

**Cherokee National Forest
Ocoee Ranger District**

**Travel Analysis Process
Report**

for

**Towee Creek
Assessment Area**

February 2015

BACKGROUND

In August 1999, the Washington Office of the USDA Forest Service published Miscellaneous Report FS-643 titled Roads Analysis: Informing Decisions about Managing the National Forest Transportation System. The objective of roads analysis is to provide decision makers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions.

In January 2001, the agency published the Transportation Final Rule and Administrative Policy authorizing units to use, as appropriate, the road analysis procedure embodied in FS-643 to assist land managers making major road management decisions.

The 2005 Travel Management Rule was developed in response to Forest Chief Dale Bosworth's 4 key threats to the national forests and national grasslands – specifically the 4th threat of “unmanaged recreation”. The rule dealt with how motor vehicles are used on the national forests and national grasslands units. It reorganized the Forest Service travel management regulations found in CFR 212. The rule created parts A, B, and C, moving the bulk of what was called the “2001 Roads Rule” into the new Subpart A.

In addition to reorganizing the Forest Service travel management regulations, the new rule also updated terminology, The terms “forest transportation system” and “unauthorized road” were introduced and the previous terms were made obsolete.

The bulk of the new requirements included as part of the new “2005 Travel Management Rule” were organized into the new Subpart B of the regulations. These focused on designation of roads, trails, and areas for motor vehicle use on National Forest Service lands.

The new policy made some changes to the previous process called “roads analysis” or RAP. The new established process was called “travel analysis” and the scope was expanded to now include trails and areas in addition to roads. Some of the procedures were streamlined, but the same six-step process that was previously used was carried forward into the travel analysis process. A complete inventory of unauthorized routes is no longer required.

Sub-Part A Travel Analysis is required by the 2005 Travel Management Rule (36 CFR 212.5). Forest Service Manual 7712 and Forest Service Handbook 7709.55-Chapter 20 provide specific direction, including the requirement to use a six step interdisciplinary, science-based process to ensure that future decisions are based on an adequate and balanced consideration of environmental, social and economic impacts of roads. The travel analysis process (TAP) report It is intended to inform future proposed actions related to identifying the minimum road system. The TAP process is designed to work in conjunction with other frameworks and processes, the results of which collectively inform and frame future decisions executed under NEPA.

The Federal Register Notice (73 FR 74689) for the final travel management directives was published on December 9, 2008. The directives became effective January 8, 2009 (Forest Service Manual (FSM) 7700 – Travel Management). FSM 7703.25 changes the term “roads analysis” to “travel analysis”. Consequently, the terms are changed in this document to reflect the current direction unless there are references from previous documents using the term “roads analysis.”

These directives require that a travel analysis is conducted to inform decisions related to:

- a. Identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands per 36 CFR 212.5(b)(1).
- b. Designation of roads, trails and areas for motor vehicle use per 36 CFR 212.51.

PROCESS

This travel analysis is a six-step process. The steps are designed to be sequential with the understanding the process may require feedback among steps over time as an analysis matures. The amount of time and effort spent on each step differs by project, based on specific situations and available information. The process provides a set of possible issues and analysis questions for which the answers can inform choices about the transportation system management. Decision makers and analysts determine the relevance of each question, incorporating public participation as deemed necessary.

- Step 1. Setting up the Analysis
- Step 2. Describing the Situation
- Step 3. Identifying Issues
- Step 4. Assessing Benefits, Problems and Risks
- Step 5. Describing Opportunities and Setting Priorities
- Step 6. Reporting

The analysis is an integrated ecological, social, and economical approach to transportation planning that addresses both existing and future transportation system (USFS, 1999a). This analysis follows the process outlined in the document “Roads Analysis: Informing Decisions About Managing The National Forest Transportation System,” (USFS, 1999a). *This is not a NEPA document*, but rather a site specific NFMA analysis for the Towee Creek Assessment Area. This area encompasses approximately 11,725 acres of National Forest ownership within Compartments 109, 115-118, 128-130, 137-145, 160-163, 168, 170, 180-181. This NFMA analysis defines the existing and desired conditions of the transportation system, and opportunities are identified to move towards the desired condition.

This analysis provides a framework to identify travel related concerns and management opportunities that can be incorporated into subsequent projects being evaluated through the NEPA process. This analysis will assist in the decisions involving transportation systems in the Towee Creek Assessment Area.

PRODUCTS

The product of an analysis is a report for decision makers and the public that documents the information and analyses used to identify opportunities and set priorities for future national

forest transportation systems. Included in the report is a map displaying the known transportation system for the analysis area, and the needs and opportunities for each road and trail, or segment of road or trail. A complete list of all the maps is included in Step 6. This report will:

- Identify needed and unneeded roads, trails, and areas for motor vehicle use;
- Identify travel-associated environmental and public safety risks;
- Identify site-specific priorities and opportunities for travel-related improvements and decommissioning;
- Identify areas of special sensitivity or any unique resource values.

THIS REPORT

This report documents the travel analysis procedure used for the Towee Creek Assessment Area (wherever analysis area is referenced in this document, it corresponds to the Towee Creek Assessment Area boundary). This report is a “living” document and reflects the conditions of the analysis area at the time of writing. The document can be updated as the need arises and conditions warrant. Any future updates will be reflected in the title (e.g., version 2.0).

STEP 1 SETTING UP THE ANALYSIS

PURPOSE AND PRODUCTS

The purposes of this step are to:

- Identify the geographic scale or scales for the analysis,
- Develop a process plan for conducting the analysis, and
- Clarify the roles of technical specialists and line officers in the team.

The products of this step are:

- A statement of the objectives of the analysis,
- A list of interdisciplinary team members and participants,
- A list of information needs, and
- A plan for the analysis.

OBJECTIVES OF THE ANALYSIS

This travel analysis is specific to the project scale; it is being completed for the Towee Creek EA and will be used to develop the Forest TAP. Unless otherwise stated, the boundary for this roads analysis will match the Towee Creek Assessment Area boundary. (See maps in Appendix A.)

This report analyzes all the roads, trails, and areas for motor vehicle use in the analysis area – including the existing Forest Service transportation system and unauthorized roads and trails (see Step 2 for definitions). It will identify the minimum road system for the analysis area by determining which routes are needed, and it will describe opportunities and set priorities. Some of these opportunities will be carried forward in the Towee Creek EA.

INTERDISCIPLINARY TEAM MEMBERS AND PARTICIPANTS

Name	Title	Role for Travel Analysis
Janan Hay		Planning Team Leader
Bob Lewis & Eric Taylor	Silviculturist	Forest Health / Soils
Mary Miller & Laura Morris	Wildlife Biologist	Terrestrial Wildlife
Jim Herring	Aquatic Biologist	Aquatic Resources / Water
Mark Pistrang	Botanist/Ecologist	Botanist/Ecologist
Steve Carlson	South Zone FMO	Fuels/Fire Management
Gary Hubbard	Forest Engineer	Transportation Management
James Ehrlich	Infra Coordinator	TAP Editor
Doug Byerly	Landscape Architect	Visual Resources
Mary Jane Burnette	Other Resource Assistant	Recreation Resources
Anita Bailey	GIS Specialist	GIS Support
Quentin Bass & Chris Bassett	Archeologist	Cultural Resources / Social Issues
Bill Jackson		Air Resources

Individuals from this Interdisciplinary team were utilized for the Travel analysis as needed. At critical points, Line Officers established sideboards, identified issues, and summarized management recommendations.

The Cherokee National Forest’s Revised Land and Resource Management Plan (RLRMP) and amendments provide the management objectives, baseline information, and standards and guidelines to meet legal requirements. Additional information was obtained through field surveys, knowledge of forest personnel, and database queries. The analysis incorporates the best available scientific information as summarized in the document “Forest Service roads: a synthesis of scientific information” (USFS, 2001). This information was the foundation for determining impacts to different resources and identifying recommended management actions.

A Forest Wide Roads Analysis was completed in December 2002 (CNF RAP 2002). This analysis will tier to that document.

INFORMATION NEEDS

The data currently housed in the geographic information system (GIS) will be the information used for this analysis. Updates will be made as new information becomes available. Extensive GIS maps are needed for the various resource fields and are discussed in Step 2 and displayed in Appendix A.

ANALYSIS PLAN

Review of the document will occur on the Cherokee NF (Forest Service specialists); and, the report will be available for other Forests as well. Once finalized, the document will be available to the public if requested. It will be part of the administrative record for the Towee Creek EA, for much of the information and many of the opportunities identified may be carried forward in the EA. The Towee Creek Team conducted the analysis using GIS data, field data, and public involvement. The interdisciplinary (ID) team developed issues related to road management and reviewed all the questions in Step 4 to determine which were applicable to the analysis area. In Step 5 the team brought together all the resource information and made recommendations and set priorities.

STEP 2 DESCRIBING THE SITUATION

PURPOSE AND PRODUCTS

The purpose of this step is to:

- Describe the existing transportation system in relation to current forest plan direction.

The products of this step are:

- A map or other descriptions of the existing transportation system defined by the current forest plan or transportation plan, and
- Basic data needed to address travel management issues and questions.

EXISTING TRANSPORTATION SYSTEM DESCRIPTION

Most of the study area is on National Forest System land. The roads assessed in and near the boundary of this study area are mostly National Forest System Roads (NFSRs) under the jurisdiction and maintenance of the Forest Service. There are approximately 74 miles of Forest Service jurisdiction roads within the analysis area. Approximately 39 miles of the Forest Service roads are closed to motor vehicle use by the public. These roads are gated, vegetated, and closed seasonally or throughout the year. The remaining approximately 27 miles of roads are open to public motor vehicle use. Most of the NFSRs are in fair to good condition, but all have annual routine maintenance needs. Deferred maintenance needs exist for most of the roads.

System Summary for Towee Creek Assessment Area

	System Roads				Unauthorized			Net change to System
	Open	Seasonal	Closed	Recommen nd Decom	To Be Added To System	Recommen nd Decom	Total Decom	
Towee Creek	2.7	1.18	22.8	1.35	.13	.06	1.41	-1.22

The Forest is aware of approximately 0.19 miles of unauthorized routes. This mileage may not represent all the existing unauthorized routes in the analysis area.

There are no system trails or areas for motor vehicle use in the analysis area.

LAND AND RESOURCE MANAGEMENT PLAN EMPHASIS

The Towee Creek Assessment Area covers approximately 14,950 total acres.

Acres in Assessment Area

Assessment Area	Total Acres	GIS Acres of FS Land	GIS Acres Pvt	% FS Ownership
Towee Creek	14,950	11,725	2,402	78%

This acreage is contained in compartments within Management Areas 3 and 5 and is allocated into the following Management Prescriptions:

Management Prescriptions and Allocation (general description within assessment area)

7.B Scenic Corridors/Sensitive Viewsheds

7.D Concentrated Recreation Zone

8.B Early Successional Habitat Emphasis

9.H Restoration (mostly Big Cove Branch area)

Prescription	Acres
7.B	725.66
7.D	8.65
8.B	9829.96
9.H	1284.98

DEFINITIONS (36 CFR 212.1)

The Federal Register published the Final Rule and Administrative Policy which established new definitions for road management on the National Forests. Listed below are some of the new definitions related to travel management and analysis.

Area. A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a ranger district (36 CFR 212.1).

Designated Road, Trail, or Area. An NFS road, an NFS trail, or an area on NFS lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on an MVUM (36 CFR 212.1).

Forest Road or Trail. A road or trail wholly or partly within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1).

Forest Transportation Atlas. A display of the system of roads, trails, and airfields of an administrative unit (36 CFR 212.1).

Forest Transportation Facility. A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system (36 CFR 212.1).

Forest Transportation System. The system of NFS roads, NFS trails, and airfields on NFS lands (36 CFR 212.1).

Forest Transportation System Management. Travel planning, analysis, designation of roads, trails and areas for motor vehicle use, recordkeeping, scheduling, construction, reconstruction, maintenance, decommissioning, and other operations undertaken to achieve environmentally sound, safe, and cost-effective access for the use, enjoyment, protection, administration, and management of NFS lands.

