitted in the model ranged from the sawtimber CMAI to the minimum old growth age. Reductions in the number of stems through thinning also contribute to a positive benefit-to-cost ratio and SPECTRUM 'scheduled' thins for that reason.

The 'Forest Products' topic is directly related to Issue number 5 – Wood Products, which includes several sub-issues:

Where on National Forest should timber harvest be allowed?

This sub-issue primarily concerns a prioritization of human values; that is, identifying and removing from consideration for harvest those acres where timber harvest would directly or indirectly cause the loss of, or significant detriment to, other existing values from the environment which are deemed of greater value than any to be gained by harvest. The determination of relative values cannot be scientifically determined because they are subjective and vary by individual.

The 'where' sub-issue has been addressed both within each alternative and among the alternatives by how the management prescriptions have been applied on the ground; that is, other values were given consideration first in allocating prescriptions.

The measures of response to the 'where' portion of the wood products issue is three-part: (1) identification of acres outside the Regional Forester's decision authority, (2)

identification of the modeled prescriptions, and (3) the acres in modeled prescriptions by alternative. Reference to alternative maps for modeled prescription locations completes the analysis of where timber harvest would occur.

How much timber harvest should be allowed on National Forest?

At the strategic plan level, this sub-issue is about a Forest timber program, not how much per sale unit, per sale, per District, etc. Though stated as a question of wood volume, it is about both volume and land area. Of concern is sustainability and environmental impacts. Sustainability has both an economic and a biological facet.

Economic sustainability concerns not creating a predictable future decline in harvest by cutting more volume than is being, or can be, replaced by growth. This is not as simple as matching harvest rates to *current* growth rates because as trees age, growth slows and productivity declines. Replacing slow-growing trees with faster-growing trees can sustain a higher harvest level than existing conditions would. This is particularly relevant to the National Forest because of the relatively advanced age of the tree cover. Traditionally, a future decline in harvest was considered undesirable because it created an unstable supply environment for dependent wood industries and negatively affected local economies. For example, in an unstable supply environment business people are reluctant to invest capital in facility expansion or look for expanded markets that would lead in turn to local hiring. As far as Forest Service timber production is concerned, litigation, new law, natural catastrophe, or changes in policy cause instability in the timber supply situation rather than excessive harvests. In the timber modeling process, the SPECTRUM model is constrained to require stability in outputs at a level that ensures biologically sustainable yield on those lands being modeled.

Environmental impacts in the short term are about such things as changes to visual quality and off-site effects such as sediment in streams. Longer term, it is about such things as shifts in forest cover species (conversion), shifts in forest structural characteristics, effects to wildlife habitat availability and quality, and the accumulated effects from past harvesting. These effects of timber harvest are analyzed for each affected resource.

All of the acres within the Regional Forester's decision authority are modeled for timber yields in a 'max timber' analysis simulation. This simulation produces an estimate of the maximum amount of timber that ***could be*** produced from lands within the Regional Forester's discretion. This estimate is then a standard for comparison for each alternative in that it can be compared to the 'max timber' output to see how much wood volume is estimated to be produced in that alternative compared to how much could have been produced. The difference between these is the tradeoff of wood product output for other environmental values. That comparison is not being made here. The 'max timber' output is reported in Appendix B of this EIS describing the analysis process. In addition, historic harvest volumes and acreages are also a standard of comparison for how alternatives would change wood production.

The measures of response to the 'how much' portion of the issue are: (a) estimated volume by alternative, and (b) the acres estimated to be harvested in suitable management prescriptions. The time scale for showing response to this sub-issue is 50 years, or 2000 through 2050. Though the model was run for 200 years, there is decreasing confidence with increasing time due to limitations of the data the model was built on and future, un-knowable changes in economic, social, and ecological conditions in the long-term. For example, numerous forest pests can be expected to cause shifts in forest species composition and age structure but the exact timing and severity are unknown.

How many trees should be removed from any harvested acre at any one time; that is, harvest methods?

The sub-issue of harvest methods concerns two things; (a) the proportion of trees removed compared to pre-harvest conditions, and (b) the logging system. Some of the public favors those systems that remove the least. Others favor those that remove more. Appendix F to the Plan includes a very brief overview of logging systems.

No decision is being made in the plan that a specific silvicultural system or final harvest method will be used at the individual site level of detail; that is, in a specific vegetation community. Specific silvicultural systems were modeled in the SPECTRUM program and in achieving the objective and constraints set for it, the model projects acres by harvest method in each decade. These outputs are presented for a relative comparison of alternatives to each other to inform both the public and the decision-maker. Displaying these outputs and activities is not a decision that they will or must be used to reach activity estimates.

Choosing the specific harvest method is being left to individual projects during plan implementation, based on Plan objectives being achieved and site-specific factors. There are a number of reasons for this. A principal reason is that, with ecosystem management as the ideal, the classic textbook terminology of silviculture traditionally aimed primarily at a high level of wood fiber production is no longer descriptive. Vegetation community restoration activities emphasized in some alternatives are outside the scope of traditional silviculture. For example, an oak 'savanna' might approximate a seed tree in appearance, but does not include an intention of regenerating a closed canopy forest, as a traditional seed tree is meant to do. Attempting to use the term anyway is certain to result in miscommunication. In addition, certain terminology - especially the word 'clearcut' - has taken on such a negative connotation that its use confounds communication, short-circuiting reason and engaging emotions.

Given that selling timber is a revenue-generating activity, will the purchase price equal or exceed taxpayer costs of producing the wood; that is, will the timber program be 'below cost?

Timber sales that generate less revenue than they cost to make; that is, 'below cost' sales, have been one of the lightening rods of criticism of the Forest Service for about

two decades. As with 'clearcut', it has become an emotion laden term. The underlying position is that the Forest Service, as a public, taxpayer funded agency, should not sell public resources at a price that is less than the cost of producing them, irrespective of any non-monetary benefit gained. Central to the controversy has been differences of opinion about: (a) what are appropriate costs, (b) what are appropriate revenues, and (c) how, or whether, non-market values such as wildlife habitat, should be valued. The Forest Service does not have the option in timber analysis to decide what must be considered revenues or costs in evaluating its timber program. That direction is in the National Forest Management Act and is intentionally a dollars and cents analysis.

The measure of response to the below-cost part of the issue is a present net value (PNV) for the estimated timber harvest program level of each alternative. A present net value is a complex financial calculation that makes a mathematical comparison of revenues and costs. The variable of time is included through compounding and discounting. PNV 'values' the timber program of each alternative as of the start year of 2000. Response to the below-cost issue shows anticipated economic behavior of an alternative at the scale of an entire Forest, not of an individual sale. The individual sale level of detail is left to project analysis.

Affected Environment

There are two aspects to the affected environment for wood products - geographic and economic. Although there is overlap, the Chattahoochee NF and the Oconee NF are considered separately.

The geographic area of interest is divided into two parts: (1) the area within which the Forest Service was a timber supplier in the period 1985 through 1996 – called the 'market area,' and (2) a surrounding 'competitive zone' within the procurement area of each mill from which timber could also be drawn from private lands or from National Forests in adjacent states. Together, these make up the analysis area for the wood products issue. Each of the five Southern Appalachian Forests in revision used this procedure in their timber supply and demand analysis. The complete analysis is in 'Timber Supply and Demand' reports of the Analysis of the Management Situation.

The second aspect is the economic sector itself - the number of wood-using facilities, their types, number of employees, etc. In other words, it is the socio-economic portion.

The Geographic Affected Environment

A map for each of the Chattahoochee NF and the Oconee NF wood products affected environment is shown in the following figures. Counties shown in gray are areas of *potential* supply for mills that have historically bought Forest Service timber.

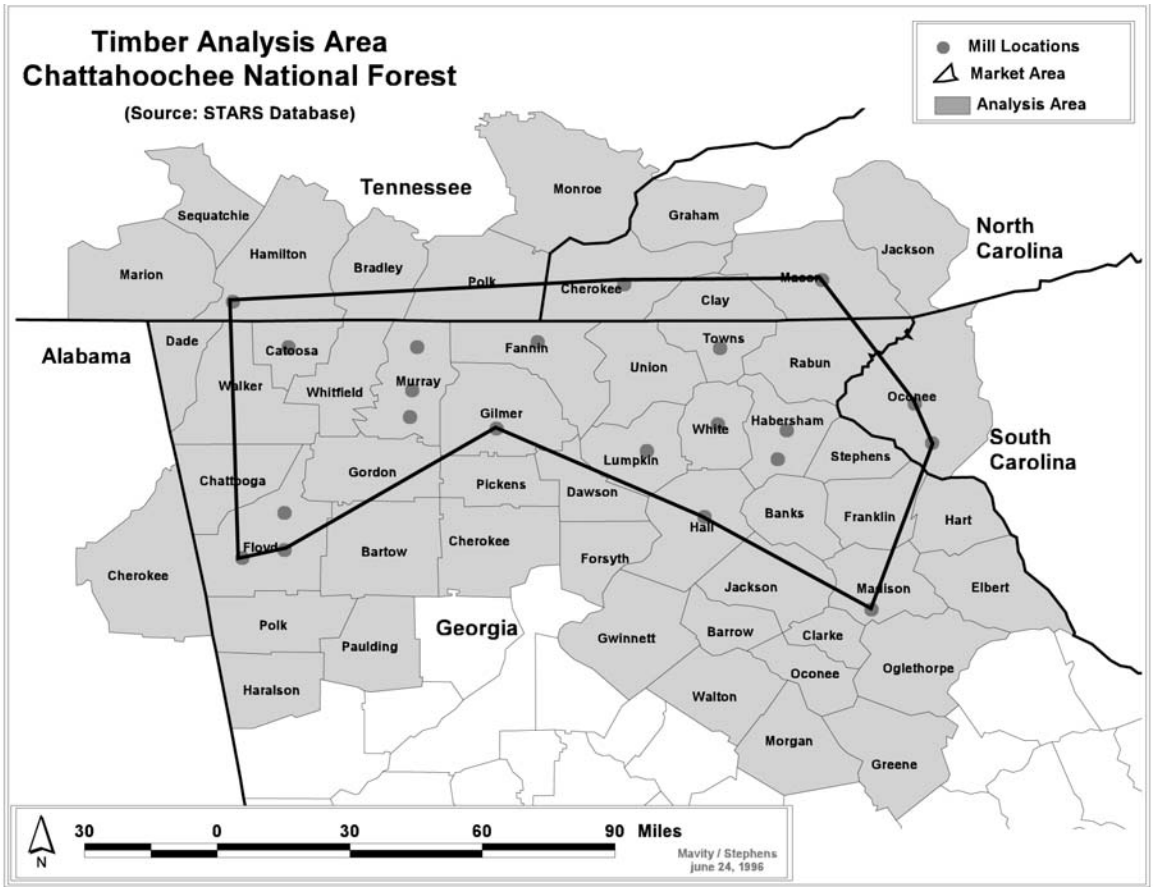

Figure 3 - 32. Map Of Chattahoochee National Forest Affected Geographic Environment For Analysis Of The Forest Products Issue

The entire Chattahoochee wood products analysis area is 11.5 million acres involving five states and fifty-three counties. The states and the numbers of counties are: Georgia, forty counties; North Carolina, five counties; Tennessee, six counties; South Carolina, one county; and Alabama, one county.