Highway-Legal Vehicle. Any motor vehicle that is licensed or certified under state law for general operation on all public roads in the state. Operators of highway-legal vehicles are subject to state traffic law, including requirements for operator licensing.

Jurisdiction Over a Forest Transportation Facility. The legal right to control or regulate use of a forest transportation facility derived from title, an easement, an agreement, or other similar source.

Motor Vehicle. Any vehicle which is self-propelled, other than:

- a. A vehicle operated on rails; and
- b. Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area (36 CFR 212.1).

Motor Vehicle Use Map (MVUM). A map reflecting designated roads, trails, and areas on an administrative unit or a ranger district of the NFS (36 CFR 212.1).

National Forest System Road. A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

National Forest System Trail. A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

Non-Highway-Legal Vehicle. Any motor vehicle that is not licensed or certified under state law for general operation on all public roads within the state. Operators of non-highway-legal vehicles are subject to state requirements, if any, for licensing and operation of the vehicle in question.

Private Road. A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.

Public Road. A road under the jurisdiction of and maintained by a public road authority and open to public travel (23 U.S.C. 101(a)).

Road. A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

Road Construction or Reconstruction. Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road (36 CFR 212.1).

Road Decommissioning. Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).

Road Maintenance. Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives (FSM 7714).

Road Subject to the Highway Safety Act. An NFS road that is open to public use in a standard passenger car, including a road with access restricted on a seasonal basis and a road closed during extreme weather conditions or for emergencies, but which is otherwise open to public travel.

Route. A road or trail.

Temporary Road or Trail. A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or a forest trail and that is not included in a forest transportation atlas (36 CFR 212.1).

Trail. A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

Unauthorized Road or Trail. A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR 212.1).

BASIC DATA NEEDS

Basic data needs are listed below for the Big Creek/Upper Ocoee River Travel Analysis; these were data needed to adequately address the issues. Some of the data are displayed in this report, and other data was used to help answer questions in Step 4, but are located on file at the Ocoee Ranger District.

- GIS layer of existing transportation system.
- Road logs.
- GIS layer of wildlife cover types.
- GIS coverage and mapping of critical, unique or sensitive wildlife habitats.
- GIS map of potential unroaded areas (roads buffered ¼ mile).
- Classification of all roads by type and level of use, season of use and maintenance needs.
- Identification of illegal OHV use within the analysis area.
- Mapping of wetlands, landforms, and ecological land types within the analysis area.
- Identification of wildlife species most at risk from roads, whose viability is a concern.
- On-Forest wildlife monitoring data.

- Identification of wildlife habitat management needs facilitated by the existing road system.
- Identification of existing monitoring/inventory sites and the required roads necessary for access.
- An assessment of the degree of encroachment and proximity of roads to wetland areas, and the potential impacts is needed.
- The location of roads relative to riparian boundaries and the intersections that influence riparian vegetative communities.
- Vegetation inventory data.

STEP 3 IDENTIFYING ISSUES

PURPOSE AND PRODUCTS

The purpose of this step is to:

- Identify the key questions and issues affecting travel management, and
- Describe the origin of the issues.

The products of this step are:

- A summary of key travel-related issues, including their origin and basis, presented by general categories of environmental, socio-cultural and economic, and
- A description of the status of current data, including sources, availability, and methods of obtaining information.

ISSUE SUMMARY

The following issues were identified by the interdisciplinary team for this travel analysis.

Issue 1 – Private Property/Special Use Access

Private property access and special use permit access are issues in this analysis. They are factors in deciding the management of roads in all Management Prescriptions in the Towee Creek Assessment Area. Roads they need for access are retained on the road system.

Issue 2 – Use of roads for wildfire suppression and prescribed burning.

Existing system roads serve an important role in safe and efficient wildfire suppression operations. Timely access for suppression personnel and equipment is dependent upon an adequate road system.

Existing roads often serve as the primary control lines. This allows for suppression with minimal ground disturbance and minimal exposure of personnel to hazards. In addition to wildfire suppression, system roads serve as the primary containment sources for the Zone's Hazardous Fuels Reduction prescribed burning operations.

Issue 3 – Access for Vegetation Management

Generally, the road network in the Towee Creek Assessment Area was designed and built to facilitate vegetation management. Access is generally good, but small amounts of roading may be needed for future management.

Issue 4 – Access/Use for Wildlife Management

The presence of roads, especially roads open to public traffic, can have adverse effects on wildlife. Many adverse impacts are the result of disturbance, illegal harvest, and habitat

alterations caused by roads. Controlling access, by gating roads, is an important tool for mitigating adverse impacts. Gated roads also provide benefits for wildlife when these areas are managed as linear wildlife openings or provide access to spot openings. Roads also facilitate and provide access for hunting and wildlife viewing opportunities. Maintaining un-roaded areas is crucial in order to provide wildlife with large contiguous blocks of un-fragmented habitat with low levels of disturbance. Controlling access, providing wildlife openings, and maintaining un-roaded areas were identified as important road issues for wildlife in the Towee Creek Assessment Area.

Issue 5 – Recreation/Heritage Use

Roads are important factor from a recreational standpoint for numerous reasons. They serve as the primary conduit for ingress/egress to the National Forest and the recreation zones. Recreation activities in the Towee Creek Assessment Area include: horseback riding, fishing, hiking, camping, swimming, hunting, scenic driving, and many others. All of these recreational activities require a road system to access the recreation zones. Additionally from an administrative standpoint, roads are a necessity for emergency response and maintenance of recreational zones and campgrounds.

STATUS OF CURRENT DATA

The roads in the analysis area are in the GIS system, and their condition/status is current as of the June 2010. The road number, name, length, and other data are detailed in **Table 1** below.

TABLE 1. TOWEE CREEK WATERSHED - CURRENT TRANSPORTATION STATUS								
ROAD #	ROAD NAME	APPROX. MILES OF ROAD IN WATERSHED	APPROX. MILES OF ROAD WITHIN 100' OF STREAM	% OF ROAD MILEAGE WITHIN 100' OF STREAM	RMO	STATUS (as defined by Travel Management Rule)	SURFACE TYPE	REMARKS
NATIONAL FOREST SYSTEM ROADS (NFSR)								
1041	LOWER IRONSBURG	2.46	0.53	22%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	lwlo
1041B	OLD LOWER IRONSBURG	0.23	0.06	26%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	
1061	BUTLER RIDGE	1.18		0%	D2-HC/D2-FS	Open/Closed	IMPROVED NATIVE MATERIAL	lwlo/accesses wlos
1062	DEEP BRANCH	0.63		0%	E1	Closed	NATIVE MATERIAL	
1064	BUTLER BRANCH	0.45		0%	E1	Closed	AGGREGATE/NATIVE MATERIAL	
1065	LITTLE BRANCH	0.46		0%	D2-FS	Closed	NATIVE MATERIAL	
108B	TOWEE CR. BOAT LAUNCH	0.16	0.06	38%	B4	Open	ASPHALT	SPECIAL USE ACCESS
112901	COUNTY LINE	0.30	0.05	17%	D2-FS	Closed	NATIVE MATERIAL	accesses wlo
11298	BRISTOW SPECIAL USE	0.31		0%	D2-HC	Closed	AGGREGATE	ACCESSES PVT
113801	SANDY GAP	1.00		0%	E1	Closed	NATIVE MATERIAL	
11431	MCCULLEY MOUNTAIN	0.65		0%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	
11605	WEST BLACK MTN.	0.15		0%	E1	Closed	IMPROVED NATIVE MATERIAL	
1161	NORTH DEEP BRANCH	0.32		0%	D2-FS	Closed	NATIVE MATERIAL	
1162	NORTH SMITH MTN.	0.84		0%	D2-FS	Closed	AGGREGATE	lwlo
2015	TOWEE CREEK	2.56	0.09	4%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	lwlo
2015A	TOWEE CR. SPUR A	0.63		0%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	lwlo
2015B	TOWEE CR. SPUR B	0.57		0%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	lwlo
2016	WILDCAT-ROCK ISLAND	2.92	0.19	7%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	lwlo
2016A	ROCK ISLAND	2.00	0.06	3%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	TVA ACCESS; lwlo
2018	HICKS BRANCH	2.32		0%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	lwlo
2018A	HICKS BR SPUR A	0.31		0%	D2-FS	Closed	AGGREGATE	lwlo
2018B	HICKS BR SPUR B	0.68		0%	D2-FS	Closed	AGGREGATE	lwlo
2019	JONES RIDGE SPECIAL USE	0.61		0%	D2-HC	Closed	NATIVE MATERIAL	ACCESSES PVT; access wlo
2022	WITT CEMETERY	0.53		0%	D2-FS	Closed	IMPROVED NATIVE MATERIAL	ACCESSES PVT; access lwlo
2104	BORIN TOP-KINGDOM	1.03		0%	D2-FS	Closed	NATIVE MATERIAL	lwlo
2130	WEST IRONSBURG	0.87	0.04	5%	D2-FS	Closed	AGGREGATE	lwlo/accesses wlos
22C	HAMPTON CEMETERY	0.44	0.13	30%	C3	Open	IMPROVED NATIVE MATERIAL	ACCESSES PVT
23	MC FARLAND	1.77	0.27	15%	C3	Open	AGGREGATE	access to lwlo/wlo

TABLE 1. TOWEE CREEK WATERSHED - CURRENT TRANSPORTATION STATUS								
ROAD #	ROAD NAME	APPROX. MILES OF ROAD IN WATERSHED	APPROX. MILES OF ROAD WITHIN 100' OF STREAM	% OF ROAD MILEAGE WITHIN 100' OF STREAM	RMO	STATUS (as defined by Travel Management Rule)	SURFACE TYPE	REMARKS
23B	OLD MC FARLAND	0.34	0.04	12%	D2-HC	Open	NATIVE MATERIAL	
		26.71	1.52	6%				

UNAUTHORIZED ROADS								
T-1		0.06						Off #23; between #1061 & #1064; accesses dispersed campsite
T-2		0.13						Off #23; near #23B: accesses TVA tunnel & dispersed camping
		0.19						

STEP 4 ASSESSING BENEFITS, PROBLEMS, AND RISK

PURPOSE AND PRODUCTS

The purpose of this step is to:

- Assess the various benefits, problems, and risks of the current transportation system and whether the objectives of Forest Service policy and forest plans are being met.

The products of this step are:

- A synthesis of the benefits, problems, and risks of the current transportation system,
- An assessment of the risks and benefits of entering any unroaded areas, and
- An assessment of the ability of the transportation system to meet management objectives.

CURRENT ROAD SYSTEM BENEFITS, PROBLEMS, AND RISKS

The following section is a series of questions and answers that assess benefits, problems, and risks of the current transportation system and its ability to meet the objectives stated in the Forest Land Management Plan. The questions are from Forest Service publication FS-643, *Road Analysis: Informing Decisions About Managing the National Forest Transportation System*.

Although the questions specifically address the road system, in answering the questions, the transportation system was considered. *Table 2* provides documentation for this section of the travel analysis process.

Table 2. Documentation for Towee Creek Travel Analysis Process Step 4.

Assigned to Specialist	Question Number	Addressed in Analysis?	*Rationale For Questions Not Addressed
Mark Pistrang / Mary Miller	EF (1) Received	Y	
	EF (2) Received	Y	
	EF (3) Received	Y	
	EF (4) Received	Y	
	EF (5) Received	Y	
Ali Reddington	AQ (1) Received	Y	
	AQ (2) Received	Y	
	AQ (3) Received	Y	
	AQ (4) Received	Y	
	AQ (5) Received	Y	
	AQ (6) Received	Y	
	AQ (7) Received	Y	
	AQ (8) Received	Y	
	AQ (9) Received	Y	
Jim Herrig	AQ (10) Received	Y	
	AQ (11) Received	Y	
	AQ (12) Received	Y	
	AQ (13) Received	Y	
	AQ (14) Received	Y	
Mary Miller	TW (1)	Y	
	TW (2)	Y	

Table 2. Documentation for Towee Creek Travel Analysis Process Step 4.

Assigned to Specialist	Question Number	Addressed in Analysis?	*Rationale For Questions Not Addressed
	TW (3)	Y	
	TW (4) Received	Y	
Gary Hubbard	EC (1) Received	Y	
Gary Hubbard	EC (2) Received	Y	
Gary Hubbard	EC (3) Received	Y	
Eric Taylor	TM (1) Received	Y	
	TM (2) Received	Y	
	TM (3) Received	Y	
	MM (1)	N	Addressed in Forest Tap
	RM (1)	N	Addressed in Forest Tap
Ali Reddington	WP (1) Received	Y	
	WP (2) Received	Y	
	WP (3) Received	Y	
Mary Miller / Mark Pistrang	SP (1) Received	Y	
Gary Hubbard	SU (1) Received	Y	
Gary Hubbard	GT (1) Received	Y	
	GT (2) Received	Y	
	GT (3) Received	Y	
	GT (4) Received	Y	
	AU (1)	N	Addressed in Forest Tap
David Cadle, Ken Seymore	AU (2)		
Steve Carlson	PT (1) Received	Y	
	PT (2) Received	Y	
	PT (3) Received	Y	
	PT (4) Received	Y	
Matt Henry	UR (1) Received	Y	
	UR (2) Received	Y	
	UR (3) Received	Y	
	UR (4) Received	Y	
	UR (5) Received	Y	
Matt Henry	RR (1) Received	Y	
	RR (2) Received	Y	
	RR (3) Received	Y	
	RR (4) Received	Y	
	RR (5) Received	Y	
Mary Miller / Mark Pistrang	PV (1) Received	Y	
Quentin Bass / Chris Bassett	PV (2) Received	Y	
	PV (3) Received	Y	
Matt Henry/Doug Byerly	PV (4) Received	Y	
Matt Henry/Doug Byerly	SI (1) Received	Y	
	SI (2) Received	Y	
Quentin Bass / Chris Bassett	SI (3) Received	Y	
	SI (4) Received	Y	
	SI (5) Received	Y	
Matt Henry/Doug Byerly	SI (6) Received	Y	
	SI (7) Received	Y	
	SI (8) Received	Y	
Mary Miller / Mark	SI (9) Received	Y	

Table 2. Documentation for Towee Creek Travel Analysis Process Step 4.

Assigned to Specialist	Question Number	Addressed in Analysis?	*Rationale For Questions Not Addressed
Pistrang			
Matt Henry/Doug Byerly	SI (10) Received	Y	
	CR (1)	N	Addressed in Forest TAP

EF (1): What ecological attributes, particularly those unique to the region, would be affected by roading of currently unroaded areas?

The Towee watershed does not contain large unroaded areas, and effects of additional roading in most of this this area would be similar to effects described in the forest-wide RAP.

EF (2): To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?

Roads are known vectors for the spread of exotic species. Effects are the same across the forest.

EF (3): To what degree do the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?

Effects are the same across the forest.

EF (4): How does the road system affect ecological disturbance regimes in the area?

Some natural ecological disturbance regimes (fire) may be limited to a very local level in areas where road densities are high, while others (wind, native insect outbreaks) may not be affected by roads at all. While the existing road system may provide corridors for the movement of some animals and plant species, it also has the potential to limit the movement of other species. Natural disturbance regimes are likely most influential in large unroaded landscapes such as congressional wilderness and wilderness study areas where the effects of roads on the landscape are minimized, however no such areas exist within this watershed.

EF (5): What are the adverse effects of noise caused by developing, using, and maintaining roads?

The Towee Creek watershed is interspersed with private land and roads are somewhat more prevalent than in some areas. Noise effects from roads are similar to what is found across the forest. Noise can affect some species and in other species have no effect. It initially may cause avoidance of an area by some species. Most of those species rapidly become habituated.

Aquatic, Riparian Zone, and Water Quality (AQ)

AQ (1): How and where does the road system modify the surface and subsurface hydrology of the area?

Surface and subsurface flows are intercepted by the road when water is moving down adjacent hill slopes. Water can be concentrated either on the road surface or in adjacent ditches, and in places, is rerouted from pathways it would otherwise take if the road were not present. By intercepting surface and subsurface water flow, and diverting it into ditches and channels, roads effectively increase the density of streams on the landscape. As a result, water infiltration decreases, the timing of flood flows is quickened, and the peak of flood flows is increased. The magnitude of this effect is dependent on the density of roads, gradient of road, and its location in the watershed. These effects are particularly pronounced in association with roads located along drainages or with multiple stream crossings.

Three County Highways, CH22, CH123 and CH640-2, intercept stream flows and may be adversely affecting the hydrology of Loss Creek and Towee Creek. The Forest Service does not manage these roads but could work with the Polk County to lessen these impacts. Four Forest Service roads also intercept stream flows (see table below).

Road Number	Miles	Streams Affected
1041	0.53	Loss Creek
23	0.27	Butler Creek and West Fork Butler Creek
2016	0.19	Wildcat Creek
22C	0.13	Loss Creek Tributary

Recommendations – Overall the impacts of roads on stream flow are minimal; however, if any of the Forest or county roads listed above are programmed for reconstruction, consideration should be given toward correcting the hydrologic impacts.

AQ (2): How and where does the road system generate surface erosion?

All native and aggregate surfaced roads generate some surface erosion. The amount depends on factors such as soil type, road surface type, road gradient, road prism, the spacing and effectiveness of drainage structures, traffic use, and maintenance activity. The extent of surface erosion occurring on road cut-banks depends on the steepness, slope length, soil type, and vegetative cover. Road ditches concentrate water flow which generates surface erosion and also increases sediment delivery to streams from road surfaces and road cut-banks.

Surface erosion is particularly problematic when roads are located immediately adjacent to drainages and/or have multiple perennial/intermittent stream crossings. The road segments discussed in AQ1 have the greatest potential for generating sediment to the streams.

Recommendations – Overall the impacts of roads on stream flow are minimal; however, if any of the Forest or county roads listed above are programmed for reconstruction, consideration should be given toward correcting the hydrologic impacts.

AQ (3): How and where does the road system affect mass wasting?

Small slides and slumps are possible below culvert outfalls, along fill slopes where road drainage is concentrated, and on road cutbanks. Inadequately sized culverts or plugged culverts may blowout during high flow periods and initiate soil slides. Proper sizing and location of drainage culverts can reduce this potential, as well as, armoring the outfall areas associated with drainage structures, as needed. Road cutbanks pose a problem in steep areas where soils are coarse in texture, shallow, and where unstable colluvium material occurs.

The soil structure within the Towee analysis area is relatively stable not subject to frequent slides or slumps. All nine culverts that pass perennial flows under roads are somewhat undersized.

Recommendations – Replace round culverts with arched culverts of adequate size to accommodate flood flows when major road construction is being implemented.

AQ (4): How and where do road-stream crossings influence local stream channels and water quality?

Road-stream crossings serve as a primary conduit for road-related erosion and storm drainage to reach streams. Accelerated sediment delivery to affected streams occurs at these points, and can affect water quality and substrate condition. In most cases culverts have more of an influence on stream channels and water quality than do bridges or bottomless culverts. Culverts concentrate and accelerate water flow causing soil displacement to occur at the outfalls and cause stream banks to undercut. Over time the stream channel adjusts to the change in flow by becoming deeper and/or wider for a short distance below the culvert. Piping occurring under or around culverts is usually a minor source of sediment; however, high sediment loading can occur from a culvert blowout due to piping. Blowouts can also occur from plugged culverts. Road surfacing, eroded materials and pollutants are usually deposited into streams by ditches that empty directly into streams at road-stream crossings. All nine culverts that pass perennial flows under roads are somewhat undersized.

Recommendations – Replace round culverts with arched culverts of adequate size to accommodate flood flows when major road construction is being implemented.

AQ (5): How and where does the road system create potential for pollutants, such as chemical spills, oils, deicing salts, or herbicides, to enter surface waters?

Due to the nature and location of the roads within this analysis area, there is little potential for chemical pollution of streams related to Forest Service roads. If roads were used to transport chemicals such as herbicide, the greatest potential for spills affecting aquatic resources would be at stream crossings or road segments located adjacent to streams. Roads in the Towee Creek analysis area are not heavily traveled by vehicles carrying chemicals. Some risk may be associated with delivery/disposal of chemicals used at the TVA Apalachia Powerhouse and with transport/application of herbicides along the powerline corridors emanating from that powerhouse. Oil, fuel, and raw sewage carried by campers/RVs are potential water pollutants.

Recommendations – None

AQ (6): How and where is the road system "hydrologically connected" to the stream system? How do the connections affect water quality and quantity?

The road system in the analysis area is connected to streams primarily at stream crossings. Generally, the hydrologic connection is made where ditchlines empty into streams or drainages. Road surfacing and other eroded materials are usually deposited into streams by ditches that empty directly into streams. Without proper ditch turnouts, surface runoff enters the stream channel carrying eroded materials and pollutants. If this water moves directly to stream channels, peakflows and hydrograph timing can be somewhat altered from the condition associated with an unroaded watershed. The majority of road mileage within this analysis area is located along ridge-tops or upper/middle side-slopes. However, stream crossings can also be problematic with these roads.

About 6% of the road miles in the Towee Analysis Area are so close to perennial stream channel that disruption of the hydrological connection between the ditch lines and the streams cannot be mitigated.

Recommendations - Create more ditch turnouts where ditchlines empty directly into stream channel. When major road construction is being implemented convert ditchlines to other types of water control structures such as rolling.

AQ (7): What downstream beneficial uses of water exist in the area? What changes in uses and demand are expected over time? How are they affected or put at risk by road-derived pollutants?

As outlined in the Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control Amendments, Chapter 1200-4-4, Use Classifications for Surface Waters beneficial uses of water bodies in or immediately downstream from the analysis area are as follows:

Stream	Description	Designated Beneficial Uses								
		DOM	IWS	FAL	REC	LWW	IRR	NAV	TS	NRTS
Hiwassee River	0.0 – 57.0	X	X	X	X	X	X	X		
Towee Creek	0.0 - Origin			X	X	X	X			
Loss Creek	0.0 - Origin			X	X	X	X			
Definitions:										
DOM - Domestic Water Supply					IRR - Irrigation					
IWS - Industrial Water Supply					NAV Navigation					
FAL - Fish and Aquatic Life					TS - Trout Stream					
REC - Recreation					NRTS - Naturally Reproducing Trout Stream					
LWW - Livestock Watering and Wildlife										

All waters within National Forests are Exceptional Tennessee Waters (Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Chapter 1200-04-03-.06(4)) and consequently no degradation that threatens the designated uses of these waters are is permitted.

The 2014 TDEC Stream/Waterbody Assessments revealed that all assessed streams in the analysis area are supporting their designated uses with the following exceptions:

The portion of the Hiwassee River within the analysis area is not supporting its designated uses. The 2012 303(d) list indicates that Hiwassee River is impaired with respect to water temperature and low flow alterations. These impacts result from Hydrostructure Flow Regulation/modification associated with the Apalachia Dam and associated power generation infrastructure/management.

Over time, excessive sedimentation could compromise the storage capacity of reservoirs along the Hiwassee River. However, the relative contribution of sediment originating from Forest Service roads is extremely small compared to the contribution of sediment originating from privately managed lands. The impact of this small amount of sediment on downstream designated uses is negligible and is likely to remain so.

Recommendations - None

AQ (8): How and where does the road system affect wetlands?

Road systems may affect wetland hydrology by altering surface and subsurface drainage patterns. This change has the potential to modify the wetland moisture regime. Roads crossing at wetlands may restrict natural water flow quantity, timing, and routing. Sediment from roads can fill in wetlands over time. Based on a review of the National Wetlands Inventory and forest roads GIS data, no specific locations were identified where the road system is negatively affecting wetland hydrology.

Recommendations - None

AQ (9): How does the road system alter physical channel dynamics, including isolation of floodplains, constraints on channel migration, and the movement of large wood, fine organic matter, and sediment?

The road system can alter physical channel dynamics by increasing runoff and sediment delivery to affected streams. Sediment entering streams can reduce pool depths and contribute to changes in channel substrate (i.e. embededness). Stream crossings can retard or prohibit the movement of large woody debris, fine organic matter, and sediment. Areas located within the riparian corridor tend to isolate the floodplain associated with streams and impede or prevent natural channel migration. Only 6% of the roads in the Towee Analysis area fall within the riparian corridor.