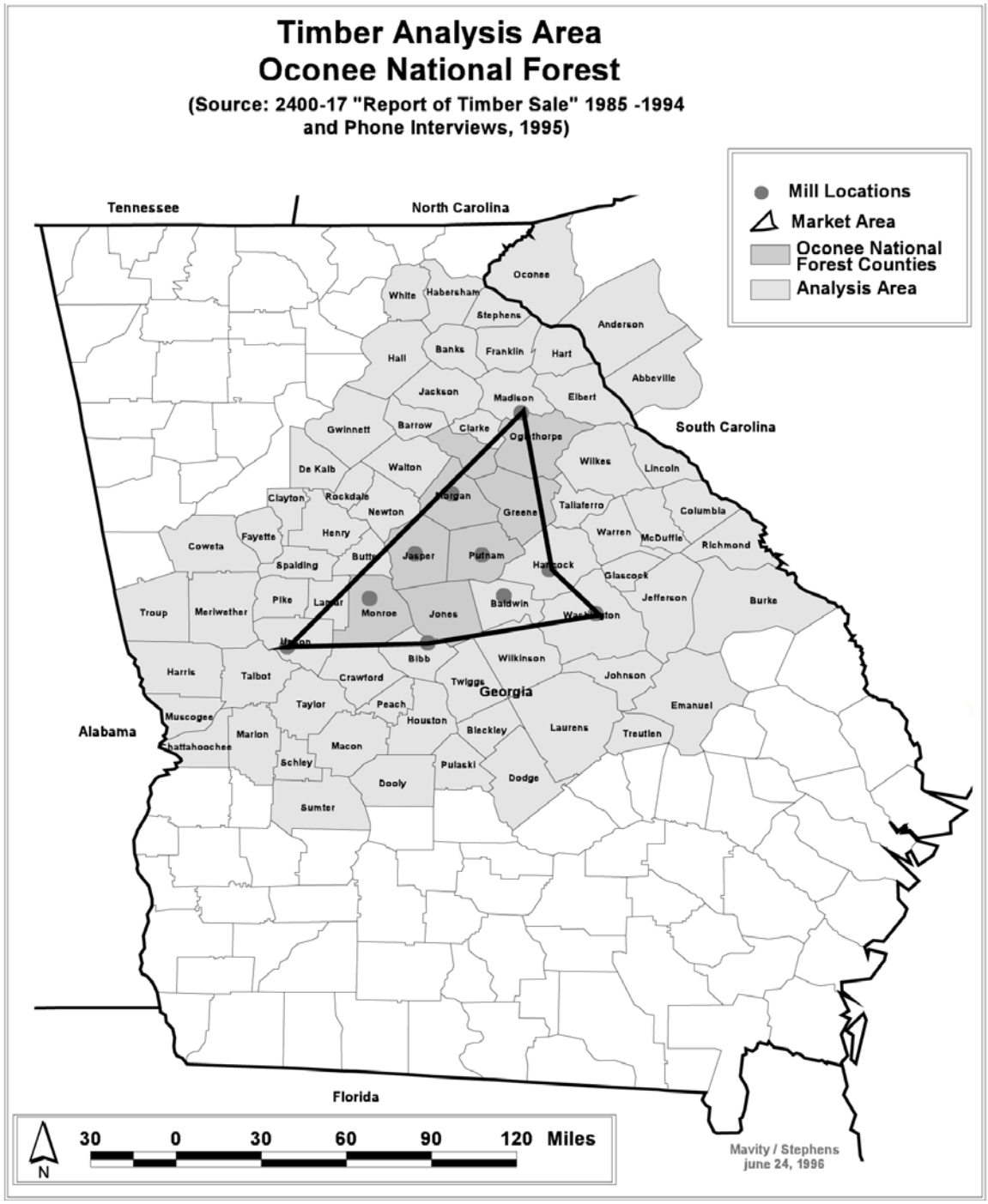

Figure 3 - 33. Map Of Oconee National Forest Affected Geographic Environment For Analysis Of The Forest Products Issue

The entire Oconee wood products analysis area is 16.5 million acres involving two states and seventy-five counties. Nearly all of the area is within the Piedmont and Coastal Plain physiographic areas.

The Socio-Economic Affected Environment

Refer also to the Socio-economic topic of this EIS for economic impact modeling of the National Forest timber program. The information presented here provides more detail for just the wood industry sector of the economy.

The number and type of primary wood manufacturers; that is, those that receive their raw material as still cylindrical and bark-covered, in each of the Chattahoochee NF and Oconee NF market areas was examined and profiled in the timber supply and demand reports. The data sources were: the 1996 Georgia wood industries directory (Georgia Forestry Commission, 1996); 1990 Tennessee directory (Tennessee Division of Forestry, 1991); 1993 South Carolina directory (Nodine, 1993); and 1996 North Carolina directory of timber buyers (Brown, 1996). No directory was available for Alabama. These directories are revised and re-issued approximately every five to ten years. Date presented may be taken to generally represent the period of plan implementation of 1986 through 2002 even though there will have been some variation in the number of businesses and their employment. The market area counties for each Forest are unique so there is no double counting. Madison County, Georgia is common to both because products from each Forest move to a single mill there. But the convention adopted of including a county only if it were 50-percent or more in the market area put Madison County in the Chattahoochee NF market area. Directory entries vary somewhat by State so that direct comparisons were not always possible. Employment - where reported – was by a size class that gave a range rather than a single number.

These data do not include any estimate of the number of loggers because no data source for this information was known or found to be available. The data also does not track locally produced wood into local 'secondary' manufacturers. Secondary manufacturers receive their raw material from primary manufacturers and process it into finished products. A well-known example is the furniture industry of western North Carolina that uses high-quality hardwood, a principle product of local primary manufacturers.

Chattahoochee National Forest

There were ninety-nine primary wood processors in the Chattahoochee market area counties. The most frequent types are sawmills (66 mills or 67 percent), and wood yards (23 facilities or 23 percent). The remaining ten businesses are: two oriented strand board mills, a paper mill, two hardwood veneer mills, three chip mills, a plywood mill, and a firewood yard.

Overall, primary wood industry in the Chattahoochee market area is diverse. All species traditionally considered commercially valuable are being used. There is also a wood industry-wide trend of using smaller, lower-quality, and formerly non-merchantable stems. Each of the four major timber products: hardwood sawtimber, softwood sawtimber, hardwood roundwood, and softwood roundwood, is in demand. The number of wood yards receiving and forwarding raw logs to more distant mills indicates a vigorous procurement situation. Specialization for chipping of low-quality wood and marketing of veneer-quality wood are also part of the marketplace.

Products produced range from bark mulches and firewood to coated paperboard and yellow poplar plywood. Equipment ranges from the relatively simple (firewood splitter) to the highly complex. Facilities investments (relative to the sector) range from very low to very high. Employment size ranges from a low of one to three employees per business all the way up to about 500 employees for a single business. For facilities with employment data, reported total employment is in the range of 1,070 to 2,375 persons directly employed at these various facilities with an average of 1,722 persons during the survey year.

Oconee National Forest

A total of thirty-one primary manufacturers were identified. The most common products were lumber, roundwood, and chips. Sawmills (12 mills or 39 percent) and wood yards (11 facilities or 35 percent) were the two largest groups. Wood-chipping businesses, which produced chips for secondary manufacture, were the third largest group with two businesses. The remaining businesses were two Pine plywood mills, a hardwood veneer mill, a paper mill, a firewood yard, and one treated lumber mill.

Overall, primary wood industry in the Oconee market area is also very diverse. Each of the four major timber products: hardwood sawtimber, softwood sawtimber, hardwood roundwood, and softwood roundwood, is in demand. These products include all species. Again, the number of wood yards demonstrates local procurement for distant mills. Specialization for retailing of both low-quality and veneer-quality wood is part of the marketplace. Products produced range from bark mulches and firewood to coated paperboard and Pine plywood. Equipment ranges from the relatively simple (firewood splitter) to the highly complex. Facilities investments (relative to the sector) range from very low to very high. Employment size ranges from a low of one to three per business all the way up to 1,000 for a single business. Reported total employment is in the range of 1,440 to 3,140 persons and averaged 2,290 persons during the survey year.

Summary

For the Chattahoochee and Oconee combined, there were one hundred and thirty primary manufacturers of wood products. The most frequent types were sawmills (78 mills or 60 percent), and wood yards (34 facilities or 26 percent). The remaining businesses were: three chip mills, three hardwood veneer mills, three plywood mills, two oriented strand board mills, two paper mills, two wood chipping businesses, two firewood yards, and a treated lumber mill. Reported total employment in primary wood manufacturing is in the range of 2,510 to 5,515 persons and averaged approximately 4,012 persons during the survey year.