Recommendations – Replace round culverts with arched culverts of adequate size to accommodate flood flows when major road construction is being implemented.

AQ(10): How and where does the road system restrict the migration and movement of aquatic organisms? What aquatic species (i.e. fish and amphibians) are affected and to what extent?

Restrictions to migration for aquatic species primarily occur at stream crossings. There are thirteen perennial stream crossings along the road system in this project area; nine are culverts and potential barriers to fish, amphibians, or macroinvertebrates. The other four are bridges and do not restrict aquatic organism passage.

Fourteen of twenty stream reaches capable of supporting fish in the analysis area have been surveyed. The unsurveyed stream reaches are unlikely to support any new or rare species.

Fifty species of fish have been documented in these streams and include one sensitive species. Three federally listed mussels occur and critical habitat for two mussels has been designated within this analysis area.

The nine culverts are not migration barriers for the endangered mussels because these species normally do not occur in small streams or steep gradient channels. The culverts are barriers to the sensitive species – Tennessee dace. The culverts could pose migration barriers to many other unlisted species.

Recommendations – When major improvements are proposed to these, replace round culverts with arched culverts.

AQ(11): How does the road system affect shading, litterfall, and riparian plant communities?

Of the 26.7 miles of roads in this project area, 1.5 (6%) are within the riparian corridor. Shading, litterfall and riparian plant communities are minimally impacted by these roads because the canopy remains closed. One road segment contributes sediment to the watershed and is of no apparent use:

No.	Name	Miles
23B	Old McFarland	0.34

Recommendations – Decommission approximately 0.34 miles of road listed above

AQ(12): How and where does the road system contribute to fishing, poaching, or direct habitat loss for at-risk species?

Fishing and poaching could occur for spotted, largemouth, smallmouth and rock bass, rainbow and brown trout, green sunfish, redbreast sunfish, and bluegill in this analysis area. The “at-risk” species (TESLR) are not subject to fishing or poaching. Direct habitat loss from the road system is unlikely because the riparian corridor will be protected.

Recommendations – Protect the riparian corridor.

AQ(13): How and where does the road system facilitate the introduction of non-native aquatic species?

Not relevant to this analysis area – see Forest Wide discussion

Recommendations – None

AQ(14): To what extent does the road system overlap with areas of exceptionally high aquatic diversity or productivity or areas containing rare or unique aquatic species or species of interest?

The Hiwassee River within the analysis area contains 42 species of fish, 15 species of mussels, and many other aquatic species; Towee Creek has 34 species of fish; Loss Creek has 21 species of fish; and Wallace Creek has 13 species of fish. This area has exceptionally aquatic diversity.

Recommendations – Protect the riparian corridor.

Terrestrial Wildlife (TW)

TW (1): What are the direct effects of the road system on terrestrial species habitat?

Effects are dependent upon the type of road and amount of traffic. Roads can be barriers to movement and dispersal of species including small mammals, amphibians and reptiles. However, roads, especially forested roads, serve as flight corridors for bats. Roads can also provide dispersal corridors for larger mammals. Vegetation along roads can provide nesting areas and forage. However, open road use may disturb animals during breeding and/or nesting season. Road systems fragment habitat; particularly detrimental for interior stand species or wide-ranging isolationist species. The road system in this area is not expected to contribute significantly to habitat fragmentation or invasion of nest parasites such as the brown-headed cowbird due to the large expanse of forested habitat within the Cherokee National Forest. The only large terrestrial animal within the analysis areas that may be sensitive to road density is the black bear. Roads can also provide habitat and mechanisms for the spread of some non-native, invasive plant species. Non-native, invasive plants can out-compete the more beneficial native plants important to wildlife habitat and forage. Effects are the same across the forest.

TW (2): How does the road system facilitate human activities that affect habitat?

Roads may facilitate human activities that result in habitat disturbances. Disturbances may include loss of habitat or habitat removal in the forms of direct loss (from trampling in campgrounds and other direct disturbances), loss to fire (from increased incidence of human – caused ignitions), removal of forest products, or removing structures (reduction in density of snags and logs due to removal near roads). Roads near adjacent private land owners may allow for illegal OHV user created trails to private property and therefore, potentially affecting habitat.

The road system facilitates management activities such as timber harvest and wildlife habitat improvement. These activities may positively or negatively affect habitat depending on the wildlife species in question.

TW (3): How does the road system affect legal and illegal human activities (including trapping, hunting, poaching, harassment, road kill, or illegal kill levels)? What are the effects on wildlife species?

The road system provides access and opportunity for wildlife viewing, camping, hiking, and hunting. These activities may temporarily disturb wildlife. Disturbance during nesting or early rearing periods may result in nest failure or abandonment of young. Access provides opportunities for illegal activities such as dumping, poaching, collection of live animals for human use, and increased road mortality. Access also provides for the dispersal of exotics and pests that impact wildlife populations.

TW (4): How does the road system directly affect unique communities or special features in the area?

The section of the Hiwassee River within the Towee Watershed is one of two known locations in the world for the federally endangered Ruth's golden aster, and also harbors a diversity of other rare plants and animals. Existing road systems provide limited access into these areas which

certainly has the potential to create a variety of effects to these important resources. The most likely effects are trampling or poaching of rare plants by visitors.

Economics (EC)

EC (1): How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?

See table 3 for the average maintenance costs for each road.

COSTS/REVENUES

Direct costs to the agency include road maintenance costs due to motor vehicle use and any needed restoration or protection costs to stabilize roads near resources such as streams.

Road maintenance costs fit into two categories:

- **Annual Maintenance.** Work performed to maintain serviceability, or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance.

This amount will vary depending on the road's operational maintenance level which is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns. It defines the level to which the road is currently being maintained.

- **Deferred Maintenance.** Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. Deferred maintenance needs may be categorized as critical or noncritical at any point in time. Continued deferral of noncritical maintenance will normally result in an increase in critical deferred maintenance.

A critical need is a requirement that addresses a serious threat to public health or safety, a natural resource, or the ability to carry out the mission of the organization.

The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level.

The operational maintenance level is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns. It defines the level to which the road is currently being maintained.

Expenditures have decreased due to decreased funding. It is hard to predict future funding, but the trend in recent years is a decrease in road maintenance funding.

The need to provide forest visitors with safe and environmentally friendly roads seems to have become an important issue to many legislators. This concern may reverse the recent downward trend.

When funding is below the amount needed, priorities are set concerning which roads will have which maintenance activities (grading, brushing, gravel, etc.) performed.

All the maintenance level 3 roads in the area are graded twice a year and mowed once every two years.

Consideration is given to changing the objective maintenance level if a reduction in funds continues, e.g. maintenance level 3 (suitable for passenger car) is changed to maintenance level 2 (high clearance vehicles). Also, funds other than those specifically designated for road maintenance (CMRD) are often available for road maintenance. These include K-V Trust Fund - Special Legislation (CWK2), Legacy Roads and Trails (CMLG), Vegetation Management (NFVW), Wildlife Management (NFWF), Recreation Fee Revenue Program (FDFD), road maintenance deposits from timber purchasers, road permits that require the user to perform maintenance, and road legacy funds.

The road system provides for potential revenues to the agency in the following ways:

- Timber sales
- Recreation use fees
- Fees for special use and road use permits:
 - Access to timber on private land

Presently, direct costs exceed direct revenues, but many resource management targets could not be met or would cost more to accomplish without the current road system, so reducing the number of roads and/or reducing the amount of maintenance on roads could result in a net decrease in revenue. For example, roads that provide access to areas for prescribed burns which are needed to reduce hazardous fuels.

CHANGES

Changes to the road system that could increase net revenue:

- Manage the suitable timber base that can be accessed by existing roads and/or new roads that are low cost and would not harm resources. Any new system roads would likely have an objective maintenance level of 1 or 2 which reduce the long-term funding needs. New roads would be built to reduce annual maintenance costs. This would be done by the construction features including broad-based dips and the stabilization of the roadbed with gravel or vegetation. Some of the costs associated with this include planning, design, and contract administration. The forest would collect road maintenance deposits from the purchasers and/or the purchaser would perform the necessary maintenance on roads not open to the public. It could also provide an opportunity to perform deferred maintenance work on roads open to the public if the work is also needed to accommodate log trucks. Such work would be done so that long-term impacts of a road to adjacent resources are reduced.

- Close roads to motor vehicle use by the public. This could require the following costs: planning, enforcement, and mitigating unacceptable environmental effects such as sedimentation from roads adjacent to streams. Possible consequences of closure: decreases in revenues from commodities such as timber (if road is no longer used to access timber), recreation fees, and other services such as special-use permits. Reduced maintenance costs and reductions in costs to mitigate unacceptable environmental effects would likely increase in net revenues. Some roads were built prior to FS ownership and were considered “public” access with an established historical use. Changes that prevent the public from using roads that have feel they have a “right” to use could increase costs to the agency due to the need for enforcement of the closure and an increase in the amount of time spent responding to complaints.
- Decommissioning is the demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded road, including necessary cleanup work. Decommissioning would be done so that the road no longer needs maintenance. Costs include planning, monitoring, repairing or mitigating any unacceptable impacts to resources, and the actual decommissioning work. Possible consequences include decreases in revenues from commodities such as timber, recreation fees, and other services such as special-use permits. This work would reduce maintenance costs and reduce costs to mitigate any unacceptable impacts to resources. This work could make some areas harder to access for resource management which could increase costs.
- Encourage individuals who use Forest Service roads to access private land to form homeowner associations and/or to approach the county road department to maintain those roads. This would reduce the agency’s road maintenance costs.
- Maintain some or all of the maintenance level 3 or 4 roads as maintenance level 2 roads. The maintenance level 3, 4, & 5 roads in this area are:
 - ML 4:
 - Towee Cr. Boat Launch, #108B
 - ML3:
 - Hampton Cemetery, #22C
 - McFarland, #23

EC (2): How does the road system affect priced and non-priced consequences included in economic efficiency analysis used to assess net benefits to society?

The management of the road system involves decisions to build new roads, reconstruct roads, perform maintenance on some roads and not others, decommission roads, or temporarily close them if they are no longer needed or are causing resource damage.

Construction of new roads, although improving access to the area (a benefit to some), may diminish the desired natural and remote character associated with the area and would reduce its passive use value to some visitors.

Passive use values include features society values simply because they exist without actually using them or they expect them to be preserved for others to use and enjoy (a scenic landscape, wilderness, or an endangered plant or animal). They are also features valued for preservation (cultural resources and historic sites).

Decommissioning, closing, or changing the maintenance level of roads may be necessary to meet budget and funding constraints or to prevent resource damage, but may diminish access to areas that are important to certain users of forest resources. People with a strong attachment to a place, activity, or road may consider it a loss in value unless they are willing and able to find, and adapt, to substitute experiences.

The road users that contribute the most significant economic benefits are those who visit the area for recreation-related activities such as:

Driving for pleasure:

Road #23 is a through road that is part of a network of roads that is very popular with sightseers.

Camping - road #23 provides access to Lost Cr. Campground & to dispersed camping areas

Hunting - the open roads provide access and closed roads make game retrieval easier.

Fishing - road #23 provides access to the Hiwassee River

Hiking - the following roads provide access to the trails indicated:

- #23:
 - #81
- #108B:
 - #152
 - #2

Foot travel is permitted on many roads closed to the public for motor vehicle use.

Wildlife viewing - the open roads are used by visitors for this activity.

Other:

- Road #108B provides boating access on the Hiwassee River
- Road #22C provides access to Hampton Cemetery.
- Road #2022 provides access to Witt Cemetery
- Road #1064 provides access to Butler Cemetery
- Road #23 provides access to the Apalachia Powerhouse on the Hiwassee River
- Roads #1062, #1061, #1161, #2016, & #2016A provide access to the TVA powerline
- Roads #1041, #1041B, #11298 & #2019 provide access to private land
- Unauthorized road T2 provides access to the TVA tunnel

Portions of roads #1041, #1041B, #108B, #112901, #22C, #23, & #23B are in riparian areas which could be considered a net cost to society because of the roads' impact on water quality.