Forest Service Supply Role

The Forest Service timber supply environment is both biologically and economically dynamic and complex. Four primary aspects are investigated:

(1) the proportion of National Forest land area within the discretion of the Regional Forester to decide whether or not timber harvest will be permitted to occur,
(2) the timber inventory on those acres,
(3) growth and mortality compared to harvest amounts, and

(4) historic timber production amounts from National Forest compared to all timber production.

Each of these four aspects of timber supply are presented separately.

The Forest Service supply role starts with the inventory of timber on timberland. The technical definition of *timberland* is "*land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, not currently developed for non-forest use, capable of producing 20 cubic feet of industrial wood per acre per year and not withdrawn from timber utilization by legislative action*" (USDA Forest Service, 1988). The factors of tree cover percent, development as non-forest, and wood production capability effect very minor acreages of National Forest. The major factor is legislative withdrawal. Another significant factor is Regional Forester decisions to allocate land to a management direction that either; (a) does not permit timber harvest, or (b) allows it not on any regular, periodic basis, but rather on a case-by-case basis in response to natural events or as an activity associated with another primary purpose, such as campground construction.

Forest Service Timber Resource Land Suitability

Portions of each of the Chattahoochee and Oconee National Forests are not available for a decision by the Regional Forester on whether or not sustained yield harvest may occur. The reasons for this and the land area involved are shown in the following tables. The criteria are those specified in the National Forest Management Act.

Note that within the category of '*Withdrawn by Congress, Secretary of Agriculture, or the Chief* [of the Forest Service]', the decision that withdrew each area from the Regional Forester's discretion ***may*** itself, allow for timber harvest in unusual circumstances or to achieve specific non-timber purposes. The Regional Forester does not have the authority to change that. However, no timber yields are modeled for these lands and they do not contribute to sustained yield.

Table 3- 231. Acres Identified as Unsuitable for Sustained Yield Timber Production On the Chattahoochee NF as a Result of Stage One Suitability Analysis. 23 Sept 2003.

National Forest Management Act Criteria for Unsuitability	Acres
Not forest land	2,126
Withdrawn by Congress, Secretary of Agriculture, or Chief	155,001
Incapable of Producing Crops of Industrial Wood	0
Technology not available to produce timber without irreversible resource damage to soils productivity, or watershed conditions	0
No reasonable assurance that such lands can be adequately restocked within 5 years after final harvest	0
Inadequate response information	4,327
Total Stage 1 Unsuitable	**161,454**

Source: GIS 'Stands' layer as modified for Plan revision September 2003.

The details of criteria 2 for the Chattahoochee National Forest are shown in the in the following table.

Table 3- 232. Detail of Chattahoochee NF Stage 1 Unsuitable Criteria 2 '*Withdrawn by Congress, Secretary of Agriculture, or Chief of the Forest Service*' 23 Sept 2003

Category and Names of Areas	Withdrawn By	Acres
National Wilderness Preservation System		
Blood Mountain	Congress	7,736
Brasstown	Congress	13,406
Cohutta	Congress	35,484
Ellicott Rock	Congress	2,007
Mark Trail	Congress	17,077
Raven Cliffs	Congress	9,309
Rich Mountain	Congress	10,540
Southern Nantahala	Congress	11,555
Tray Mountain	Congress	10,425
		Subtotal 117,539
National Wild & Scenic River System		
Chattooga River	Congress	6,887
		Subtotal 6,887
Other Congressionally-Designated Areas		
Ed Jenkins National Recreation Area	Congress	23,449
Coosa Bald Scenic Area	Congress	7,044
		Subtotal 30,493
Other Areas		
Sosebee Cove	Chief	74
Cedar Mountain	Chief	18
		Subtotal 82
		TOTAL 155,001

Source: GIS 'stands' data layer as modified for Plan revision September 2003

Table 3- 233. Area Identified as Unsuitable for Sustained Yield Timber Production On the Oconee NF as a Result of Stage One Suitability Analysis. 23 Sept. 2003.

National Forest Management Act Criteria for Unsuitability	Acres
Not forest land	2,216*
Withdrawn by Congress, Secretary of Agriculture, or Chief	5,673
Total Unsuitable	7,889

Source: GIS 'stands' layer as modified for Plan revision September 2003.

** Note: Non-forest land is primarily 1,141 acres of grass rangeland and approximately 1,000 acres of submerged land under Lake Oconee. Balance is administrative sites, lakes, ponds, rights of way, and wildlife openings.*

The details of acres within criteria 2 '*Withdrawn by Congress, Secretary of Agriculture, or the Chief* [of the Forest Service]' for the Oconee National Forest are shown in the following table.

Table 3- 234. Detail of Oconee NF Stage 1 Unsuitable Criteria 2 'Withdrawn by Congress, Secretary of Agriculture, or Chief of the Forest Service,' 23 Sept 2003

Names of Areas	Withdrawn By	Acres
Hitchiti Experimental Forest	Chief	4,666
Murder Creek Research Natural Area	Chief	1,007
		TOTAL 5,673

Source: GIS 'stands' layer as modified for Plan revision September 2003.

The table below summarizes the tentatively suitable acres for each of the Chattahoochee and Oconee National Forests. It is only these acres that can be considered by the Regional Forester for timber production in any alternative.

Table 3- 235. Land Area Tentatively Suitable for Sustained Yield Timber Production On the Chattahoochee and Oconee NF. 23 Sept 2003.

National Forest	Total Land Area (Acres)	Stage 1 Unsuitable (Acres and Percent)		Net Tentatively Suitable (Acres and Percent)	
Chattahoochee	750,767	161,454	21%	589,313	79%
Oconee	115,215	7,889	7%	107,326	93%

Source: GIS 'stands' layer as modified for Plan revision September 2003.

The Regional Forester's ability to respond to the question about the amount of timber to be produced as a part of the 'forest products' issue is limited to his or her decision for the 'net tentatively suitable' acres identified in Table 3- 235. The 'stage 1 unsuitable' acres already have a decision about timber harvest that the Regional Forester cannot re-visit. For Criteria 2 "Withdrawn by Congress, Secretary of Agriculture, or Chief," the management prescription stays constant across alternatives. Within the 'net tentatively suitable' acres, the timber harvest regime; that is, type, timing, and intensity, will be a function of the management prescription.

Even within management prescriptions with scheduled harvest, the timber yield has been reduced for acreage in riparian areas or on very steep slopes. At a local scale of a few thousand acres, the effect is small but cumulatively across the Forests, it is significant enough to be considered.

Forest Service Timber Inventory

Part of the context for a wood products discussion is just how much wood of what types the Forest Service has in comparison to other owners. That comparison is made in the following tables. Each table shows wood volume in million cubic feet by ownership group and species group of hardwood or softwood. Volumes shown for National Forest are for those lands within the Regional Forester's decision authority only; that is, they are not the total volume on all National Forest acres.

Definition *– Growing-stock volume is defined as volume (cubic feet) of solid wood in growing-stock trees 5.0-inch DBH and larger, from a 1-foot stump to a minimum 4.0-inch top diameter outside bark on the central stem. Volume of solid wood in primary forks from the point of occurrence to a minimum 4.0-inch top diameter outside bark is included (USDA Forest Service, 1988).*

Table 3- 236. Inventory Volume in Million Cubic Feet of Growing Stock on Timberland for the Chattahoochee NF Timber Supply/Demand Analysis Area.

Species Group & Owner	Diameter Classes (Inches)														
	5.0–8.9		9.0–10.9				15.0–18.9		19.0–20.9		21.0–28.9		29.0+		
	Volume		Volume	%		%	Volume		Volume		Volume	%	Volume	%	Totals
Softwood															
National Forest	128	16	128	16	248	31	144	18	39	5	82	10	40	5	809
Other Public	24	18	24	18	45	34	22	17	7	5	9	7	0		131
Forest Industry	211	41	122	24	136	26	34	7	9	2	1	< 1	0		513
NIPF	966	29	755	22	1,088	32	386	11	87	3	86	3	13	< 1	3,381
Subtotal	**1,329**	**27**	**1,029**	**21**	**1,517**	**31**	**586**	**12**	**142**	**3**	**178**	**4**	**53**	**1**	**4,834**
Hardwood															
National Forest	315	16	253	13	511	27	393	21	133	7	267	14	36	2	1908
Other Public	54	24	37	17	59	27	51	23	14	6	7	3	0		222
Forest Industry	87	25	59	17	100	29	56	16	21	6	18	5	1		342
NIPF*	1,035	20	754	15	1,591	31	1,039	20	297	6	368	7	40	< 1	5,124
Subtotal	**1,491**	**20**	**1,103**	**14**	**2,261**	**30**	**1,539**	**20**	**465**	**6**	**660**	**9**	**77**	**1**	**7,596**
TOTAL	**2,820**	**23**	**2,132**	**17**	**3,778**	**30**	**2,125**	**17**	**607**	**5**	**838**	**7**	**130**	**1**	**12,430**

** NIPF - Nonindustrial Private Forest*
Source: EastWide Data Base report, May 16, 1996.

National Forest has approximately 22 percent of all timber inventory in the Chattahoochee timber supply and demand analysis area. Within this, it has about 17 percent of softwood inventory and 25 percent of hardwood inventory. National Forest also has the highest share in trees 21 inches in diameter at breast height and larger.

Table 3- 237. Average Net Annual Growth and Average Annual Mortality of Growing-Stock Volume in Million Cubic Feet - Chattahoochee NF Timber Supply/Demand Analysis Area

Species	Annual Mortality by Owner				Net Annual Growth by Owner			
	NF	Other Public	Industry	NIPF	NF	Other Public	Industry	NIPF
Softwood								
Shortleaf/Loblolly Pine	3.4	1.2	3.0	35.8	2.6	3.0	26.2	74.6
Other Yellow Pine	4.4	0.3	0.5	10.5	4.8	0.7	3.6	35.2
White Pine	1.4	0	0	0	7.6	0.3	0	7.5
Subtotal	9.2	1.5	3.5	46.3	15.0	4.0	29.8	117.3
Hardwood								
Select White Oak	1.3	0.1	0	1.7	3.0	1.0	1.9	19.5
Select Red Oak	1.5	0.1	0.3	2.2	4.5	0	0.8	6.5
Other White Oaks	1.0	0	0.1	3.1	7.6	1.0	1.6	15.6
Other Red Oaks	5.4	0.5	0.5	14.4	6.7	2.1	2.2	30.7
Hickory	1.9	0	0.3	3.7	2.4	0.3	1.1	9.9
Yellow Poplar	0.5	0	0	1.9	4.4	1.1	2.2	29.6
Subtotal	**11.6**	**0.7**	**1.2**	**27.0**	**28.6**	**4.5**	**9.8**	**111.8**
TOTAL	**20.8**	**2.2**	**4.7**	**73.3**	**43.6**	**8.5**	**39.6**	**229.1**

NF - national forest; NIPF - nonindustrial private forest
Source: EastWide Data Base report, May 16, 1996.