Based on the activities that the road system accommodates, the following consequences are realized:

Priced:

- Sale of commodities such as timber (on Forest Service and private land)
- Less cost due to convenient access for research, inventory, and monitoring
- Road development and maintenance
- Liability
- Maintenance of trails and recreation-related sites
- Fire suppression
- Resource management
- Control of invasive species
- Mitigation of resource damage from roads

Non-priced:

- Resource protection such as fire suppression, wildlife and watershed management to preserve the "passive" value that the public assigns to natural resources.
- Access to public land and its resources
- Noise and air pollution
- Water quality
- Fish habitat
- Effect of road density on wildlife
- Litter

Typically, the transportation system increases the value of both priced and non-priced commodities, because without access these items have less value or cost more to obtain. The most notable exception to this is commodities that have an intrinsic value because they are difficult to access, such as a wilderness or areas with low road densities.

The type of experience society desires in the study area and its associated value depends in large part on whether or not there are roads, their density, their condition, and whether or not they are open to motor vehicle use. The consequence may be a net benefit or a cost depending on what value the public assigns to the type of experience they desire.

Road management activities that benefit some members of society by enhancing their quality of life, may negatively impact resources that other members value for their quality of life. These may include impacts to resources such as soil, water, habitat, scenic beauty, or a reduction in value that people assign to an area such as limited accessibility or solitude. Public input is needed to provide information to evaluate the tradeoffs being considered and will help assign "value" to non-priced consequences.

EC (3): How does the road system affect the distribution of benefits and cost among affected people?

The accessibility to resources in the study area is important to the local economy, and commerce associated with forest visitors also has an economic influence on Blount, McMinn, and Monroe Counties and the communities of Etowah, Athens, Madisonville, Sweetwater, Vonore, and Tellico Plains in Tennessee and Graham County, North Carolina. Since counties do not collect property taxes on federal land, activities that generate other tax revenue such as sales tax are beneficial to the community.

Forest roads are the primary means of access to forest resources. Changes to the road system and/or in road management can affect long-established access and use patterns, lifestyles, recreation activities, forest resource-related businesses, the collection of forest products, fire suppression, and the distribution of recreational opportunities available to users. These effects can change the distribution benefits and costs for all users.

Construction, maintenance, or decommissioning of roads in the area is not likely to have a significant long-term impact on the economic benefits derived from recreation activities unless there is a significant reduction in the total mileage of roads that provide access for this use.

The road system distributes the following economic benefits to businesses of various sizes as well as individuals:

- Income from the sale of gas, food, lodging, supplies, and souvenirs.
- Employment under Government contracts for:
 - road maintenance
 - control of invasive species
 - maintenance of wildlife openings
 - vegetation management
 - trail maintenance
 - watershed management
 - fire suppression
 - maintenance of recreation sites

The road system creates different benefits and costs to people who use vehicles for travel within the area than to visitors who travel on foot or by other non-motorized methods. For those who choose non-motorized forms of transportation, the economics of the road system may cost more in terms of aesthetic values, air and noise pollution, and conflicts with motorized vehicle use.

Reduced road mileage and/or maintenance can lead to unbalanced recreation opportunities among users and directly affect the distribution of economic benefits and costs to the region. Closing roads would limit or eliminate access to those who are unable or unwilling to walk long distances and could increase the cost of resource removal, which usually requires mechanized equipment. This could have economic impacts for the local communities, which may depend on convenient access for employment opportunities.

In contrast, improved road access can increase the efficiency and effectiveness of fire-suppression activities, but can also contribute to an increase in the number of human-caused fires

in the area. Closing or restricting roads to minimize traffic could be a benefit by reducing fires and keeping the road in a condition that facilitates use by fire fighting equipment.

State and county roads between communities affect how the benefits and costs associated with use of the area are distributed beyond the immediate communities.

As stated in EC (2), the type of experiences and their associated values are dependent upon whether or not there are roads, how the roads are managed, and the desires of the user groups or individual. This may be a benefit or a cost depending on what value the public assigns to the type of experience they desire.

Commodity Production - Timber management (TM)

TM (1): How does road spacing and location affect logging system feasibility?

In general:

Road access is one of the deciding factors whether or not areas are managed for vegetation. If there is no existing access to an area needing vegetation management the area must produce a value worth creating an access or be included with other areas that will combine to offset the cost of creating an access. Likewise, if an area is not immediately accessible (access adjacent to the area) then the closer the access the less cost to actively manage that area. If an access is available the next issue to consider is its ability for use. An access that can be used anytime of the year is more beneficial than a road that is limited in its usage due to weather. The factor most effecting the time, or season, of the year that it can be used is its ability to drain water. Roads with proper drainage construction, and on or along ridges, and on south or west facing slopes are best suited for year-around usage, and therefore, are most beneficial for vegetation management.

Other factors contributing to access availability are the following: a road system that has the least amount of erosion control issues, a grade, or steepness, that can be maneuvered by heavy loads, and one with as few as possible sharp turns for vehicles longer and wider than a car or pickup truck.

A well planned and maintained road system is essential for an effective land management program to be successful.

Specifically:

The Towee Watershed contains a portion of the Hiwassee River in the southern portion. The Management Prescriptions contained in this watershed are the following: 9H Management, Maintenance, and Restoration of Plant Associations to their Ecological Potential; 8B Early Successional Habitat Emphasis; and 7B Scenic Corridors/Sensitive Viewsheds all of which are suitable for vegetation management. A relatively small area along Coker Creek is in Management Prescription 4F Scenic Areas and is unsuitable for timber management. There are scattered private landholdings in this watershed north of Hiwassee River. Some of the main access routes include: Towee Pike, Ivy Trail, Fingerboard Road, Duckett Ridge Road, and McFarland Road. Much of this area can be accessed via these roads or from road spurs off them. There is a small section of land between the Hiwassee River and a TVA tunnel that is difficult to access, but there are gated roads across the tunnel in a few places allowing access between streams. There is a much larger area between Loss Creek and Duckett Ridge that has limited access without adding roadways. A few other areas with limited to no access are as follows: Towee Ridge, Jones Ridge, and a portion of Black Mountain that is surrounded on three sides by private land. Some of these areas will likely remain relatively inaccessible due to them being too steep or having issues with water or are 'blocked' by private land.

TM (2): How does the road system affect managing the suitable timber base and other lands?

In general:

A well planned and maintained road system affects the managing of suitable lands by allowing better access for a wider variety of vehicle types and in a wider variety of weather conditions. If areas can be accessed at all times of the year then the ability to manage an area for a variety of purposes is possible, and contributes greatly to maintaining a successful land management program.

Specifically:

The Towee watershed, with the exception of private land and a small section of 4F Scenic Areas Management Prescription of Coker Creek, is suitable for vegetation management. The 9H and 8B Management Prescriptions both have Forest Plan direction of a minimum early successional habitat acreage. The MP 7B is suitable for timber management, but does not have an early successional habitat acreage goal. Most of this watershed is accessible or can be with short extensions of existing roadways.

TM (3): How does the road system affect access to timber stands needing silvicultural treatment?

In general:

Stands in need of silvicultural treatment that are well accessed are more likely to be effectively managed and monitored throughout the different stages of growth and development of the vegetation, i.e., from planning of vegetation management to implementation of management to monitoring effects of management. To describe an area as “well accessed” it should be available by as many different types of vehicles as possible, i.e., 4-wheel drive, high clearance, 2-wheel drive, and/or even passenger car. This not only aids in the type of equipment that can be used to access the area but also does not limit the time of year it can be accessed. Therefore, a well-planned and maintained road system greatly contributes to the success of the vegetation management of an area.

Specifically:

The Towee Watershed has abundant opportunity for timber management due to the large area of suitable management prescription allowing management. There could be some challenges in areas adjacent to private land for additional access points if needed, but there are several roads and spur roads that allow sufficient access across the watershed – as a whole. The vast majority of roads are gravel-based, and therefore could pose some limitations during wet and/or cold weather. There are several gated roadways that could need some reconstruction activities such as curve widening to allow long truck traffic.

Commodity Production - Minerals Management (MM)

MM (1): How does the road system affect access to locatable, leasable, and salable minerals?

Addressed in Forest TAP

Commodity Production - Range Management (RM)

RM (1): How does the road system affect access to range allotments?

N/A. No range allotments.

Commodity Production - Water Production (WP)

WP (1): How does the road system affect access, constructing, maintaining, monitoring, and operating water diversions, impoundments, and distribution canals or pipes?

There are no known water diversions, impoundments, or distribution canals in this watershed.

Recommendation – None

WP (2): How does road development and use affect water quality in municipal watersheds?

See question AQ(7) in previous section, about how roads in this watershed may affect water quality for municipal water source.

Recommendation – None

WP (3): How does the road system affect access to hydroelectric power generation?

Several roads access the Apalachia Powerhouse and the associated transmission lines. Forest Service Road 23 provides access to Apalachia Powerhouse via FSR 236; it also provides access to the Apalachia Tunnel which transports water from Apalachia Dam to Apalachia Powerhouse (12 mile along). The importance of these roads to TVA is recognized and will be maintained through cooperation with TVA.

Recommendation – None

Commodity Production - Special Forest Products (SP)

SP (1): How does the road system affect access for collecting special forest products?

Roads across the forest are used to access sites for the collection of a variety of special forest products. There is nothing unique in regards to this relative to these four watersheds. Effects would be the same as those analyzed in the forest-wide TAP.

Special-Use Permits (SU)

SU (1): How does this road system affect managing special-use permit sites (concessionaires, communication sites, utility corridors, and so on)?

TVA has permitted uses for the following roads:

- #23
- #1061
- #1062
- #1065 (need to confirm with TVA)
- #2016
- #2016A

Permitted commercial outfitters on the Hiwassee River use road #108B.

Easements and/or special-use permits have been issued for the following roads:

- #1041
- #1041A
- #11298
- #2019

Polk County has a road easement on Towee Creek road at the Towee Creek bridge.

Other Polk County roads are managed in accordance with the Forest Development Road Cooperative Agreement dated 8/2/79 and 5/21/80. The most recent revision to the schedule of designated roads for this agreement appears to be dated March 2008.

It is not anticipated that the proposed road system would affect the known special use areas. The proposed road system could affect future special use requests, however, each request is analyzed on its own merits and alternatives could be negotiated in the event the road system became inadequate.

Although no outstanding rights to public roads are known to exist in the area, care should be taken to ensure that such rights, if applicable, are identified and extinguished prior to closing any old open road that accesses or abuts private land, particularly if the road appears to be well travelled and the agency cannot determine the origin of the road.

General Public Transportation (GT)

GT (1): How does this road system connect to public roads and provide primary access to communities?

There are no specific communities accessed solely by Forest Service roads in the study area. The NFSRs in the study area connect to state and county roads that lead to the communities of Reliance and Turtletown, TN. The collector road system within the study area is mainly State Highways and county roads but includes all or parts of the following Forest Service collector roads:

<u>Road No.</u>	<u>Road Name</u>
23	McFarland

GT (2): How does the road system connect large blocks of land in other ownership to public roads (ad hoc communities, subdivisions, in holdings, and so on)?

There are numerous private land inholdings in the study area that are accessed by roads described in GT (1) plus some additional local roads that provide access through easement or special use permit. In addition to the roads in GT (1), the following roads provide access to private land:

Local roads open to the public that provide access to in-holdings or permitted uses:

<u>Road No.</u>	<u>Road Name</u>
#23	McFarland

Local roads not usually open to the public that provide access to in-holdings or permitted uses:

<u>Road No.</u>	<u>Road Name</u>
#1041	Lower Ironsburg
#1041B	Old Lower Ironsburg
#1061	Butler Ridge
#1062	Deep Branch
#1161	N. Deep Branch
#11298	Bristow Special Use
#2019	Jones Special Use
#2016	Wildcat-Rock Island
#2016A	Rock Island

GT (3): How does the road system affect managing roads with shared ownership or with limited jurisdiction (RS 2477, cost-share, prescriptive rights, FLPMA easements, FRTA easements, DOT easements)?

There are no shared ownership (cost-share) roads on the Forest. The FS has a co-operative agreement with Polk County for sharing various types of roadwork from planning to maintenance on roads of common interest to the FS and to the county.

GT (4): How does the road system address the safety of road users?