The net annual growth for timberland on National Forest within the Chattahoochee timber supply and demand analysis area is approximately 44 million cubic feet or 240 million board feet.

Table 3- 238. Average Net Annual Growth and Average Annual Removals in Million Cubic Feet of Growing Stock and Growth-to-Removal Ratio on Timberland for the Chattahoochee NF Timber Supply/Demand Analysis Area During 1982–88

Species Group & Ownership Class	Sawtimber			Roundwood			Combined Sawtimber & Roundwood Growth Ratio
	Average Annual Growth	Average Annual Removal	Average Annual Ratio	Average Annual Growth	Average Annual Removal	Average Annual Ratio	
Softwood*							
National Forest	16.4	14.2	1.15	0.5	3.5	0.14	0.95
Chattahoochee NF	**8.8**	**2.6**	**3.38**	**0.1**	**1.0**	**0.10**	**2.47**
Other Public	3.8	5.9	0.64	0.2	1.8	0.11	0.52
Forest Industry	18.1	15.8	1.15	12.3	14.2	0.87	1.01
NIPF	109.8	81.6	1.35	10.1	56.5	0.18	0.87
All Owners	148.1	117.5	1.26	23.1	76.0	0.30	0.88
Hardwood							
National Forest	30.9	17.7	1.75	8.1	16.2	0.50	1.17
Chattahoochee NF	**11.5**	**1.4**	**8.43**	**4.7**	**1.2**	**3.92**	**6.23**
Other Public	5.1	2.2	2.32	2.5	1.5	1.67	2.05
Forest Industry	6.4	4.9	1.31	6.8	5.5	1.24	1.27
NIPF	103.8	26.8	3.87	42.1	24.2	1.74	2.86
All Owners	146.2	51.6	2.83	59.5	47.4	1.26	2.08
Softwood & Hardwood							
National Forest	47.3	31.9	1.48	8.6	19.7	0.44	1.08
Chattahoochee NF	**20.3**	**4.0**	**5.08**	**4.8**	**2.2**	**2.18**	**4.05**
Other Public	8.9	8.1	1.10	2.7	3.3	0.82	1.02
Forest Industry	24.5	20.7	1.18	19.1	19.7	0.97	1.08
NIPF	213.6	108.4	1.97	52.2	80.7	0.65	1.41
All Owners	294.3	169.1	1.74	82.6	123.4	0.67	1.29

**Softwood group includes all needle-leaved species. NIPF – nonindustrial private forest*
Sources: EastWide Data Base reports, May 16, 1996; and forest "cut and sold" reports.

A comparison of the amount of annual growth to annual harvest shows that even in a period with relatively high harvest levels growth has been from two to eight times harvest in all cases except softwood pulpwood. For the softwood group, growth was 247 percent of harvest. For the hardwood group, growth was 623 percent. For both groups combined growth was slightly over four times harvest.

Table 3- 239. Inventory Volume in Million Cubic Feet of Growing Stock on Timberland for the Oconee NF Timber Supply/Demand Analysis Area.

Species Group & Owner	5.0–8.9		9.0–10.9		11.0–14.9		15.0–18.9		19.0–20.9		21.0–28.9				Totals	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
Softwood																
National Forest	67	27	40	16	63	26	42	17	15	6	11	4	6	2	245	3
Oconee NF	(16)	(18)	(18)	(21)	(26)	(29)	(19)	(21)	(8)	(9)	(2)	(3)	(0)	—	(89)	1
Other Public	59	13	58	12	156	34	115	25	40	9	33	7	0	—	462	7
Forest Industry	437	35	239	19	372	29	167	13	25	2	19	2	1	< .1	1,260	18
NIPF	1,232	25	968	20	1,635	34	709	15	165	3	142	3	8	0.2	4,859	71
Subtotal	1,795	26	1,305	19	2,226	33	1,033	15	245	4	205	3	15	0.2	6,826	100
Hardwood																
National Forest	39	18	28	13	62	30	39	18	16	8	26	12	1	.5	210	3
Oconee NF	(30)	(21)	(26)	(18)	(45)	(31)	(27)	(19)	(11)	(8)	(5)	(3)	(0)	—	(144)	2
Other Public	89	24	62	17	112	30	68	18	16	4	22	6	2	0.6	371	5
Forest Industry	212	23	117	13	225	25	202	22	58	6	77	8	25	3	915	12
NIPF	1,401	23	911	15	1,778	30	1,074	18	304	5	445	7	84	1	5,996	80
Subtotal	1,741	23	1,118	15	2,177	29	1,383	18	394	5	570	8	112	2	7,492	
TOTAL	3,536	25	2,423	17	4,403	31	2,416	17	639	4	775	5	127	1	14,318	100

NIPF - Nonindustrial Private Forest *Source: EastWide Data Base report, May 9, 1996.*

The timber inventory on all National Forest within the Oconee timber supply and demand analysis area is 3 percent. The Oconee NF holds approximately 2 percent of all inventory.

Table 3- 240. Growth to Removal Comparisons in Million Cubic Feet for each of Sawtimber and Roundwood for the Oconee NF Timber Supply/Demand Analysis Area during 1982–89

Species Group & Ownership Class	Sawtimber			Roundwood			Combined Sawtimber & Roundwood Growth Ratio
	Average Annual Growth	Average Annual Removal	Average Annual Ratio	Average Annual Growth	Average Annual Removal	Average Annual Ratio	
Softwood*							
National Forest	2.7	6.0	0.45	3.7	1.6	2.3	0.84
Oconee NF	**(2.3)**	**(2.6)**	**(0.88)**	**(2.5)**	**(1.1)**	**(2.3)**	**(1.30)**
Other Public	12.7	7.8	1.63	0.8	2.1	0.38	1.36
Forest Industry	52.2	64.4	0.81	41.9	45.6	0.92	0.86
NIPF	189.4	198.1	0.96	24.2	79.8	0.30	0.77
All Owners	**257.0**	**276.3**	**0.93**	**70.6**	**129.1**	**0.55**	**0.81**
Hardwood							
National Forest	3.9	0.6	6.50	1.5	0.8	1.88	3.86
Oconee NF	**(1.0)**	**(0.1)**	**(10.0)**	**(0.7)**	**(0.07)**	**(10.0)**	**(10.0)**
Other Public	8.7	2.9	3.00	2.1	2.1	1.00	2.16
Forest Industry	17.9	25.1	0.71	11.7	20.6	0.57	0.65
NIPF	131.6	72.1	1.83	63.4	56.7	1.12	1.51
All Owners	**162.1**	**100.7**	**1.61**	**78.7**	**80.2**	**0.98**	**1.33**
Softwood & Hardwood							
National Forest	6.6	6.6	1.00	5.2	2.4	2.17	1.31
Oconee NF	**(3.3)**	**(2.7)**	**(1.22)**	**(3.2)**	**(1.17)**	**(2.73)**	**(1.49)**
Other Public	21.4	10.7	2.00	2.9	4.2	0.69	1.63
Forest Industry	70.1	89.5	0.78	53.6	66.2	0.81	0.79
NIPF	321.0	270.2	1.19	87.6	136.5	0.64	1.00
All Owners & Species	**419.1**	**377.0**	**1.11**	**149.3**	**209.3**	**0.71**	**0.97**

**Softwood group includes only longleaf, slash, loblolly, and shortleaf pine to reflect species composition of Oconee NF.*
NIPF - Nonindustrial Private Forest
Source: EastWide Data Base report, May 9 & 17, 1996. Base year 1989. Also forest "cut and sold" reports.

For each of the softwood group and the hardwood group, growth exceeds harvest by a substantial margin. The slight excess of harvest above growth in the softwood sawtimber category but the growth in excess of harvest for the softwood group demonstrates that the rapid growth of younger trees offsets a higher harvest rate in sawtimber. This is a critical distinction to bear in mind. An unvarying harvest level will become a greater proportion of growth with time as the growth rate slows with advancing tree age and declining tree vigor.

Table 3- 241. Average Annual Growing-Stock Removals Compared to Average Annual Mortality in Million Cubic Feet for the Oconee NF Timber Supply/Demand Analysis Area, 1982–89

Species Group & Ownership Class	Removals		Mortality as Percent of	
			Removals	Net Growth
Loblolly & Shortleaf Pine				
National Forest	7.6	3.3	43	55
Oconee NF	(3.7)	(1.3)	(35)	(27)
Other Public	9.5	8.9	94	82
Forest Industry	78.1	12.0	15	14
NIPF	224.2	52.9	23	30
Hardwood				
National Forest	1.4	1.9	136	33
Oconee NF	(0.2)	(0.6)	(300)	(9)
Other Public	5.1	2.0	39	18
Forest Industry	45.5	7.0	15	23
NIPF	129.5	44.6	34	23

NIPF - Nonindustrial Private Forest
Source: EastWide Data Base report, May 9, 1996. Base year 1989.

Mortality figures show that an amount of wood volume equal to one-third of softwood harvest was dying. But in hardwood, mortality volume was three times the harvest level.

Table 3- 242 summarizes data from the "Chattahoochee National Forest Timber Supply and Demand Report" of the Analysis of the Management Situation for just the 'tentatively suitable acres.' Values in the table are generally arranged hierarchically (like an outline) with values to the right being a subset of the preceding value. In each case, percents are of the total amount for all owners in the entire analysis area for that particular topic.

For example, in the upper left box, the "Area" entry shows that the entire analysis area considered for supply and demand for the Chattahoochee NF was 11,500,000 acres. On the first row, the "% of all land" shows in the "National Forest" column that all National Forest was 13 percent of that total. The "Chattahoochee NF" column shows that the Chattahoochee was 6 percent of the entire 11,500,000 acres. Succeeding entries are interpreted the same way.

Table 3- 242. National Forest and Chattahoochee NF Supply Role in the Chattahoochee NF Timber Supply/Demand Analysis Area

Supply Factor	National Forest		Chattahoochee NF	
Area (11.5 million acres)				
% of All Land	13		6	
% of All Forestland	19		9	
% of All Timberland	17		7	
% in Softwood Forest Cover	21		21	
% in Hardwood Forest Cover	79		79	
Volume				
% of All Growing Stock	21		9	
% of All Softwood Growing Stock	16		7	
% of All Softwood Sawtimber	19		9	
% of All Shortleaf/Loblolly Pine	9		3	
% of All Other Yellow Pine	26		9	
% of All Eastern White Pine	56		39	
% of All Hardwood Growing Stock	24		10	
% of All Hardwood Sawtimber	26		11	
% of All Select Red Oaks	50		21	
% of All Other Red Oaks	25		10	
% of All Select White Oak	22		11	
% of All Other White Oaks	38		19	
% of All Yellow Poplar	19		8	
Grade	#1	#2	#1	#2
% of All Softwood Sawtimber	28	22	10	8
% of All Shortleaf/Loblolly Pine	16	8	7	2
% of All Other Yellow Pine	51	38	31	15
% of All Eastern White Pine	65	47	27	24
% of All Hardwood Sawtimber	39	30	22	11
% of All Select Red Oaks	62	53	36	18
% of All Other Red Oaks	40	32	20	11
% of All Select White Oak	21	26	14	12
% of All Other White Oaks	68	43	41	20
% of All Yellow Poplar	24	16	15	6

Source: Compiled from the Chattahoochee timber supply/demand analysis dated March 1998.

To summarize, National Forest timber inventory is particularly important in white pine sawtimber (56 percent) and in hardwood sawtimber (19 to 50 percent). Within all species groups, National Forest assumes a much greater market importance as a holder of high-quality sawtimber than its small timberland area would suggest. The Chattahoochee NF tracks well with this overall pattern. The Chattahoochee has almost 40 percent of white pine sawtimber inventory and 27 percent of Grade 1 white pine sawtimber. It also has a hardwood Grade 1 inventory ranging from twice the amount to about six times the amount of its proportion of timberland area. That is, it is a significance potential supplier of the highest quality hardwood sawtimber. Conversely, the Forest Service is able to exert a dominant influence on the ability of wood industry that uses either high-quality white pine or high-quality red oak as their raw material to expand their operations. The Forest Service is able to exert a significant influence on hardwood supply across all grades.

High-quality trees currently tend to occur on terrain difficult to log, such as steep slopes. On National Forest, harvest on slopes over about 45 percent would typically be done with cable logging systems. These systems are not typically in use in the private sector, are very expensive to purchase, and long-term stability is needed in timber supply before it makes business sense to buy one.

Table 3- 243. National Forest and Oconee NF Supply Role in the Oconee NF Timber Supply/Demand Analysis Area

Supply Factor	National Forest			
Area (16.5 million acres)				
% of All Land	2		0.6	
% of All Forestland	3		1	
% of All Timberland	3		1	
% in Softwood Forest Cover	48		72	
% in Hardwood Forest Cover	52		28	
Volume				
% of All Growing Stock	3.0		1.6	
% of All Softwood Growing Stock	3.6		1.3	
% of All Softwood Sawtimber	2.0		0.8	
% of All Shortleaf/Loblolly Pine	1.7		1.6	
% of All Hardwood Growing Stock	2.8		1.9	
% of All Hardwood Sawtimber	1.5		0.3	
% of All Select Red Oaks	4.9		No data	
% of All Other Red Oaks	2.8		No data	
% of All Select White Oak	5.0		No data	
% of All Other White Oaks	15.3		No data	
% of All Yellow Poplar	2.6		No data	
Grade	#1	#2	#1	#2
% of All Softwood Sawtimber	0.9	0.5	No data	No data
% of All Hardwood Sawtimber	0.7	0.9	No data	No data

Source: Compiled from Oconee timber supply/demand analysis dated March 1998.

For the Oconee timber analysis area, neither the Forest Service generally, nor the Oconee specifically, are major holders of timber inventory. The major reason for this is that the Oconee is such a small fraction of the timberland base. Favorable terrain and good roads allow much longer haul distances from mills. Wood concentration yards further facilitate large procurement areas.

As with the Chattahoochee, the Oconee has the potential to be a small, but important, supplier of high-quality timber, especially hardwoods. Currently, National Forest as a holder of high-quality oak is nearly twice as important as just its timberland area would suggest. However, harvest of the limited amount of hardwood on National Forest as a program emphasis would be nearly certain to result in strong public opposition from a variety of sources.

Forest Service Historic Importance

The table below summarizes timber volume sold from each of the Chattahoochee and Oconee National Forests for each year of the 1985 plan implementation. Note that 1988 and 1989 were severe southern pine beetle epidemics. That is why the volume reached its highest levels in those years. Note also that cut volume, presented later, lags from sold volume. The terms of sale typically allow from eighteen months to two years for a sale to be completely harvested. When this lag time is considered, there is a very strong trend of decreasing harvest from 1993 on. Also some of the volume sold was never actually cut. Litigation resulted in first suspending work on twenty-one sales in 1996, then the Regional Forester withdrawing the decision supporting them.

Table 3- 244. Volume Sold by Year for Each of the Chattahoochee and Oconee National Forests, 1986-2001.

Year	Chatt. Total (MMBF)	C-O NF Total (MMBF)	C-O NF Total	Total (MCF)	Oconee Total (MCF)	C-O NF Total (MCF)
1986	40.5	25.6	66.0	7.4	4.6	12.0
1987	33.3	19.6	52.8	6.0	3.6	9.6
1988	42.9	24.0	66.9	7.8	4.4	12.2
1989	49.1	23.1	72.2	8.9	4.2	13.1
1990	29.0	15.7	44.7	5.3	2.9	8.1
1991	38.6	23.2	61.8	7.0	4.2	11.2
1992	34.1	19.5	53.6	6.2	3.5	9.7
1993	34.8	13.3	48.1	6.3	2.4	8.8
1994	25.1	2.9	28.0	4.6	0.5	5.1
1995	25.9	4.4	30.2	4.7	0.8	5.5
1996	28.7	5.4	34.0	5.2	1.0	6.2
1997	2.6	8.1	10.7	0.5	1.5	1.9
1998	8.8	10.4	19.3	1.6	1.9	3.5
1999	3.4	0.1	3.5	0.6	0.0	0.6
2000	0.0	0.1	0.1	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0

Source: Chattahoochee-Oconee annual timber cut and sold reports

For the period prior to the effect of litigation, the Southern Appalachian Assessment found that the Brasstown, Toccoa, Tallulah, and Cohutta Ranger Districts combined produced about 32 percent of all timber produced within their aggregate land area when averaged across the years 1983, 1986, 1989, and 1992. Immediately to the north of the Brasstown Ranger District, the Tusquitee Ranger District of the Nantahala NF had a 53 percent production share. To the north of the Cohutta Ranger District, the Hiwassee, Tellico, and Ocoee Ranger Districts on the Cherokee NF in Tennessee, as a group, had about a 24 percent share of production. The Chattooga Ranger District of the Chattahoochee NF had about 16 percent production share. On the Andrew Pickens Ranger District of the Sumter NF in South Carolina; just east of the Chattooga RD, the production share averaged about 7 percent. The Armuchee Ranger District of the Chattahoochee NF had the lowest share at about 4 percent. (SAMAB.1996. Rpt 4:124)

Both the Southern Appalachian Assessment and the local supply and demand analysis show that on the Chattahoochee there is a central, interior mountain area where the Forest Service timber production share has historically been high. In general, this area may be considered Towns and Union Counties in Georgia. This interior mountain area is also the portion of the Forest lowest in area occupied by yellow pine or mixed forest cover types. It is predominately a hardwood forest cover.

From the Towns and Union County area, the Forest Service timber production share decreases to the east, south, and west. Major factors underlying this pattern are; (1) decreasing NF timberland area in the Piedmont and Ridge and Valley physiographic

regions, and (2) relatively small procurement areas around mills in the Blue Ridge due both to adverse terrain and to specialization into hardwood production.

Table 3- 245 below details the historic timber harvest levels under the 1985 Forest Plan and its amendments since. For the Chattahoochee, the years shown cover most of the timber harvest history. After 1995, harvest levels fell dramatically due to litigation.

Table 3- 245. Volume In Million Cubic Feet Reported Cut from the Chattahoochee NF by Product and Year, 1984–95, Inclusive

Year	Sawtimber		Roundwood		Total Chattahoochee Production (%)*		
	Pine		Pine	Hardwood		Hardwood	
1984	1.8	1.3	0.6	1.2	2.4	2.5	4.9
1985	2.0	1.2	0.6	1.1	2.6	3.3	5.9
1986	2.5	1.9	0.9	1.3	3.4	3.2	6.6
1987	3.4	1.6	1.1	1.5	4.5	3.1	7.6
1988	4.2	1.2	2.0	1.4	6.2	2.6	8.8
1989	4.5	1.0	2.3	1.1	6.8	2.1	8.9
1990	2.9	0.7	1.2	0.7	4.1	1.4	5.5
1991	1.3	0.7	0.5	0.5	1.8	1.2	3.0
1992	3.1	1.3	1.4	1.0	4.5	2.3	6.8
1993	3.0	0.7	1.0	0.7	4.0	1.4	5.4
1994	2.8	0.9	0.8	0.5	3.6	1.4	5.0
1995	2.9	0.7	0.8	0.5	3.7	1.2	4.9
TOTAL	34.4	13.2	13.2	11.5			
Avg.	2.9	1.1	1.1	1.0			
%*	48	18	18	16			

Source: Timber "cut and sold" reports
**Shows each product's percentage of total volume.*

Note that in Table 3- 245 pine sawtimber harvest is 2.6 times the hardwood sawtimber harvest. Hardwood roundwood harvest, however, is nearly equal to softwood roundwood harvest. There are two factors that are probably largely responsible for this pattern. First, the Forest Service stress on utilization results in the frequent inclusion of timber sale contract provisions requiring the purchaser to remove roundwood. Second, the amount of hardwood roundwood is also an indicator of the occurrence of hardwood pole timber in the understory of predominately pine stands or as low-quality canopy trees, which are often residuals predating Forest Service acquisition.