There are several open FS roads in the study area that are objective maintenance level 3, 4, or 5 (suitable for passenger cars). Since they are subject to the Highway Safety Act, safety of road users is a concern. Because they are designed for low speed and low volume, safety is usually not a major issue, but as private land has been subdivided, the number of land owners has increased and has caused in an increase in traffic. There may be a need to work with the counties to accept responsibility for the maintenance of some roads.

The objective maintenance level 3, 4, & 5 roads receive routine maintenance which normally consists of blading graveled surface twice a year and roadside mowing every two years. Other maintenance activities that are done on an as-needed basis include gravel placement, hazard tree removal, slide repair, pothole repair, etc.

Most of the other roads (ML's 1 & 2) in the area are not usually open to the public and are used only when needed for specific purposes or managed for other uses, such as hunter access, horse trails, or timber sales. Safety is not as much of a concern on those roads since there is generally single use and very little traffic.

Recommendations

Actions to Be Considered (all mileages are approximate):

-Add following unauthorized route to the transportation system:

- T-2: 0.13 mi.(TVA needs to install a gate)

-Decommission the following unauthorized routes:

- T-1: 0.06 mi.

-Decommission the following system roads:

- #1061 (from TVA powerline to end of road; manage as a linear wildlife opening): 0.4 mi.
- #1065 (if not needed by TVA): 0.46 mi.
- #11605 (if not needed to access private land): 0.15 mi.
- #23B (if not needed to access railroad): 0.23 mi.

Administrative Uses (AU)

AU (1): How does the road system affect access needed for research, inventory, and monitoring?

Addressed in Forest TAP.

AU (2): How does the road system affect investigative or enforcement activities?

All the roads in the area provide access for investigative and enforcement activities. McFarland Road, #23, is open to the public, so it has the highest use.

The roads that are closed to the public do not add to the need for investigative and enforcement activities.

The construction of new roads or adding unauthorized roads to the transportation system would not adversely affect these activities if the roads are adequately closed to public motor vehicle use.

Protection (PT)

PT (1): How does the road system affect fuels management?

Roads are a key element in planning and implementing a fuels management program. Existing roads are used as control features for most of the prescribed burns that are implemented on the forest. Roads are preferred control features because they allow lines to be easily patrolled, rapid response to spot fires, and minimal ground disturbance is required. The current forest road system has been adequate to meet the needs of the fuels management program. It has not been necessary to propose road construction strictly for fuels management. In general, decommissioning roads will restrict access during prescribed burns. Limited access may lead to larger or smaller, unfavorable burns. In the absence of an existing road, natural features such as ridge tops, coves or streams are used. However, using these types of features may also increase the need for additional ground disturbing activities to create an adequate control line. Most roads serve as an additional control feature that allows managers more flexibility when planning burn units. Decommissioning roads could also increase the probability of escape due to limited patrolling opportunities and the inability to respond to spot fires, outside control lines, with fire suppression equipment.

PT (2): How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires?

The current road system has not presented any problems in the Forests' ability to suppress wildfires. There have not been any critical areas identified that need roads specifically for wildfire suppression purposes. The forest continues to utilize all roads to the fullest extent possible during wildfire suppression efforts.

In general, decommissioning roads will restrict access of wildfire personnel and equipment. These restrictions may lead to increased fire size and a heightened probability that severe resource damage may occur. Most roads serve as excellent control features as well as escape routes for fire suppression personnel. Conversely, road construction may increase accessibility of wildfire personnel and equipment, limit fire size, and provide additional safety during wildfire suppression.

PT (3): How does the road system affect risk to firefighters and to public safety?

Roads serve two main functions during wildfire suppression efforts. First, they serve as access routes to the fire. Second, they serve as excellent escape routes for firefighters as well as the public. In the wildland/urban interface (WUI), roads should be designed, or upgraded, to allow for the access and egress of large structure protection equipment. Most other forest roads are able to accommodate the smaller, brush-type engines used by the forest and the cooperating state agency. Although roads can greatly increase the safety of firefighters, firefighters should not engage in suppression activities if the proper safety precautions have not been met.

PT (4): How does the road system contribute to airborne dust emissions resulting in reduced visibility and human health concerns?

This is of minor relevance to our Forest. Dust causes some temporary, localized problems of visibility during periods of low rainfall.

Recreation – Unroaded Recreation (UR)

UR (1): Is there now or will there be in the future excess supply or excess demand for unroaded recreation opportunities?

In addition to the UR(1)/RR(1) discussion in the Forest RAP, there is a demand for unroaded recreation opportunities outside of congressionally designated Wilderness. The analysis area is comprised of almost entirely General Forest Area (GFA) and contains no developed recreation sites. It is unforeseeable that recreational infrastructure will be constructed within the analysis area.

The only recreational infrastructure in the analysis area is a section of the John Muir National Recreation Trail/Benton MacKaye Trail. Visitors to the National Forest in this area.....

UR (2): Is developing new roads into unroaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quantity, quality, or type of unroaded recreation opportunities?

While there is very limited infrastructure that supports unroaded recreation in the assessment area, any changes in the road system may affect access into General Forest Area.

UR (3): What are the adverse effects of noise and other disturbance caused by developing, using, and maintaining roads, on the quantity, quality, and type of unroaded recreation opportunities?

See discussion in Forest RAP

UR (4): Who participates in unroaded recreation in the areas affected by building, maintaining, and decommissioning roads?

Visitors participate in a variety of recreation activities within unroaded portions of the assessment area including hunting, fishing, hiking, dispersed camping, and sightseeing.

UR (5): What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

The majority of participants in the activities mentioned in UR(4) reside in the surrounding communities. Many residents consider the national forest as part of their community or backyard, so there is a sense of ownership and entitlement. There may be other areas available to provide unroaded recreation opportunities, but not on public lands close to the local populations.

Recreation - Road Related Recreation (RR)

RR (1): Is there now or will there be in the future excess supply or excess demand for roaded recreation opportunities?

Same as discussion in UR (1)

RR (2): Is developing new roads into unroaded areas, decommissioning existing roads, or changing maintenance of existing roads causing significant changes in the quantity, quality, or type of roaded recreation opportunities?

Same as discussion in UR (2)

RR (3): What are the adverse effects of noise and other disturbances caused by building, using, and maintaining roads on the quantity, quality, or type of roaded recreation opportunities?

See discussion in Forest RAP

RR (4): Who participates in road-related recreation in the areas affected by road building, changes in road maintenance, or road decommissioning?

Same as discussion in UR (4)

RR (5): What are these participants attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

Same as discussion in UR (5)

Passive-Use Value (PV)

PV (1): Do areas planned for road entry, closure, or decommissioning have unique physical or biological characteristics, such as unique natural features and threatened or endangered species?

See TW (4). The Hiwassee River harbors unique plant communities and several globally rare plant and animal species including the federally endangered Ruth's golden aster and federally listed mussels. No new entries, closures, or decommissioning are proposed in this area. If other areas planned for road entry are found to have unique features then they will be considered during the planning process for those projects.

PV (2): Do areas planned for road construction, closure, or decommissioning have unique cultural, traditional, symbolic, sacred, spiritual, or religious significance?

None of the areas planned for road construction, closure, or decommissioning have any known unique cultural, traditional, symbolic, sacred, spiritual, or religious significance.

PV (3): What, if any, groups of people (ethnic groups, subcultures, and so on) hold cultural, symbolic, spiritual, sacred, traditional, or religious values for unroaded areas planned for road entry or road closure?

No known groups of people hold cultural, symbolic, spiritual, sacred, traditional, or religious values for unroaded areas planned for road entry or road closure.

PV (4): Will road construction, closure, or decommissioning significantly affect passive-use value?

In addition to the discussion in the Forest RAP, passive values to consider would be the remote backcountry resources; and scenic viewsheds managed for high and very high scenic integrity.

Social Issues (SI)

SI (1): What are people's perceived needs and values for roads? How does road management affect people's dependence on, need for, and desire for roads?

See discussion in Forest RAP

SI (2): What are people's perceived needs and values for access? How does road management affect people's dependence on, need for, and desire for access?

See discussion in Forest RAP

SI (3): How does the road system affect access to paleontological, archaeological, and historical sites?

The road system does not have any known affect on access to paleontological, archaeological, and historic sites.

SI (4): How does the road system affect cultural and traditional uses (such as plant gathering, and access to traditional and cultural sites) and American Indian treaty rights?

The present road system does not have any known affects on cultural and traditional uses and American Indian treaty rights.

SI (5): How are roads that are historic sites affected by road management?

No historic roads or transportation routes will be affected by road management.

SI (6): How is community social and economic health affected by road management (for example, lifestyles, businesses, tourism industry, infrastructure maintenance)?

Road within the assessment area provide access into General Forest Areas (GFAs). Managing roaded access to the natural, cultural and recreational resources within the Cherokee National Forest provides visitors with a diversity of destinations and opportunities.

SI (7): What is the perceived social and economic dependency of a community on an unroaded area versus the value of that unroaded area for its intrinsic existence and symbolic values?

The surrounding communities' recognition of remote backcountry & GFAs as an attraction and potential economic resource has increased over the years. Recreation opportunities linked to the unroaded areas have been advertised by the Tennessee Overhill Heritage Association (non-profit

organization) in various media outlets including *Backpacker* magazine.
<http://www.tennesseeoverhill.com/>

In addition to the advertised recreation opportunities, roads within the assessment area are primarily used for access to long traditional recreational opportunities such as hunting and forest products collection.

SI (8): How does road management affect wilderness attributes, including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation?

In general paved roads provide visitors with a low risk, low challenge traveling experience. Graveled and/or native surfaced roads offer a more challenging, risky experience. Road management in the assessment area presently offers a desirable progression of road conditions aligned with the desired recreation opportunity spectrum (ROS).

Roads within the assessment are generally graveled and are less suitable for passenger cars and create opportunities for traveling in a sport utility vehicle or truck, thus creating the desired experience of remoteness and primitiveness related to dispersed recreation. The “country miles” traveled on these more primitive roads are essential to creating the desired experience of remoteness and primitiveness related to dispersed recreation.

SI (9): What are the traditional uses of animal and plant species within the area of analysis?

The area of analysis does not contain any specific places that are unique for the forest in terms of traditional uses of animals and plants. Hunting, fishing and plant collecting occurs in many places throughout the watershed. Typical plant species sought by collectors include ginseng, flowering shrubs for transplant, and numerous species of medicinal herbs. Information would be similar to that described in the forest-wide TAP.

SI (10): How does road management affect people's sense of place?

As stated for SI 8, the traffic surface level and maintenance levels of roads leading to backcountry and primitive recreation areas should be appropriate for the desired ROS setting. Reference the revised Forest Plan to determine the ROS class emphasized in each prescription area. The type and frequency of recreation guide signs also contribute to a visitor’s sense of place.

Civil Rights and Environmental Justice (CR)

CR (1): How does the road system, or its management, affect certain groups of people (minority, ethnic, cultural, racial, disabled, and low-income groups)?

Road system management has no known affects for minority, ethnic, cultural, racial, disabled, and low-income groups.

ABILITY OF THE ROAD SYSTEM TO MEET OBJECTIVES

To meet the objective of determining needed and unneeded roads (minimum road system needed), each road segment was examined to determine its uses. These uses are displayed in Table 4

- Recreation/Heritage Access
- Vegetation Management Access
- Access to Private Land/Special Uses
- Wildlife/Fish Management
- Fire Management

Based on these uses, the needed transportation system, as well as unneeded roads, were identified. These are displayed on Map 1.

STEP 5 DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES

PURPOSE AND PRODUCTS

The purpose of this step is to:

- compare the current road system with what is desirable or acceptable, and
- describe options for modifying the road system that would achieve desirable or acceptable conditions.

The products of this step are:

- a map and descriptive ranking of the problems and risks posed by the current road system,
- a map and list of opportunities, by priority, for addressing important problems and risks, and
- a prioritized list of specific actions, projects, or forest plan adjustments requiring NEPA analysis.

PROBLEMS AND RISKS POSED BY THE CURRENT TRANSPORTATION SYSTEM

Overall Priorities for Towee Creek Ecosystem Assessment Area

The priorities listed below in the table and in the site-specific descriptions are prioritized by resource area. The Team analyzed the individual resource priorities in order to develop larger, overall priorities for the assessment area. These priorities are:

- Recreation/Heritage Access
- Vegetation Management Access
- Access to Private Land/Special Uses
- Wildlife/Fish Management
- Fire Management.