In Table 3- 246 below, the 1989 and 1992 timber production (the years for which timber product output data was available) is shown for each of three sub-areas of the Chattahoochee and by each major product to show how Forest Service production varies among the ecological units. The Armuchee RD sub-area is identified as Ridge and Valley, the Blue Ridge Mountain ranger districts collectively as Blue Ridge, and the Chattooga Ranger District as Piedmont. For each product, a total volume of that product produced in the entire sub-area from all ownerships is shown followed by the amount produced from the just the Chattahoochee. Next, the Chattahoochee's percent of the total production is shown. Finally, at the right hand side of the table

total volumes for all four products and both years is shown for the entire sub-area, the Chattahoochee portion, and the percent Chattahoochee share. These figures reveal how important National Forest timber production was in the past.

If 27.7 percent of the Oconee NF timber production for each of 1989 and 1992 is combined with the Chattooga RD volume to reflect the overlap in market area, the national forest production share ranges from 5 to 7 percent for the entire sub-area. These are expected to be the more accurate figures for this sub-area. Note the relative strength of hardwood roundwood production as compared to the other products and the similarity in these numbers between the Blue Ridge RD and the Chattooga RD.

Table 3- 246. Chattahoochee NF Timber Production Volume In Million Cubic Feet and Percent Production Share for Each of Three Major Sub-areas of the Forest

Sub-area	Pine Sawtimber		Hardwood Sawtimber		Pine Roundwood		Hardwood Roundwood		Total & 2-Year
	1989	1992	1989	1992	1989	1992		1992	
Ridge & Valley									
Total Volume	22.5	14.2	4.1	3.1	36.3	37.3	8.6	8.2	134.3
Armuchee Volume	0.75	0.62	0	0.02	0.51	0.53	12	0.03	2.6
% NF Sub-area	3	4	0	< 1	1	1	1	<1	24
Georgia Only – Not available									
Blue Ridge									
Total Volume	13.3	13.2	11.4	11.0	22.0	16.1	4.0	5.3	96.3
Chattahoochee NF Volume	2.7	1.7	0.9	1.0	1.3	0.5	0.5	0.6	9.2
% Chattahoochee NF Sub-area	20	13	8	9	6	3	13	11	10
Georgia Only*									32*
Piedmont									
Total Volume	19.2	26.7	4.9	5.1	13.3	13.3	5.0	6.2	96.1
Chattooga RD Volume	1.0	0.8	0.07	0.03	0.4	0.4	0.5	0.5	3.8
Percent Chattooga Sub-area	5	3	1	< 1	3	3	10	8	4
Ranger District Only*									16*

Sources: Timber product output data, forest cut and sold reports, and Southern Appalachian Assessment Timber Study.
NF – National Forest; RD – Ranger District
**Values are from SAA Timber Study.*

In summary, the Chattahoochee has historically been an important, but not a dominant, supplier of timber within the Georgia portion of its market area. When contrasted with its timber inventory (supply) position, it is easy to see that Forest Service timber production has been neither proportionate to its timberland area nor reflective of its timber supply strengths. Stated another way, Forest Service timber management has always been very conservative compared to either the potential of the land or the potential of the markets.

Table 3- 247. Volume In Million Cubic Feet Reported Cut from the Oconee NF by Timber Product, 1985 through 1995 and Timber Production Share

Year	Sawtimber		Roundwood				Oconee Production Share (%)		
	Pine	Hardwood	Pine		Pine	Hardwood	Pine*	Hardwood*	Total
1985	1.7	0.1	0.9	0.01	2.6	0.11	No TPO Data		
1986	3.7	0.1	1.0	< .01	4.7	0.10	1.2	0.09	1.3
1987	3.7	0.1	0.9	0.02	4.6	0.12	No TPO Data		
1988	1.9	0.2	0.7	0.02	2.6	0.22	No TPO Data		
1989	2.2	0.1	0.6	0.03	2.8	0.13	0.8	0.11	0.9
1990	2.4	0.1	0.7	0.05	3.1	0.15	No TPO Data		
1991	2.8	0.2	0.8	0.06	3.6	0.26	No TPO Data		
1992	2.1	0.1	0.7	0.01	2.8	0.11	0.7	0.09	0.8
1993	2.0	0.2	0.7	0.08	2.7	0.28	No TPO Data		
1994	0.8	< .1	0.7	0.02	1.5	0.02	No TPO Data		
1995	0.1	0.0	< .1	< .01	0.1	0.00	No TPO Data		
TOTAL	23.4	1.2	7.7	0.32	31.1	1.50			
% of Total	72%	4%	23%	1%					

Source: Timber "cut and sold" reports, 1985–95 and USDA, Forest Service Resource Bulletin SE-144, 1992.

**Percents are of "All Products" total for each year and species grouping as shown at the bottom of Table 3- 248*

TPO – timber product output.

As a percent of total harvest from the Oconee, the product breakdown is softwood sawtimber, 72 percent; hardwood sawtimber, 4 percent; softwood roundwood, 23 percent; and hardwood roundwood, 1 percent. The very low production of hardwood reflects the management emphasis of retaining hardwood stands in hardwood, especially for wildlife benefits such as hard mast production. Most of the hardwood that has been produced has been incidental volumes in pine stands rather than regeneration harvest in hardwood stands. This highlights that pine stands have a very low occurrence of merchantable hardwood mid-story. September 1995 CISC data shows hardwood-pine and hardwood forest cover types occur on 25 percent of the Oconee, yet average annual hardwood sawtimber volume production was only 4 percent.

The Oconee NF historic market share for the entire analysis area is approximately 1 percent of softwood timber products and 0.1 percent of hardwood timber products.

To explore how Forest Service historic share changes at different scales, timber product output (TPO) data for those counties 50 percent or more within the market area was examined. Eight counties were identified: Baldwin, Greene, Hancock, Jasper, Jones, Monroe, Morgan, and Putnam. Of these, Baldwin and Hancock have no national forest land and Monroe County had no national forest until 1995. Oconee and Oglethorpe Counties, which do have minor acreage in Oconee NF, were not included. Timber production was examined as a single simple average for all products and for each of softwood and hardwood by summing production for the years 1986, 1989, and 1992. Data is presented by "all products," because national forest timber cannot be tracked into the five products for which there is countywide TPO data. Table 3- 248 is a summary of Forest Service historic share at this scale.

Table 3- 248. Oconee NF Timber Product Output Share for Major Market Area Counties as an Average for the Years 1986, 1989, and 1992

Product and Species Group	3-Year Average		
	(million cubic feet)	Oconee NF Production (million cubic feet)	
All Products			
Softwood	65.3	3.4	5.2
Hardwood	13.1	0.1	0.7

Source: Timber product output data from Tony Johnson, FIA Unit, Southeastern Forest Experiment Station, Asheville, NC, May 1996.

These figures show that the Oconee did not historically produce much of the total timber output in its market counties. However its importance was about five times what its timberland area alone would suggest. This would indicate that its significance is to individual wood-using industries within its market area rather than to the economic sector as a whole.

Direct and Indirect Effects

The direct effects of adopting a Forest Plan are to change one or more of the volume, product mix, or value outputs for wood products. These effects arise from:

1. a change in the acres available for regular, periodic timber harvest;
2. a redirection of harvest onto different land in order to accomplish objectives; or
3. a change in the conditions regarding when or how harvest may occur on those acres.

This section shows:

(a) management prescriptions modeled by alternative,
(b) total suitable acres by alternative and Forest,
(c) volumes produced in each alternative for each of the first fifty years,
(d) acres by harvest method by period and alternative, and
(e) the revenue-to-cost comparison for each alternative for each of the first fifty years.

Table 3- 249. Management Prescriptions Modeled for Timber Yields By Alternative on the Chattahoochee National Forest.

Mgmt Rx		Use of Mgmt Rx by Alternative						
		A	B	D	E	F	G	I
4.F.1	Scenic Areas in Wildlife Mgmt Areas							X
4.J	Urban/Suburban Interface		X	X	X		X	
6.D	Core Old Growth w/ Adjacent Area of Extended Rotations	X		X			X	X
7.A	Scenic Byway Corridor	X		X	X			X
7.B	Scenic Corridors and Sensitive Viewsheds	X		X	X	X		X
7.C	OHV Use Areas	X		X	X		X	
7.E.2	Dispersed Recreation w/ Veg Mgmt.							X
8.A.1	Mix of Successional Forest Habitats	X	X	X	X		X	X
8.A.2	Area-Sensitive Mid-to-Late Successional Forest Habitats	X	X	X	X		X	X
8.B	Mix of Successional Habitats – Early-Successional Habitat Emphasis	X	X		X			
8.E.1	Ruffed Grouse Management		X					
8.E.3	High Elevation Early-Successional Habitat							X
9.A.1	Source Water Protection	X	X	X	X		X	X
9.A.3	Watershed Restoration	X	X		X		X	X
9.H	Restoration of Plant Associations	X	X	X	X		X	X
10.A	Sustained Yield Timber Management		X	X		X		
10.B	High-quality Forest Products	X		X	X			
10.E	Timber Management with Recreation Emphasis	X		X				

Source: GIS stands data layer as modified for plan revision and SPECTRUM model September 2003.

Table 3- 250. Management Prescriptions Modeled for Timber Yields By Alternative on the Oconee National Forest.