Road Maintenance Needs

During the course of completing condition surveys of the Forest Service roads within this assessment area, data was gathered on maintenance needs on the FS roads open to motor vehicle use. Data on roads closed to motor vehicle use is based on random sampling. The table 3 lists the work needed.

TABLE 3. TOWEE CREEK - ROAD MAINTENANCE NEEDED ON NATIONAL FOREST SERVICE SYSTEM ROADS

ROAD #	ROAD NAME	LENGTH	ANNUAL COSTS	DEFERRED COSTS	RMO	MACHINE GRADING	GRAVEL	DITCH CLEANING	PAVE	BRUSH	BRIDGE MAINT.	CULVERTS	REMARKS
1041	LOWER IRONSBURG	2.46	\$2,199	\$23,751	D2-FS					X			
1041B	OLD LOWER IRONSBURG	0.23	\$44	\$1,044	D2-FS					X			
1061	BUTLER RIDGE	1.18	\$222	\$5,286	D2-HC/D2-FS					X			
1062	DEEP BRANCH	0.63	\$0	\$0	E1					X			
1064	BUTLER BRANCH	0.45	\$0	\$0	E1					X			
1065	LITTLE BRANCH	0.46	\$87	\$2,073	D2-FS					X			
108B	TOWEE CR. BOAT LAUNCH	0.16	\$1,078	\$1,510	B4					X			
112901	COUNTY LINE	0.30	\$57	\$1,355	D2-FS					X			
11298	BRISTOW SPECIAL USE	0.31	\$58	\$1,375	D2-HC					X			
113801	SANDY GAP	1.00	\$0	\$0	E1					X			
11431	MCCULLEY MOUNTAIN	0.65	\$122	\$2,912	D2-FS					X			
11605	WEST BLACK MTN.	0.15	\$0	\$0	E1					X			
1161	NORTH DEEP BRANCH	0.32	\$60	\$1,439	D2-FS					X			
1162	NORTH SMITH MTN.	0.84	\$158	\$3,764	D2-FS					X			
2015	TOWEE CREEK	2.56	\$482	\$11,488	D2-FS					X			
2015A	TOWEE CR. SPUR A	0.63	\$118	\$2,810	D2-FS					X			
2015B	TOWEE CR. SPUR B	0.57	\$107	\$2,542	D2-FS					X			
2016	WILDCAT-ROCK ISLAND	2.92	\$548	\$13,062	D2-FS					X			
2016A	ROCK ISLAND	2.00	\$376	\$8,960	D2-FS					X			
2018	HICKS BRANCH	2.32	\$436	\$10,382	D2-FS					X			
2018A	HICKS BR SPUR A	0.31	\$58	\$1,377	D2-FS					X			
2018B	HICKS BR SPUR B	0.68	\$128	\$3,046	D2-FS					X			
2019	JONES RIDGE SPECIAL USE	0.61	\$115	\$2,733	D2-HC					X			
2022	WITT CEMETERY	0.53	\$100	\$2,372	D2-FS					X			
2104	BORIN TOP-KINGDOM	1.03	\$194	\$4,614	D2-FS					X			
2130	WEST IRONSBURG	0.87	\$163	\$3,890	D2-FS					X			
22C	HAMPTON CEMETERY	0.44	\$393	\$4,248	C3					X			
23	MC FARLAND	1.77	\$1,585	\$17,122	C3					X			
23B	OLD MC FARLAND	0.34	\$64	\$1,535	D2-HC					X			

OPPORTUNITIES FOR TRAVEL MANAGEMENT

Table 4 summarizes recommendations in response to the issues identified in Step 3 and the questions answered in Step 4. A more detailed narrative follows the table, and priorities are listed above. Maps are included in Appendix A to assist in tracking the recommendations. Each specialist identified recommendations based on how the transportation system affected their resource; therefore, conflicting recommendations may exist between resource areas due to differing needs.

Aquatics

Road surfaces and ditches are properly aligned and graded to minimize sediment runoff.

As road improvements are made, culverts are replaced to allow aquatic species passage.

TABLE 4. TOWEE CREEK WATERSHED - SUMMARY OF RECOMMENDATIONS TO BE CONSIDERED

ROAD #	ROAD NAME	APPROX. MILES IN WATERSHED	PRIVATE ACCESS	WILDFIRE SUPPRESSION USE	RECREATION /HERITAGE USE	WILDLIFE USE	VEGETATION MANAGEMENT	HDC – Hydrologic Disturbance Class*	ENVIRONMENTAL RISK	RECOMMENDATIONS TO BE CONSIDERED
1041	LOWER IRONSBURG	2.46	Yes	Yes	No	Yes	Yes	4		Manage as is
1041B	OLD LOWER IRONSBURG	0.23	Yes	No	No	No	No	2		Manage as is
1061	BUTLER RIDGE	1.18	Yes	Yes	No	Yes	Yes	1		Decommission approx. 0.4 mi. starting at TVA Reservation Boundary. Manage as LWO.
1062	DEEP BRANCH	0.63	Yes	Yes	No	No	Yes	1		Confirm Private Access with TVA. Manage as is.
1064	BUTLER BRANCH	0.45	No	Yes	No	No	Yes	1		Manage as is
1065	LITTLE BRANCH	0.46	Yes	Yes	No	No	No	1		Confirm TVA access. Decommission if TVA doesn't need it.
108B	TOWEE CR. BOAT LAUNCH	0.16	No	No	Yes	No	No	3		Manage as is
112901	COUNTY LINE	0.30	No	Yes	No	Yes	Yes	2		Manage as is
11298	BRISTOW SPECIAL USE	0.31	Yes	No	No	No	Yes	2		Manage as is
113801	SANDY GAP	1.00	No	Yes	No	Yes	Yes	1		Manage as is
11431	MCCULLEY MOUNTAIN	0.65	No	Yes	No	No	Yes	1		Manage as is
11605	WEST BLACK MTN.	0.15	Yes	No	No	No	No	1		Decommission if access private isn't needed.
1161	NORTH DEEP BRANCH	0.32	Yes	Yes	No	Yes	Yes	1		Manage as is. Confirm access with TVA.
1162	NORTH SMITH MTN.	0.84	No	Yes	No	Yes	Yes	2		Manage as is
2015	TOWEE CREEK	2.56	Yes	Yes	No	Yes	Yes	2		Manage as is
2015A	TOWEE CR. SPUR A	0.63	No	Yes	No	Yes	Yes	1		Manage as is
2015B	TOWEE CR. SPUR B	0.57	No	Yes	No	Yes	Yes	1		Manage as is
2016	WILDCAT-ROCK ISLAND	2.92	Yes	Yes	No	Yes	Yes	2		Manage as is
2016A	ROCK ISLAND	2.00	Yes	Yes	No	Yes	Yes	2		Manage as is
2018	HICKS BRANCH	2.32	No	Yes	No	Yes	Yes	1		Manage as is
2018A	HICKS BR SPUR A	0.31	No	Yes	No	Yes	Yes	1		Manage as is
2018B	HICKS BR SPUR B	0.68	No	Yes	No	Yes	Yes	1		Manage as is
2019	JONES RIDGE SPECIAL USE	0.61	Yes	Yes	No	Yes	Yes	1		Manage as is
2022	WITT CEMETERY	0.53	No	Yes	No	Yes	Yes	2		Manage as is
2104	BORIN TOP-KINGDOM	1.03	No	Yes	No	Yes	Yes	1		Manage as is
2130	WEST IRONSBURG	0.87	No	Yes	No	Yes	Yes	2		Manage as is
22C	HAMPTON CEMETERY	0.44	Yes	Yes	No	No	Yes	3		Manage as is
23	MC FARLAND	1.77	Yes	Yes	Yes	Yes	Yes	3		Manage as is

TABLE 4. TOWEE CREEK WATERSHED - SUMMARY OF RECOMMENDATIONS TO BE CONSIDERED

ROAD #	ROAD NAME	APPROX. MILES IN WATERSHED	PRIVATE ACCESS	WILDFIRE SUPPRESSION USE	RECREATION /HERITAGE USE	WILDLIFE USE	VEGETATION MANAGEMENT	HDC – Hydrologic Disturbance Class*	ENVIRONMENTAL RISK	RECOMMENDATIONS TO BE CONSIDERED
23B	OLD MC FARLAND	0.34	No	No	No	No	No	5		Decommission. Confirm access not needed for R/R.
UNAUTHORIZED ROADS										
T-1	Off #23; bet. #1061 & #1064	0.06	No	No	No	No	No	3		Decommission
T-2	Off #23 near #23B	0.13	Yes	No	No	No	No	4		TVA access; Add to system; have TVA install gate at intersection with 23.

*1 = LOW, 2 = MEDIUM, 3 = HIGH, 4 = VERY HIGH, 5 = SEVERE

Miles of system routes to be considered for decommissioning:
 Roads: 1.35
 Trails: 0.00
 Total: 1.35

Miles of unauthorized routes to be decommissioned:
 0.06

Total miles of all routes to be decommissioned:
 1.41

Miles of unauthorized routes to consider adding to system:
 Roads: 0.13
 Trails: 0.00
 Total: 0.13

Net change to transportation system mileage:
 Roads: -1.22
 Trails: 0.00
 Total: -1.22

RECOMMENDATIONS FOR FURTHER CONSIDERATION

Non-native Invasive Plants

Non-native invasive plants are a problem across the forest and are commonly encountered along forest roads. Discreet populations of non-native invasive plants should be reported to the Forest Botanist using the appropriate site documentation forms. All reported sites are input into the NRIS reporting system and catalogued for future treatment. It is important that future road maintenance, construction, or decommissioning projects recognize the existence of these species and provide opportunities to reduce their spread rather than exacerbate the situation.

NEPA ANALYSIS NEEDS

Many opportunities identified in this report can be incorporated into the Towee Creek EA process. If there are some opportunities identified that will not be incorporated into the EA, they will require a site-specific NEPA analysis in the future when the decision is made to implement them (activities other than maintenance and administrative decisions).

STEP 6 REPORTING

PURPOSE AND PRODUCTS

The purpose of this step is to:

- report the key findings of the analysis.

The products of this step are:

- a report including maps, analyses, and test documentation of the travel analysis, and
- maps that show the data and information used in the analysis, and the opportunities identified during the analysis.

REPORT

This report will be reviewed by the Cherokee NF, and shared with other offices in the Forest Service that are also working on roads analysis. This report is available to the public if requested, and will be part of the Towee Creek Assessment project file

MAPS

All maps used for this report are included in Appendix A.

REFERENCES

Recreation

USDA Forest Service. 2004. Revised Cherokee National Forest Land and Resource Management Plan 2004. Cleveland, TN.

USDA Forest Service. 2004. Recreation Sites Facility Master Plan, Cleveland, TN

USDA Forest Service. 2006. Cherokee National Forest Strategic Trails Analysis DRAFT. Cleveland, TN

USDA Forest Service (2009), Cherokee NF, GIS Data Base.

Attachment 1

Road Classifications in Current Use

Functional Class	Traffic Service Level	Maintenance Level
<p>Arterial: Provides service to large land areas. Connects with other arterials or public highways.</p> <p>Collector: Serves smaller land areas than arterials. Connects arterials to local roads or terminal facilities.</p> <p>Local: Single purpose road. Connects terminal facilities with collectors or arterials.</p>	<p>A: Free flowing, mixed traffic; stable, smooth surface; provides safe service to all traffic.</p> <p>B: Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal-size load or vehicle.</p> <p>C: Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.</p> <p>D: Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Accommodates high clearance vehicles. Single purpose facility.</p>	<p>Level 1 Closed more than 1 year.</p> <p>Level 2 High-clearance vehicles.</p> <p>Level 3 Passenger vehicles— surface not smooth.</p> <p>Level 4 Passenger vehicles— smooth surface.</p> <p>Level 5 Passenger vehicles—dust free; possibly paved.</p>

Road Management Objectives are to:

- Establish the specific intended purpose of a road based on management needs as determined through land and resource management planning;
- Contain operation and maintenance criteria for existing roads; and
- Contain design criteria and operation and maintenance criteria for new roads.