Mgmt Rx	Management Prescription Name	Use of Mgmt Rx by Alternative						
3.B	Scull Shoals Experimental Forest							X
7.B	Scenic Corridors and Sensitive Viewsheds					X		
7.C	OHV Use Areas	X						
7.E.2	Dispersed Recreation w/ Vegetation Mgmt.	X	X	X	X		X	X
8.A.1	Mix of Successional Forest Habitats				X			X
8.A.2	Area-Sensitive, Mid-to-Late Successional Forest Habitats						X	
8.B.1	Early-Successional Habitat Emphasis				X			
8.D	Red Cockaded Woodpecker Habitat Mgmt. Area	X	X	X	X	X	X	X
8.D.1	Red Cockaded Woodpecker Sub-Habitat Mgmt Area	X	X	X	X	X	X	X
9.G	Maintenance & Restoration of Upland & Bottomland Hardwood & Pine-Hardwood Forests	X	X	X	X		X	
9.H	Restoration of Plant Associations		X					X
10.A	Sustained Yield Timber Management	X		X		X		

Source: GIS stands data layer as modified for plan revision and SPECTRUM model September 2003.

Table 3- 251 below, shows a summary of the "suitable" acres for each alternative. Alternative F shows the current Plan allocation and is the standard for comparison of how the other alternatives change it.

Table 3- 251. Acres Suitable for Timber Harvest on the Chattahoochee-Oconee NF By Alternative

	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F	Alt. G	Alt. I
Chattahoochee	388,007	489,985	484,070	126,771	535,466	146,830	367,196
Percent of Forest	52%	65%	65%	17%	71%	20%	49%
Oconee	91,472	90,150	91,885	81,084	97,759	76,112	93,902
Percent of Forest	79%	78%	80%	70%	85%	66%	81%
Total	479,479	580,136	575,955	207,855	633,226	222,942	461,098
Percent of Total	55%	67%	67%	24%	73%	26%	53%

Source: Planning GIS stands layer, September 2003.

An estimate of timber harvest volume for each decade and for each alternative from suitable prescriptions was modeled with the SPECTRUM program. Timber volume estimates from SPECTRUM were for each decade and have been converted for display and comparison to an average annual value. The first five decades (fifty years) of the SPECTRUM model outputs are shown here. It should be noted that salvage harvest is also expected to occur from time to time on the same lands. Harvest of non-salvage volume on these suitable acres will typically be reduced in years with a significant salvage component. Volumes are shown in both million cubic feet and million board feet. Million board feet is a more relatable measure for many people. The conversion factor between million cubic feet and million board feet used is 5.5; that is, each one million cubic feet contains five and one-half million board feet. The numbers in the table vary slightly from this because calculations were done with non-rounded values from SPECTRUM having three decimal places.

Estimated harvest volumes for each alternative in the first decade only have been reduced outside the SPECTRUM model for southern pine beetle mortality between 1999 and 2003. The procedure for doing this is described in some detail in Appendix B of this EIS. The adjustment was limited to the first decade because reforestation is assumed to return these lands to a stocked condition in the first five years of this plan cycle.

Estimated harvest volumes for Alternative I do not include any yields from stands on slopes greater than or equal to 45-percent; that is, slopes requiring cable logging systems. This is a change from Alternative I in the draft. The amount of reduction was approximately one million cubic feet or five million board feet annually in decade one.

Before reviewing numbers output by the model, it is important to understand some aspects of its behavior that are built in. The National Forest Management Act requires that National Forest timber management: (a) be managed to ensure a 'non-declining even flow' of timber, and (b) generally not exceed a 'long term sustained yield capacity.' Non-declining even flow means that within the long term sustained

yield productive capacity of the land, harvest levels may go up but never down. This requirement was originally specified in order to provide stability to a wood-using economy. Long-term sustained yield (LTSY) is defined in the NFMA implementing regulations as "*the highest uniform wood yield from lands being managed for timber production that may be sustained under a specified management intensity consistent with multiple-use objectives."* The LTSY is a single, unvarying value calculated considering the entire modeling period; or – in our case – 200 years, so as to avoid harvest levels that would exceed the potential: growth capability of the land to re-grow.

Table 3- 252. Chattahoochee-Oconee NF Estimated Average Annual 'Green' Volume Production in Million Cubic Feet and Million Board Feet for Each of The First Five Decades by Alternative.

Alt.	Average Annual Volume									
	Decade 1		Decade 2		Decade 4					
	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF
A	44	8	91	16	91	16	91	16	91	16
B	83	15	103	19	103	19	103	19	103	19
D	110	20	120	22	120	22	120	22	120	22
E	22	4	45	8	45	8	45	8	45	8
F	126	23	143	26	143	26	143	26	143	26
G	4	1	41	7	43	8	43	8	43	8
I	50	9	90	16	90	16	90	16	90	16

Source: SPECTRUM model outputs September 2003.

The average annual volume by decade of Table 3- 252 is called a 'base sale schedule' which is defined in *36 CFR 219.3* as '*A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade, and this planned sale and harvest for any decade is not greater than the long-term sustained yield capacity.'* The average annual volume for Decade 1 (either the second or third column of Table 3- 252 times 10) alone is typically called the 'ASQ' that stands for 'allowable sale quantity.' The allowable sale quantity is defined at *36 CFR 219.3* as '*The quantity of timber that may be sold from the area of suitable land covered by the forest plan for a time period specified by the plan.*' Note that ASQ applies to suitable land only.

Historic production for the Chattahoochee and Oconee combined averaged 10.1 million cubic feet per year or approximately 55 million board feet per year in the period 1985 through 1995. Historic production was thus 44 percent of the decade 1 SPECTRUM model output for Alternative F after adjustment for southern pine beetle mortality. That is, implementation of the current plan has been as if the land area available for harvest was approximately 40 percent of the total forest area rather than the allocated 73 percent. The difference is very close to the split between ground based and cable logging system slopes on the Chattahoochee. This is also why Alternative I with an average 53 percent of the combined Chattahoochee and Oconee acreage available for sustained yield timber management has a timber harvest volume estimate so close to the actual volume experienced in implementing

the 1985 plan. Unlike the 1985 Plan, however, it also shows that it will not be possible to simply 'go somewhere else' to meet plan objectives. There is no large area of non-contributing land that can be tapped as an easy alternative to avoid conflicts.

In the following table, the LTSY for each alternative is shown. By comparing to Table 3- 252, we can see that by the second decade each alternative had reached the LTSY and thereafter was holding steady on the value.

Table 3- 253. Average Annual Long Term Sustained Yield Capacity in Million Cubic Feet by Alternative.

Alternative	Average Annual Long Term Sustained Yield in Million Cubic Feet
A	16.1
B	18.6
D	21.6
E	8.2
F	26.4
G	8.0
I	16.0

Source: SPECTRUM model outputs September 2003.

As previously discussed, each alternative has management prescriptions that do not plan for a regular and periodic harvest and for which no long-term sustained yield value nor allowable sale quantity is calculated. However, they permit harvest to occur on an irregularly scheduled, case-by-case basis. An example might be a developed recreation prescription in which timber is cut and removed to clear for campground road construction. However, much of it is likely to be salvage of insect, disease, wildfire, or storm killed trees.

An estimate has been made for each alternative of the amount of salvage harvest volume and irregularly timed harvest that might be expected. This estimate was generated by:

1. calculating the acres left over after the land modeled for timber yield and the land where timber harvest does not occur where excluded;
2. estimating the annual average area of salvage for those acres at 0.5 percent (or 5 percent per decade);
3. calculating an average volume for each acre;
4. multiplying the acres by the volume.

The 5 percent per decade figure is appropriate for an estimate for both salvage and wildlife habitat creation within an early-successional objective of zero to four percent per decade. The one percent per decade difference is not significant. Also, it is likely that much of the habitat creation activity will be done in response to natural mortality of one kind or another and thus be salvage. The results of this analysis are displayed in the table below.

Table 3- 254. Chattahoochee-Oconee NF Estimated Average Annual Salvage Volume Production in Million Cubic Feet for First Five Decades by Alternative.

Alternative	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
A	3.4	3.4	3.4	3.4	3.4
B	1.6	1.6	1.6	1.6	1.6
D	1.5	1.5	1.5	1.5	1.5
E	6.8	6.8	6.8	6.8	6.8
F (current)	3.7	3.7	3.7	3.7	3.7
G	3.8	3.8	3.8	3.8	3.8
I	3.8	3.8	3.8	3.8	3.8

Source: SPECTRUM model outputs and GIS stands data.

The choice of 0.5 percent annually was based on both historic harvest records, which include the effects of southern pine beetle, ice storms, fires, and numerous tornadoes; and on the rates of canopy gap formation documented in the Southern Appalachian Assessment. This is expected to be a conservative estimate in the medium term of 10 to 20 years because of increasing risk to a variety of forest health problems. It will not be met in each individual year; some will have much more, some will have none. A major reason to be conservative is that salvage is only likely on terrain with less that 40 percent slope and with roads already in place. There is expected to be tree mortality that is not harvested due to these conditions not being met.

In general, salvage harvest volumes are expected to increase with increasing acreages placed in prescriptions where timber harvest is not regularly scheduled. Alternatives with similar salvage harvest estimates generally have similar amounts of acreage without a sustained yield timber management regime. However, Alternative G would prohibit salvage harvest on much of the land as well, thus reducing it to be equal with Alternative I . Alternative E has the highest amounts of salvage because of the high proportion of area where timber harvest would be in reaction to insect, disease, windthrow, or similar events.

Summaries of the harvest methods identified by SPECTRUM as being most effective at maximizing the present net value for the two forests combined are shown below. Again, it is important to recognize that displaying acres by a method of cut is for relative comparison of alternatives, and is not a decision. The decision of what harvest method to use will be made at the level of projects being proposed and analyzed to carry out plan direction.

Table 3- 255. Average Annual Harvest Acres In the First Five Decades By Type of Harvest and Alternative For the Chattahoochee and Oconee National Forest

Chattahoochee-Oconee NF		Average Annual Harvest Acres By Decade				
Alt	Harvest Type	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
A	Intermediate Harvest					
	Thinning	3,311	899	2,861	1,876	5,013
	Regeneration Harvest					
	Uneven-aged	444	112	444	112	1,174
	Even-aged					
	Shelterwood	0	435	0	0	0
	Clearcut with Reserves	1,506	2,814	2,929	3,663	2,331
B	Intermediate Harvest					
	Thinning	4,061	600	3,749	1,559	5,003
	Regeneration Harvest					
	Uneven-aged	964	0	964	0	1,942
	Even-aged					
	Shelterwood	0	435	498	0	140
	Clearcut with Reserves	2,553	3,423	2,624	4,866	2,480
D	Intermediate Harvest					
	Thinning	2,614	419	3,034	2,556	3,507
	Regeneration Harvest					
	Uneven-aged	483	2,820	483	2,820	1,095
	Even-aged					
	Shelterwood	0	440	0	0	212
	Clearcut with Reserves	3,849	3,805	4,142	4,247	3,564
E	Intermediate Harvest					
	Thinning	675	1,631	1,045	1,110	2,431
	Regeneration Harvest					
	Uneven-aged	407	609	407	609	407
	Even-aged					
	Shelterwood	0	435	106	0	0
	Clearcut with Reserves	660	1,196	1,474	1,566	1,184
F	Intermediate Harvest					
	Thinning	3,705	2,429	6,014	4,877	2,692
	Regeneration Harvest					
	Uneven-aged	2,588	5,781	2,588	5,781	2,612
	Even-aged					
	Shelterwood	820	2	0	0	0
	Clearcut with Reserves	3,984	5,977	5,979	5,998	6,009
G	Intermediate Harvest					
	Thinning	417	1,773	1,435	2,259	2,538
	Regeneration Harvest					
	Uneven-aged	410	34	410	34	410
	Even-aged					
	Shelterwood	0	457	435	22	48
	Clearcut with Reserves	36	987	1,031	1,486	928

Chattahoochee-Oconee NF		Average Annual Harvest Acres By Decade				
Alt	Harvest Type	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
I	Intermediate Harvest					
	Thinning	2,563	1,642	1,883	2,837	3,579
	Regeneration Harvest					
	Uneven-aged	459	112	459	112	1,343
	Even-aged					
	Shelterwood	0	454	0	0	17
	Clearcut with Reserves	1,382	2,595	2,669	3,355	1,994

Source: SPECTRUM model outputs December, 2002 for Alternatives A thru G; September 2003 for Alt. I.

The table below shows how the revenues of the timber program within each decade and each alternative compare to the costs of having the program. For each alternative, the 'revenue' line is how much timber purchasers are estimated to pay. The 'costs' line is how much the Forest Service would spend to carry out the program. The 'net' is how much revenues exceed costs. Under current law, much of this difference is available to be used for non-timber renewable resource work such as wildlife or fish habitat improvements or prescribed burning.

Unlike volumes, revenues were not reduced in any alternative nor for any decade for southern pine beetle mortality. Reduced stumpage for salvage is not attributable to a timber program. Subsequent treatment costs are also not attributable to a timber program because they would be for wildlife habitat creation or maintenance.

Table 3- 256. Projected Average Annual Economics of Chattahoochee-Oconee NF Timber Program In Millions of Dollars By Alternative and Period, 2000 - 2050, Base Year 1996

		Annual Average Within Each Decade Period				
Alt	Measure	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
A	Revenue	4.80	9.25	8.83	9.46	8.52
	Costs	3.83	6.80	6.81	8.10	6.91
	Net	0.97	2.46	2.02	1.36	1.61
B	Revenue	8.54	10.50	9.81	11.33	9.63
	Costs	6.80	7.73	7.72	10.22	8.10
	Net	1.74	2.77	2.10	1.11	1.53
D	Revenue	11.51	11.74	10.81	11.87	10.99
	Costs	8.88	9.80	9.09	10.10	9.36
	Net	2.64	1.94	1.72	1.77	1.63
E	Revenue	1.92	4.24	4.50	4.74	4.82
	Costs	1.72	3.54	3.54	3.70	3.51
	Net	0.21	0.70	0.96	1.05	1.32
F	Revenue	14.31	14.21	13.16	12.77	13.61
	Costs	10.94	12.90	11.66	12.11	11.19
	Net	3.37	1.31	1.50	0.66	2.41

Table continued next page.

Alt	Measure	Annual Average Within Each Decade Period				
		Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
G	Revenue	0.35	4.09	4.52	4.79	4.52
	Costs	0.33	3.10	3.23	3.56	3.26
	Net	0.02	0.99	1.29	1.23	1.25
I	Revenue	5.28	9.07	8.63	9.47	8.14
	Costs	4.10	6.48	6.66	8.32	6.83
	Net	1.18	2.59	1.97	1.15	1.31

Source: SPECTRUM model outputs December, 2002 for Alternatives A thru G; September 2003 for Alt .

All alternatives produce a cost-effective sale program but vary in the proportion of costs to revenue. In the first decade, the range is from 80 percent to 94 percent. These results are consistent with experience. Implementation of the 1985 plan timber program has not been below cost under the accounting rules of the General Accounting Office as reflected in the Timber Sale Program Information Reporting System (TSPIRS).

It is important to note that these results were obtained from a SPECTRUM model in which the objective of the timber harvest scheduling was to maximize the present net worth within each alternative, subject to the constraints of meeting early-successional habitat objectives in each management prescription for each decade, meeting non-declining even flow, and meeting the long-term sustained yield. As a result, the model would have 'preferred' (that is, harvested first) those analysis units with the highest product values such as red oak or white oak and southern yellow pine. It would also have preferentially scheduled thinning because it does not have the reforestation costs associated with regeneration harvests. In individual timber sale projects implementing the plan, site-specific considerations may result in selecting stands, harvest methods, and logging systems that do not result in the highest product values.

Cumulative Effects

The trend of increasing urbanization associated with the Atlanta and other metro areas is expected to continue a decline in timberland in the private sector within both the Chattahoochee and the Oconee historic market areas. The current trend of divestiture of timberlands by wood industry within the market area is expected to exacerbate this trend. The preference for suburban growth to the north of Atlanta, towards the mountains, has shifted in the most recent economic downturn to the south and east of the city but continues to affect National Forest. There is an irregularly shaped 'doughnut ring' of high growth around the Atlanta city center. To the north it extends about fifty miles. Related secondary effects such as second homes and retirement homes extend further beyond the Atlanta commuter area. In addition, the metro areas of Chattanooga, Rome, Athens, and those in the South Carolina upstate continue to expand as well, particularly along the interstate corridors. The decrease in timber supply can be expected to increase the importance of National Forest as a potential supplier.

Population growth associated with the urbanization; including retirement homes and second homes, shifts political power and changes expectations about the performance of government at all levels. Preferential location adjacent to National Forest is usually based on the amenities of visual quality and recreation opportunities it affords. Neighbors may have a strong preference for a particular type of recreation such as hiking or horseback riding. The area seen from travelways, homes, and housing developments becomes increasingly sensitive due to both numbers of observers and their level of concern for aesthetics. This trend would indicate increasing conflict, contention, and costs with having timber sales; potentially jeopardizing the ability to meet legal requirements and conservation needs.

The trend of concentration of older, larger, and higher quality timber on National Forest in comparison to other ownerships will continue, maintaining or even increasing the desirability of National Forest timber. The National Forest standing timber inventory will also continue to increase through growth until such time as catastrophic losses overtake the growth rate. This is not expected to happen within the life of the plan revision, though a distinct lessening of net growth is possible. But existing local wood industry with an historic dependence at any level on National Forest timber has already made adjustments to the regional and local decrease in Forest Service timber sales over the period 1996 through 2003. Wood industry that survives will continue to appreciate the quality of National Forest timber. But they are also quite likely to be somewhat averse to the risk of having timber sale contracts shut down or terminated. These factors affect all alternatives, but especially those that would have higher harvest levels than historically.

Along with the trend of increasing age, size, and quality of National Forest timber will be a trend of increasing risk to various forest health problems. The widespread southern pine beetle epidemic in the period 1999 through 2003 has demonstrated to the public the potential but has not resulted in strong organized reaction to the failure to act. Conservative to very conservative alternatives: namely A, E, G, and Alternative I, can be expected to result in timber harvest that is increasingly over time reactionary to natural events. If timber is dead, dying, or damaged at the time of sale, revenues will be decreased, affecting the fiscal ability to accomplish non-timber objectives. Depending upon the severity of the causal events, salvage volumes could overwhelm Forest Service ability to prepare sales, the ability of loggers to move wood before it degraded, or the ability of wood-using industry to process the wood, or even all three of these to varying degrees.

Natural disturbance events over the past five years have created opportunities to meet plan objectives without timber harvest. Taking advantage of these opportunities would be a significant part of a vegetation management program in the first few years of plan implementation. For alternatives B, D, and F this would dampen the increase over the 1985–1995 annual average harvest. For Alternatives A, E, G, and I, it would further widen the decrease over the 1985–1995 annual average harvest

The pressures on the National Forest to provide amenity values and not timber products are expected to continue and mount. The perception by much of the public

that these are in conflict rather than compatible will likely continue. However, there also appears to be a growing realization that change is natural, desirable, and even necessary in biological systems. The emphasis of Alternative I in particular on restoration, including control of nonnative invasive species, is a theme around which public consensus may be possible. Nevertheless, alternatives that would significantly increase timber output above historic actual if implemented as planned, such as Alternative B, D or F would face poor public support or even intense opposition.

Along with urbanization a trend of increasing appreciation for the importance of the National Forest for game and non-game habitat may also develop. National Forest is almost the exclusive landholder above 3,000 feet in Georgia and has almost the sole ability to provide habitat for some species. Some of the neo-tropical migratory birds in particular have been declining in population for several years. Demonstrated success by the Forest Service of effective habitat creation and maintenance could make timber harvest for non-wood production purposes more tolerable.

Cumulatively across direct, indirect, and foreseeable future effects, National Forest timber harvest levels are expected to be lower than the 1985-1995 annual average. Overall, timber revenues are expected to decline also from those years due to a shift to the restoration and wildlife habitat emphasis. Wildlife habitat objectives will tend to be met on lands or with activities producing low product volumes, low product values, or both. Restoration of communities will often be to sites also having low volume, value, or both. The low intensity of managed change will result in increased salvage volumes with low value.