ROAD MANAGEMENT OBJECTIVE
Cherokee National Forest
D1

Intended Purpose of Road	
The purpose of this road is to provide access for various resource activities on an intermittent basis. There currently is no management activity that requires vehicular access. The road is physically blocked to prevent all vehicular traffic. It will be opened when there is a management need for vehicular traffic. A different Road Management Objective will be in effect during the period of use.	
Design, Operation and Maintenance Criteria	
Traffic Service Level	D
Maintenance Level	1
Functional Classification	Local
Traffic Volume	Zero
Traffic Classification	Timber 0%, Recreation 0%, Administrative 0%
Traffic Management	Closed to all vehicular traffic
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle	<ul style="list-style-type: none"> •For curve widening •For surfacing •For grade •For travel way width •For sight distance
Critical Vehicle	<ul style="list-style-type: none"> •Depends on next management activity •Same •Same •Same •Pickup/SUV
Subject to Highway Safety Act	Depends on next management activity
Subject to Highway Safety Act	No
Design, Operation and Maintenance Standards	
Width	10-15 feet
Turnouts	Not necessarily intervisible
Surfacing	May have been spot surfaced; currently grassed or trees growing
ADT	0
Design Speed	5 mph
Highway Safety Act	Does not apply
Maintenance Level 1 requirements	<ul style="list-style-type: none"> •Do annual inspection (condition survey) •Repair only where damage is occurring to adjacent resources •Allow grass, brush to grow up
Recommended: Gary Watson	Date: February 2009
Approved: Ranger	District Date:

ROAD MANAGEMENT OBJECTIVE
Cherokee National Forest
D2-HC

126,

Intended Purpose of Road	
The purpose of this road is to provide access for the recreation use of 4WD and high clearance vehicles.	
Design, Operation and Maintenance Criteria	
Traffic Service Level	D
Maintenance Level	2
Functional Classification	Local
Traffic Volume	Low
Traffic Classification	Timber 0%, Recreation 100%, Administrative 0%
Traffic Management	Limited to 4WD/high clearance vehicles
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle	
•For curve widening	•N/A
•For surfacing	•Same
•For grade	•Same
•For travel way width	•Same
•For sight distance	•Same
Critical Vehicle	N/A
Subject to Highway Safety Act	No
Design, Operation and Maintenance Standards	
Width	10-15 feet
Turnouts	Not necessarily intervisible
Surfacing	May have been spot surfaced; currently probably native
ADT	Low
Design Speed	5 mph
Highway Safety Act	Does not apply
Maintenance Level 2 requirements	<ul style="list-style-type: none"> •Do annual inspection (condition survey) •Repair where damage is occurring to adjacent resources •No scheduled blading, drainage, surfacing work •Clear out blowdown as needed for access and mow every 5 years
Recommended:	Date:
Approved: Ranger	District Date:

ROAD MANAGEMENT OBJECTIVE
Cherokee National Forest
D2-WL

Intended Purpose of Road

The purpose of this road is to provide access for various resource activities on an as-needed basis. In the meantime it serves as a linear wildlife opening. Public traffic is restricted by means of a gate or similar device and access is limited to administrative traffic including contract wildlife maintenance traffic.

Design, Operation and Maintenance Criteria

Traffic Service Level	D
Maintenance Level	2
Functional Classification	Local
Traffic Volume	Low
Traffic Classification	Timber 0%, Recreation 0%, Administrative 100%
Traffic Management	Limited to administrative traffic
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle •For curve widening •For surfacing •For grade •For travel way width •For sight distance	•Depends on next management activity •Same •Same •Same •Pickup/SUV
Critical Vehicle	Depends on next management activity
Subject to Highway Safety Act	No

Design, Operation and Maintenance Standards

Width	10-15 feet
Turnouts	Not necessarily intervisible
Surfacing	May have been spot surfaced; currently grassed - wildlife mixture
ADT	Low
Design Speed	5 mph
Highway Safety Act	Does not apply
Maintenance Level 2 requirements	•Do annual inspection (condition survey) •Repair where damage is occurring to adjacent resources •No scheduled blading or drainage work •Clear out blowdown as needed for access and mow annually

Recommended:		Date:
Approved: Ranger	District	Date:

ROAD MANAGEMENT OBJECTIVE
Cherokee National Forest
D2-FS

5003

Intended Purpose of Road

The purpose of this road is to provide access for various resource activities on an as-needed basis. Public traffic is restricted by means of a gate or similar device and access is limited to administrative traffic including Forest Service, Special Use/Road Easement or other authorized traffic. Road may be open seasonally during certain hunting seasons.

Design, Operation and Maintenance Criteria

Traffic Service Level	D
Maintenance Level	2
Functional Classification	Local
Traffic Volume	Low
Traffic Classification	Timber 0%, Recreation low%, Administrative high%
Traffic Management	Limited to administrative traffic (FS, SU, etc.)
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle •For curve widening •For surfacing •For grade •For travel way width •For sight distance	•Depends on next management activity •Same •Same •Same •Pickup/SUV
Critical Vehicle	Depends on next management activity
Subject to Highway Safety Act	No

Design, Operation and Maintenance Standards

Width	10-15 feet
Turnouts	Not necessarily intervisible
Surfacing	May have been spot surfaced; could be grassed or other vegetation
ADT	Low
Design Speed	5 mph
Highway Safety Act	Does not apply
Maintenance Level 2 requirements	•Do annual inspection (condition survey) •Repair where damage is occurring to adjacent resources •No scheduled blading or drainage work •Clear out blowdown as needed for access and mow every three years

Recommended:		Date:
Approved: Ranger	District	Date:

ROAD MANAGEMENT OBJECTIVE
Cherokee National Forest
D2-TRL

Intended Purpose of Road

The purpose of this road is to provide access for various resource activities on an as-needed basis. Public traffic is restricted by means of a gate or similar device and access is limited to administrative traffic including Forest Service, Special Use/Road Easement or other authorized traffic. Road may be open seasonally during certain hunting seasons.

Design, Operation and Maintenance Criteria

Traffic Service Level	D
Maintenance Level	2
Functional Classification	Local
Traffic Volume	Low
Traffic Classification	Timber 0%, Recreation low%, Administrative high%
Traffic Management	Limited to administrative traffic (FS, SU, etc.)
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle •For curve widening •For surfacing •For grade •For travel way width •For sight distance	•Depends on next management activity •Same •Same •Same •Pickup/SUV
Critical Vehicle	Depends on next management activity
Subject to Highway Safety Act	No

Design, Operation and Maintenance Standards

Width	10-15 feet
Turnouts	Not necessarily intervisible
Surfacing	May have been spot surfaced; could be grassed or other vegetation
ADT	Low
Design Speed	5 mph
Highway Safety Act	Does not apply
Maintenance Level 2 requirements	•Do annual inspection (condition survey) •Repair where damage is occurring to adjacent resources •No scheduled blading or drainage work •Clear out blowdown as needed for access and mow every three years

Recommended:		Date:
Approved: Ranger	District	Date:

ROAD MANAGEMENT OBJECTIVE
Cherokee National Forest
C3

284

Intended Purpose of Road	
The purpose of this road is to provide access for various resource activities . The road is open to public traffic in standard 4-wheel passenger cars and, thus, is subject to the Highway Safety Act. Road may be closed seasonally or for periods of freeze-thaw conditions.	
Design, Operation and Maintenance Criteria	
Traffic Service Level	C
Maintenance Level	3 (or 4)
Functional Classification	Collector
Traffic Volume	Moderate - High
Traffic Classification	Timber Moderate%, Recreation high%, Administrative low%
Traffic Management	Open to all legal traffic (commercial traffic by permit only)
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle	<ul style="list-style-type: none"> •Generally tractor trailer
•For curve widening	•Same
•For surfacing	•Same
•For grade	•Same
•For travel way width	•Same
•For sight distance	•Pickup/SUV
Critical Vehicle	Low boy
Subject to Highway Safety Act	Yes
Design, Operation and Maintenance Standards	
Width	12 - 16 feet plus curve widening
Turnouts	Intervisible
Surfacing	Fully surfaced with approximately 4 inches crushed aggregate
ADT	Moderate - High
Design Speed	10 - 15 mph
Highway Safety Act	Signed to meet MUTCD
Maintenance Level 3 requirements	<ul style="list-style-type: none"> •Do annual inspection (condition survey) •Make repairs as soon as need is recognized •Scheduled blading 2 times per year; dips and/or ditches/culvert inlets cleaned once per year •Clear out blowdown as it occurs and mow every year to maintain safe sight distance •Maintain 4 inches of crushed aggregate •Maintain signs and other safety considerations
Recommended:	Date:
Approved: Ranger	District Date:

ROAD MANAGEMENT OBJECTIVE

Cherokee National Forest

B4

217E

Intended Purpose of Road

The purpose of this road is to provide access for various resource activities . The road is open to public traffic in standard 4-wheel passenger cars and, thus, is subject to the Highway Safety Act. User convenience is more of a concern than for TSL C roads. Road may be closed seasonally or for periods of freeze-thaw conditions.

Design, Operation and Maintenance Criteria

Traffic Service Level	B
Maintenance Level	4 (or 5)
Functional Classification	Collector (or local)
Traffic Volume	Moderate - High
Traffic Classification	Timber Low%, Recreation high%, Administrative low%
Traffic Management	Open to all legal traffic (commercial traffic by permit only)
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle	
•For curve widening	•Generally tractor trailer
•For surfacing	•Same
•For grade	•Same
•For travel way width	•Same
•For sight distance	•Pickup/SUV
Critical Vehicle	Low boy
Subject to Highway Safety Act	Yes

Design, Operation and Maintenance Standards
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Width	Generally 16 - 18 feet plus curve widening
Turnouts	Intervisible, if needed
Surfacing	Fully surfaced - approximately 6 inches crushed aggregate (or paved)
ADT	Moderate - High
Design Speed	10 - 15 mph
Highway Safety Act	Signed to meet MUTCD
Maintenance Level 4 requirements	<ul style="list-style-type: none"> •Do annual inspection (condition survey) •Make repairs as soon as need is recognized •Scheduled blading 3 times per year (or pavement repair as needed); ditches/culvert inlets cleaned annually •Clear out blowdown as it occurs and mow every year to maintain safe sight distance •Maintain 6 inches of crushed aggregate (or repave on a 10-12 year cycle) •Maintain signs and other safety considerations

Recommended:		Date:
Approved: Ranger	District	Date:

ROAD MANAGEMENT OBJECTIVE
Cherokee National Forest
A5

4042

Intended Purpose of Road
The purpose of this road is to provide access for various resource activities . The road is open to public traffic in standard 4-wheel passenger cars and, thus, is subject to the Highway Safety Act. User convenience is more of a concern than for TSL C roads. Usually paved. Road may be closed seasonally or for periods of freeze-thaw conditions.

Design, Operation and Maintenance Criteria

Traffic Service Level	A
Maintenance Level	5
Functional Classification	Arterial (or collector or local)
Traffic Volume	Moderate - High
Traffic Classification	Timber Low%, Recreation high%, Administrative low%
Traffic Management	Open to all legal traffic (commercial traffic by permit only)
Environmental Consideration	May or may not be adjacent to streams and/or have erosive soils
Design Vehicle •For curve widening •For surfacing •For grade •For travel way width •For sight distance	•Generally tractor trailer •Same •Same •Same •Pickup/SUV
Critical Vehicle	Low boy
Subject to Highway Safety Act	Yes

Design, Operation and Maintenance Standards
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Width	Generally 18 feet plus curve widening
Turnouts	N/A
Surfacing	Paved
ADT	Moderate - High
Design Speed	10 - 15 mph
Highway Safety Act	Signed to meet MUTCD
Maintenance Level 5 requirements	<ul style="list-style-type: none"> •Do annual inspection (condition survey) •Make repairs as soon as need is recognized •Pavement repairs as needed; ditches/culvert inlets cleaned annually •Clear out blowdown as it occurs and mow every year to maintain safe sight distance •Repave on a 10-12 year cycle) •Maintain signs and other safety considerations

Recommended:		Date:
Approved: Ranger	District	Date: