Appendix B – The Analysis Process

Land management planning is the mechanism for comparing strategic options of differing programmatic mixes of activities and land allocations. It also requires that mathematical modeling techniques be used to identify the most economically efficient solution to meet the goals and objectives of any alternative. Appendix B presents a technical discussion of the analysis process and computer models used in the Revision planning effort. The Appendix focuses on the quantitative methods used to perform the analysis and documents how the analysis was done. The results from the modeling processes are estimates of what can be expected if alternatives are implemented. These estimates facilitate comparison of alternatives.

The Forest's major analysis goal is to provide enough information to help decision-makers and the public determine which combination of goods, services, and land allocations will maximize Net Public Benefits (NPB). The regulations (36 CFR 219) developed under the National Forest Management Act (NFMA) provide the analytical framework within which these decisions are made.

The NFMA and its regulations also state that the requirements of the National Environmental Policy Act (NEPA) and its regulations (40 CFR 1500-1508) must be applied in this analytic process. The NEPA regulations in place when this Forest Plan revision was initiated and completed require that the environmental effects of a proposed action and alternatives to that proposed action be disclosed in an Environmental Impact Statement (EIS).

Information presented in this appendix supplements the broader and less technical descriptions included in the body of the EIS. This discussion includes basic assumptions, modeling components and inputs, rules, methods, and constraints. Additional information and documents used in the analysis process are contained in the planning process records. The planning record in its entirety is incorporated here by reference.

Framework of the Planning Process

The general planning process described in 36 CFR 219.12 was used to guide the revision of the Ouachita National Forest Land and Resource Management Plan. This 10-Step process is described briefly below, followed by a more detailed discussion of the analytical processes used in Steps 3, 4, and 6.

STEP 1 - Identification of purpose and need: Issues, Concerns, and Opportunities. The Forest's Planning Team assessed changes in public issues, management concerns, and resource use and development opportunities since the Amended 1990 Plan was initially developed and subsequently amended.

STEP 2 - Planning Criteria: Criteria are designed to guide the collection and use of inventory data and information; the analysis of the management situation; and the design, formulation, and evaluation of alternatives. This step establishes guidelines for accomplishing the next five steps. Planning criteria are based on:

- Laws, executive orders, regulations and agency policy as set forth in the Forest Service Manual.

- Goals and objectives in the USDA Forest Service's Strategic Plan.

- Recommendations and assumptions developed from public issues, management concerns, and resource use and development opportunities.
- The plans and programs of other federal agencies, state and local governments, and Indian tribes.
- Ecological, technical, and other factors.
- The resource integration and management requirements in 36 CFR 219.13 through 219.27.
- Alternatives that are technically possible to implement.
- Alternatives that meet management requirements or standards.
- Various levels of multiple-use objectives and outputs achieved.

STEP 3 - Inventory Data and Information Collection: The kinds of data and information needed are determined in Step 2 based on the issues, concerns, and opportunities identified and the resulting assessment of the management situation and determination of what needs to change. Data collection is part of normal forest operations. Existing data are used whenever possible and are supplemented with new data, when practicable. Data accuracy is continually evaluated. Much of the data and background documentation is on file in the planning records in the Supervisor's Office.

STEP 4 - Analysis of the Management Situation: This step describes the existing situation on the Forest and determines if there is a need to change current management direction. It examines supply potentials and market assessments for goods and services, assesses demand for goods and services from National Forest System lands, and determines suitability and feasibility for meeting needs. This information provides the basis for formulating an appropriate range of reasonable alternatives.

STEP 5 - Formulation of Alternatives: A reasonable range of alternatives is formulated according to NEPA procedures. Alternatives are formulated to assist in identifying one that comes nearest to maximizing net public benefits (NPB). They provide for the resolution of significant issues and concerns identified in Step 1. Chapter 2 of the EIS describes the formulation of alternatives for the Ouachita National Forest in more detail.

The alternatives reflect a range of resource management. Each identified major public issue and management concern is addressed in different ways in the alternatives. The programs and land allocations in each alternative represent the most cost-efficient way of attaining the goals and objectives for that alternative. Both priced and non-priced goods and services (outputs) are considered in formulating each alternative.

STEP 6 - Estimated Effects of Alternatives: The physical, biological, economic, and social effects of implementing each alternative are described in Chapter 3 of the EIS in an effort to evaluate how well each alternative responds to issues, concerns, and opportunities and what the potential impacts to resources might be.

STEP 7 - Evaluation of Alternatives: Physical, biological, economic, and social effects of implementing alternatives are used to evaluate each alternative and compare them with one another. Typically, each alternative can be judged on the basis of how it addresses the significant issues, concerns, and opportunities (ICOs) identified in Chapter 1 of the EIS.

Appendix B of the EIS presents the possible outputs and activities associated with each alternative.

STEP 8 - Preferred Alternative: The Forest Supervisor reviews the Planning Team's evaluation of each alternative and the public issues and concerns. The Forest Supervisor then recommends a preferred alternative to the Regional Forester. The Regional Forester either selects the Forest Supervisor's recommendation, another alternative, or modifies the alternative recommended by the Forest Supervisor. This alternative is described as the Preferred Alternative in the DEIS and is displayed separately as the Proposed Revised Forest Plan. Public comments are solicited and are considered as the draft Revised Forest Plan and DEIS are finalized.

STEP 9- Plan Approval and Implementation: After the Planning Team has reviewed public comments and incorporated any necessary changes into the Final EIS and the Revised Forest Plan, the Regional Forester reviews and approves the Revised Forest Plan and Final Environmental Impact Statement. A Record of Decision documents this step.

STEP 10 - Monitoring and Evaluation: The Revised Forest Plan establishes a system of measuring, on a sample basis, actual activities and their effects, and compares these results with projections contained in the Revised Forest Plan. Monitoring and evaluation comprises an essential feedback mechanism to ensure the Revised Forest Plan is dynamic and responsive to change.

Inventory Data and Information Collection (Step 3)

Several Interdisciplinary Team meetings were held to evaluate what data were needed to address the significant issues, concerns, and opportunities identified in Chapter 1 of the EIS. Existing inventories were reviewed and updated, and new information needs were identified and collected, if available. Most of the information was stored in databases, spreadsheets, and a geographic information system (GIS).

GIS Data Layers

A geographic information system (GIS) was used to develop the primary Forest Plan revision database. GIS links natural resource tabular information with spatial (map) information. This linkage enables complex spatial analyses and rapid display for many different physical, biological, or administrative resources. The resulting database was used to preliminarily map the allocation of the management prescriptions, analyze suitable timber lands, build the forest planning model Spectrum analysis areas, and perform other analyses for the revision. GIS data used in this analysis were those available as of October 2003. To develop the database, the following layers were overlaid in GIS:

- The Continuous Inventory of Stand Condition (CISC) – until recently, the Southern Region’s primary forest vegetation and stand inventory information that relates to forest cover type, age, site index, and land classification. The mapping of the management prescriptions for each alternative used recent CISC data. The Continuous Inventory of Stand Conditions, CISC, 1993, is the database component of the Silvicultural Examination and Prescription Process as documented in the Silvicultural Examination and Prescription Handbook, FSH 2409.26d, R8 Amendment 2409.26d-93-1. US Department of Agriculture, Forest Service.

- Land Status – This layer contains information on Forest surface ownership. The lands layer was updated several times throughout the process to incorporate new acquisitions.

- Digital Elevation Models (DEMs) – The DEMs were used for creation of slope maps, shaded relief maps, and contour maps; for determination of what part of the landscape is visible from various locations; and for analysis of difficulty of traversing the terrain.

- Watersheds – This layer included Hydrologic Unit Code (HUC) mapping at both the fifth and sixth levels.

- Riparian – This layer is an approximation of the riparian habitat on the forest. It is impracticable to map the true riparian corridors in detail due to the complexity of slope, vegetation, and other factors that help define the corridor. This coverage was generated by buffering perennial streams and lakes by 100 feet and by buffering a representation of intermittent stream channels by 30 feet.

- Inventoried Roadless Areas – Discussion of the data used in the roadless area evaluations is covered in Appendix G.

- Developed Recreation Sites – Includes established recreation areas, trailheads, and shooting ranges.

- Scenery Management System (SMS) – This layer addressed the visual resources and included attributes related to scenic integrity, distance zone, scenic attractiveness, and concern level.

- Recreation Opportunity Spectrum (ROS) – This layer represented the recreation experience expected in a particular area and included attributes such as rural, roaded natural, semi-primitive motorized and semi-primitive non-motorized.

- Transportation (Travel Routes) – This layer included the public and Forest Service roads and trails within the Forest boundary.

- Special Areas – This layer includes Special Interest Areas (SIAs), Wilderness Areas, Research Natural Areas (RNAs), Wild and Scenic River Corridors, and Scenic Byways.

- Management Areas– This layer included Wilderness and special management areas based upon the 1990 Plan, as amended.

- Streams and Watercourses – This layer included intermittent and perennial streams, lakes, rivers, and ponds.

- Terrestrial Ecological Communities – A derived layer based upon stand level (CISC) forest types for most communities combined with additional inventory and mapping for other communities.

- Ecological Classification System (Land Type Associations and Land Types) - At the landscape scale, ecological units are defined by general topography, geomorphic process, surficial geology, associations of soil families, and potential natural communities, patterns, and local climates. Landtype association ecological units represent this scale in the hierarchy. These are groupings of landtypes or subdivisions of subsections based on similarities in geomorphic process, geologic rock types, soil complexes, stream types, lakes, wetlands, subseries, or plant association vegetation communities.

Analysis of the Management Situation (Step 4)

In addition to the emerging issues, the need for change was identified through the Analysis of the Management Situation for the Ouachita National Forest (AMS). This analysis considered the results of monitoring and evaluation, other policy and direction since the previous Plan, the 5-Year Review, the current condition of the resources, ecoregional and regional assessments, and supply and demand factors to determine the need for change in management direction, as well as the ability of the planning area covered by the Forest Plan to supply goods and services. It provided a basis for formulating a broad range of reasonable alternatives. The processes and results for the supply and demand analyses are briefly discussed below. The process records contain the full supply and demand analyses.

Many decisions to conduct management actions were made before the effective date of the Revised Forest Plan but will not be fully implemented before the Revised Forest Plan goes into effect. These “pre-existing actions” (made under the 1990 Amended Forest Plan) were treated as part of the baseline for the Environmental Impact Statement and the Revised Forest Plan. The projected effects of these pre-existing actions are part of the cumulative effects analyses documented in the FEIS and Biological Assessment for the Revised Plan. Those analyses indicate that the continued implementation of these previously decided actions will not foreclose the ability to meet the desired conditions and objectives of this Revised Forest Plan. Table B.46, B.47, and B.48 (at the end of this appendix) provide lists of major project decisions containing timber harvest and other management activities that may not be completed until after the 2005 Revised Forest Plan goes into effect.

Determination of Demand Estimates

Recreation

This section provides additional details related to recreation supply and demand that were not covered in Chapter 3 of the FEIS. Recreation demands were based on several sources: 1) the findings of the Ozark-Ouachita Highlands Assessment; 2) Regional Demand and Supply Projections for Outdoor Recreation (1993 update to the 1989 RPA Assessment) by English et al.; 3) Ouachita and Ozark National Forests Recreation Realignment Report, August 2001; 4) Arkansas SCORP 1995; and 5) Outdoor Recreation in American Life, A National Assessment of Demand and Supply Trends (Cordell 1999).

National Forest recreation visits were estimated based upon data collected through the National Visitor Use Monitoring (NVUM) project. This project was implemented throughout the National Forest System in response to the need to better understand use of and satisfaction with recreation settings and to provide a standard means of quantifying recreation use across the system within a reasonable confidence level. National Forest plans, Executive Order 12862 (Setting Customer Service Standards), and implementation of

the National Recreation Agenda require this level of understanding. The agency's Strategic and Annual Performance Plans require measuring trends in user satisfaction and use levels to be able to improve public service, which will assist Congress, Forest Service leaders, and program managers in making sound decisions that best serve the public and protect valuable natural resources. The information collected is also important to external customers such as state agencies and private industry. NVUM methodology and analysis is explained in detail in the research paper entitled: Forest Service NVUM Process: Research Method Documentation; English, Kocis, Zarnoch, and Arnold; SE Experiment Station; May 2001 (http://www.fs.fed.us/recreation/recuse/recuse.shtml).

The first round of data collection was completed for the Ouachita National Forest in 2001, and the report was completed in 2002. The project utilized randomly selected stratified sites across the forest in four categories: Day Use Developed (DUD), Overnight Use Developed (OUD), General Forest Area (GFA), and Wilderness (Wild). Both proxy and non-proxy site data were collected. Factors based upon national data were used as multipliers to estimate total visits by category. The spreadsheets used to calculate visits are available in the process records for this plan. Following is a brief description of the NVUM process.

In conjunction with guidelines and recommendations from the Outdoor Recreation Review Commission, the USDA-Forest Service has estimated recreation use and maintained records since the 1950s. Many publications on preferred techniques for estimating recreation use at developed and dispersed recreation sites were sponsored by Forest Service Research Stations and Universities. Implementation of these recommended methodologies takes specific skills, a dedicated work force, and strict adherence to an appropriate sampling plan. The earliest estimates were designed to estimate use at developed fee recreation facilities such as campgrounds. These estimates have always been fairly reliable because they are based upon readily observable, objective counts of items such as a fee envelope.

Prior to the mid-1990s, the Forest Service used its Recreation Information Management (RIM) system to store and analyze recreation use information. Forest managers often found they lacked the resources to both manage the recreation facilities and simultaneously monitor visitor use following the established protocols. In 1996, the RIM monitoring protocols were no longer required to be used.

In 1998, a group of research and forest staff was appointed to investigate and pilot a recreation sampling system that would be cost effective and provide statistical recreation use information at the forest, national, and regional level. Since that time, a permanent sampling system (NVUM) has been developed. Several Forest Service staff areas including Recreation, Wilderness, Ecosystem Management, Research and Strategic Planning, and Resource Assessment are involved in implementing the program. A four-year cycle of data collection was established. In any given year, 25 percent of the national forests conduct on-site interviews and sampling of recreation visitors. The first 25 percent of the forests included in the first four-year cycle completed sampling in December of 2000. The last 25 percent of the first, four-year cycle forests will complete their sampling in September 2003. The cycle begins again in October 2004. This ongoing cycle will provide quality recreation information needed for improving citizen centered recreation services.

Definition of Terms

NVUM has standardized definitions of visitor use measurement to ensure that all national forest visitor measurements are comparable. These definitions are the same as established by the Forest Service since the 1970s; however, the application of the definition is stricter.

Visitors must pursue a recreation activity physically located “on” Forest Service managed land in order to be counted. They cannot be passing through; viewing from non-Forest Service managed roads, or just using restroom facilities. The NVUM basic use measurements are national forest visits and site visits. In addition, information about the visitor’s trip is also collected. Along with these use measurements, basic statistics, which indicate the precision of the estimate, are given. These statistics include the confidence level and error rate. The definitions of these terms follow.

National forest visit – the entry of one person upon a national forest to participate in recreation activities for an unspecified period of time. A national forest visit can be composed of multiple site visits.

Site visit – the entry of one person onto a national forest site or area to participate in recreation activities for an unspecified period of time.

Recreation trip – the duration of time beginning when the visitor left their home and ending when they got back to their home.

Confidence level and error rate – used together these two terms define the reliability of the estimated visits. The confidence interval defines the range of values around the estimated visits with a specified level of certainty. The error rate (which is not a negative thing like making an error on a test) is the upper and lower bounds of the confidence interval. The lower the error rate and the higher the confidence level, the better the estimate. An 80 percent confidence interval is very acceptable at a broad national or forest scale. The two terms are used to statistically describe the estimate. For example: at the 80 percent confidence level, there are 209 million national forest visits plus or minus 17 percent. In other words, we are 80 percent confident that the true number of national forest visits lies between 173.5 million and 244.5 million.

The NVUM Process and Definition of Terms

To participate in the NVUM process, forests first categorize all recreation sites and areas into six basic categories called “site types:” Day Use Developed Sites (DUDS), Overnight Use Developed Sites (OUDS), Wilderness (WILD), General Forest Areas (GFA), On-Forest Viewing Corridors (OFVC), and Off-Forest Recreation Activities. Only the first four categories are considered “true” national forest visits and were included in the estimate provided. Within these broad categories every open day of the year for each site/area was rated as high, medium, or low exiting recreation use. Sites and areas that were closed or had “0” use were also identified. Each day on which a site or area is open is called a site day and is the basic sampling unit for the survey. Results of this forest categorization are shown in Table B.1.

Table B.1 RPA Activity Group Summary from NVUM Data for Alternative A (Current)

RPA Category	DUD		OUD		GFA		WILD		TOTAL
	%	M Visits	%	M Visits	%	M Visits	%	M Visits	M Visits
Camping, Picnicking, Swimming	22	34	100	52	3	21	0	0	107
Mechanical Travel& Viewing Scenery	0	0	0	0	40	256	0	0	256
Hiking, Horseback Riding, Water Travel	0	0	0	0	25	156	0	0	156
Fish & Wildlife	47	71	0	0	25	156	0	0	227
Wilderness	0	0	0	0	0	0	100	18	18
Other	31	47	0	0	7	48	0	0	95
Total	100	152	100	52	100	637	100	18	859

A map showing all General Forest Exit locations and On-Forest Viewing Corridors was prepared. Both the categorization and the map are archived with the NVUM data for use in future sample years. NVUM also provided training materials, equipment, survey forms, funding, and the protocol necessary for the forest to gather visitor use information.

NVUM terms used in the site categorization framework are defined below:

Site day – a day that a recreation site or area is open to the public for recreation purposes.

Site types – stratification of a forest recreation site or area into one of six broad categories as defined in the paper: Forest Service National Visitor Use Monitoring Process: Research Method Documentation, May 2001, English and others. The six categories are Day Use Developed sites (DUDS), Overnight Use Developed Sites (OUDS), General Forest Areas (GFA), Wilderness (WILD), On-Forest View Corridors (OFVC), and Off-Forest Recreation Activities (Off Forest).

Proxy – information collected at a recreation site or area that is related to the amount of recreation visitation received. The proxy information must pertain to all users of the site, it must be an exact tally of use, and it must be one of the proxy types allowed in the NVUM pre-work directions (fee receipts, fee envelopes, mandatory permits, permanent traffic counters, ticket sales, and daily use records).

Nonproxy – a recreation site or area that does not have proxy information. At these sites, a 24-hour traffic count is taken to measure total use for one day at the sample site.

Use level strata – for either proxy or nonproxy sites, each day that a recreation site or area was open for recreation, the site day was categorized as either high, medium or low exiting recreation traffic, or closed. Closed was defined as either administratively closed or “0” use. For example, Smokey Bear Picnic Area (a DUDS nonproxy site) is closed for 120 days, has high exiting use on open weekends (70 days) and medium exiting recreation use on open midweek days (175 days). This accounts for all 365 days of the

year at Smokey Bear Picnic area. This process was repeated for every developed site and area on the forest.

Assumptions by alternative about recreation programs use were based on the overall theme and emphasis of each alternative as stated in its description. These assumptions related to the quality and location of recreation activities and, as such, cannot be reflected in the estimates of supply and capacity for developed recreation, dispersed recreation, general forest/trails, and wilderness.

The Ouachita National Forest NVUM data were further refined to RPA activity groups for use in the Present Net Value (PNV) and Jobs/Income calculations for the FEIS. The percent breakdown by RPA activity group was done using NVUM survey results from the Ouachita National Forest NVUM data and local experience. Table B.1 shows a summary of the conversion of visits by the NVUM categories to the RPA activity groups for the Forest under Alternative A (No Action Alternative, 1990 Amended Forest Plan). Visits were converted to trips and shown by Use Category (a combination of RPA activities) for each alternative in Table B.2 (See Table 3.101 in the FEIS for 50 year projections) in order to understand the economic impacts of recreation and wildlife visitor experiences. No differences among alternatives were indicated

Table B.2 Recreation Trips by Use Categories by Alternative

Resource	Alternatives				
	A	B	C	D	E
Recreation					
Local Residents Day Use	514,800	514,800	514,800	514,800	514,800
Non-Local Residents Day Use	188,400	188,400	188,400	188,400	188,400
Local Residents Overnight off the NF	100,500	100,500	100,500	100,500	100,500
Non-Local Residents Overnight off the NF	238,600	238,600	238,600	238,600	238,600
Local Residents Overnight on the NF	62,800	62,800	62,800	62,800	62,800
Non-Local Residents Overnight on NF	150,700	150,700	150,700	150,700	150,700
Wildlife & Fish					
Local Residents Day Use	115,100	115,100	115,100	115,100	115,100
Non-Local Residents Day Use	42,100	42,100	42,100	42,100	42,100
Local Residents Overnight off the NF	22,400	22,400	22,400	22,400	22,400
Non-Local Residents Overnight off the NF	53,300	53,300	53,300	53,300	53,300
Local Residents Overnight on the NF	14,000	14,000	14,000	14,000	14,000
Non-Local Residents Overnight on NF	33,700	33,700	33,700	33,700	33,700

Wildlife and Fisheries

The Recreation demand projections addressed hunting, fishing and wildlife viewing. Chapter 3 of the EIS discusses trends in certain wildlife "demand species" selected as management Indicator Species (MIS): Northern Bobwhite, White-Tailed Deer, and Eastern Wild Turkey.

Range

Projections for range were derived from the past history of the range program on the Forest, the 1989 Recommended RPA Program (USDA 1990) and the Forest Service Program for Forest and Rangeland Resources (USDA 1995). Since demand for the program is in decline, no differences were analyzed by alternative. Capacity was calculated to be more than adequate to meet existing demand.

Timber

Ouachita NF Timber Supply-Demand Analysis

The Ouachita NF timber market area, in which the Forest supplies mills in its area, resides within a "competitive zone" where Forest supplied mills compete for timber from other outlying areas. The "competitive zone" is considered to include the following counties (in AR unless otherwise noted); Choctaw (OK), Clark, Conway, Dallas, Garland, Grant, Hempstead, Hot Spring, Howard, Johnson, Latimer (OK), LeFlore (OK), Little River, Logan, McCurtain (OK), Miller, Montgomery, Nevada, Perry, Pike, Polk, Pope, Pulaski, Pushmataha (OK), Saline, Scott, Sebastian, Sevier, and Yell. Within these counties, other land ownerships compete to supply timber to the mills in this area. The Ouachita NF meets only a fraction of the total demand.

Data to perform a supply-demand analysis comes from the USDA-FS Forest Inventory Analysis system at the North Central Research Station. Unfortunately, the Ouachita NF data are somewhat dated—1995 for Arkansas and 1993 for the Oklahoma portion. More recent 2002 Arkansas data are matched by recent data for the Oklahoma counties of the Ouachita. Therefore, this analysis used the "old" complete data. Although using the 1990's data still results in mixing of two different survey years of data, a general idea of characteristics is still valid. Table B.3 includes relevant statistics for each of the counties within the competitive zone for the Ouachita National Forest.

Table B.3 (Part 1) Ouachita National Forest Timber Competitive Zone Characteristics

Competitive Zone Counties	Vol. Growing Stock (mcf)	Mortality of Growing Stock (mcf)	Percent of Growing Stock with Mortality	Removals of Growing Stock (mcf)	Percent of Growing Stock from Removals	Net Growth of Growing Stock (mcf)
Clark	562,481	2,585	0.46	19,942	3.55	26,605
Conway	152,813	689	0.45	2,643	1.73	6,504
Dallas	520,484	2,618	0.50	25,264	4.85	27,467
Garland	412,221	1,603	0.39	4,807	1.17	18,595
Grant	526,115	2,575	0.49	24,430	4.64	26,660
Hempstead	385,596	1,836	0.48	29,863	7.74	26,974
Hot Spring	314,190	2,455	0.78	12,371	3.94	23,519
Howard	258,325	2,161	0.84	16,900	6.54	22,453
Johnson	422,336	1,438	0.34	6,982	1.65	15,121
Little River	275,094	1,129	0.41	9,443	3.43	13,434
Logan	280,032	1,221	0.44	4,162	1.49	11,148
Miller	198,123	697	0.35	10,382	5.24	10,407
Montgomery	664,701	2,999	0.45	11,070	1.67	11,055
Nevada	425,743	3,114	0.73	27,664	6.50	22,674
Perry	359,530	1,113	0.31	4,561	1.27	15,487
Pike	351,661	4,534	1.29	16,852	4.79	23,302
Polk	449,301	2,177	0.48	11,621	2.59	17,734
Pope	486,751	2,425	0.50	5,378	1.10	15,840
Pulaski	219,396	747	0.34	7,867	3.59	9,606
Saline	413,393	1,085	0.26	14,436	3.49	19,991
Scott	665,608	1,548	0.23	15,944	2.40	20,609
Sebastian	89,606	409	0.46	1,016	1.13	3,363
Sevier	245,851	2,261	0.92	15,539	6.32	11,481
Yell	589,961	2,689	0.46	5,282	0.90	20,415
AR Total	8,782,561	43,902	0.50	299,038	3.40	404,603
Choctaw	97,816	647	0.66	1,884	1.93	4,343
Latimer	157,019	343	0.22	3,346	2.13	7,499
Leflore	509,618	1,121	0.22	9,485	1.86	32,984
McCurtain	662,876	2,945	0.44	31,361	4.73	56,009
Pushmataha	513,910	1,517	0.30	19,817	3.86	36,566
OKTotal	1,941,238	6,573	0.34	65,893	3.39	137,401
Grand Total	10,723,799	50,475	0.47	364,931	3.40	542,004

Table B.3 (continued - Part 2) Ouachita National Forest Timber Competitive Zone Characteristics

Timber Competitive Zone Counties:	Ratio of Removals to Net Growth	Cut & Sold Reports Ouachita NF Removals (MCF)	Ouachita NF % of Competitive Zone Total	FIA Data Ouachita NF Removals (MCF)	FIA Data Ouachita NF % of Market Area Total
Clark	1.33				
Conway	2.46				
Dallas	1.09				
Garland	3.87			476	9.9
Grant	1.09				
Hempstead	0.90				
Hot Spring	1.90				
Howard	1.33				
Johnson	2.17				
Little River	1.42				
Logan	2.68				
Miller	1.00				
Montgomery	1.00			6,357	57.4
Nevada	0.82				
Perry	3.40			927	20.3
Pike	1.38				
Polk	1.53			3,092	26.6
Pope	2.95				
Pulaski	1.22				
Saline	1.38				
Scott	1.29			9,055	56.8
Sebastian	3.31				
Sevier	0.74				
Yell	3.87			2,701	51.1
AR Total	1.35	23,095	7.7	22,608	7.6
Choctaw	2.31				
Latimer	2.24				
Leflore	3.48			6,384	
McCurtain	1.79			912	
Pushmataha	1.85				
OK Total	2.09	4,296	6.5	7,296	11.1
Grand Total	1.49	27,391	7.5	29,904	8.2

Significant findings within this area where the National Forest competes with other land ownerships are as follows. Total growing stock volume for this forest (all ownerships) is 11.2 million mcf. Of this total, only 0.5 percent represents growing stock with mortality.

Removals from growing stock in each county's respective survey year amounted to about 3.3 percent of the growing stock available. Removal was especially high in Dallas, Hempstead, Nevada, and McCurtain (OK) counties. The ratio of removals to growing stock was particularly high in Dallas, Hempstead, Miller, Nevada, and McCurtain (OK) where removals were between about 5-7 percent of growing stock for a given year of harvest. Of these counties, only McCurtain County includes lands within the National Forest proclamation boundary.

The growth-drain ratio for the Ouachita NF's competitive zone is about 1.5, indicating that growth is 50 percent more than harvesting during the year of survey.

Harvest data for the Ouachita NF were taken from Forest Service Cut-and-Sold reports for 1995 and 1993 for Arkansas and Oklahoma counties, respectively. Of the total harvests in the competitive zone, the Ouachita's share was about 7.5 percent, indicating that federal land ownership was a relatively small source of all timber harvested in this competitive area. Within the competitive zone, the Ouachita NF has a relatively small share of all timber activity. This timber area has a healthy margin of removals to growth and a small mortality share of total growing stock.

The same four variables from FIA data were used to assess the timber condition on the Ouachita NF as were used to characterize the Ouachita's role in its overall competitive area. Growing stock contrasted with mortality proved to be very small. By county, the percentage of mortality to growing stock ranged from 0 to 0.39 percent, with an overall forest percentage of 0.30 percent (see Table B.4).

Table B.4 Ouachita National Forest Timber Characteristics

Counties	Vol. Growing Stock mcf	Mortality of Growing Stock mcf	% of Growing Stock with Mortality	Removals of Growing Stock mcf	Percent of Growing Stock from Removals	Net Growth of Growing Stock mcf	Ratio of Removals to Net Growth	Cut & Sold Reports Removals (MCF)	FIA Data Removals (MCF)
Ashley	0	0	0	0	0	0	0		
Garland	172,959	794	0.46	476	0.28	4,571	9.60		476
Hot Spring	430	0	0.00	0	0.00	0	0.00		
Howard	3,665	0	0.00	0	0.00	0	0.00		
Logan	24,359	0	0.00	0	0.00	884	0.00		
Montgomery	560,144	2,184	0.39	6,357	1.13	7,157	1.13		6,357
Perry	158,683	590	0.37	927	0.58	5,834	6.29		927
Pike	4,503	0	0.00	0	0.00	0	0.00		
Polk	243,930	1,341	0.55	3,092	1.27	5,262	1.70		3,092
Saline	90,120	0	0.00	0	0.00	2,470	0.00		
Scott	560,864	1,342	0.24	9,055	1.61	15,158	1.67		9,055
Sebastian	13,734	0	0.00	0	0.00	0	0.00		
Yell	310,414	785	0.25	2,701	0.87	8,843	3.27		2,701
AR Total	2,143,805	7,036	0.33	22,608	1.05	50,179	2.22	23,095	22,608
LeFlore	194,928	145	0.07	6,384	3.28	9,965	1.56		6,384
McCurtain	99,267	241	0.24	912	0.92	4,870	5.34		912
OK Total	294,195	386		7,296		14,835		4,296	7,296
Grand Total	2,438,000	7,422	0.30	29,904	1.23	65,014	2.17	27,391	29,904

Growing stock on the Ouachita NF was estimated to be 2,438,000 MCF in the mid-1990s. Removals were estimated to be 29,904 MCF for a drain ratio of 1.23 percent. During this same time, net growth was estimated to be 65,014 MCF per year. Contrasted with removals of 29,904 MCF yields a removal to growth ratio of one to 2.17 for the entire forest—a very healthy condition in terms of sustainable timber supply.

Based on mid-1990's FIA data, growth, mortality, and removals of timber are in a favorable position on the Ouachita NF. Growth is healthy, mortality is very small, and removals are a very small part of the growing stock. Since the mid-1990's data were collected, an ice storm in December 2000 downed or damaged a large number of trees in several parts of the forest.

Minerals

Congress passed a law in 1987 that updated and enlarged the Forest Service role in administering surface operations for oil and gas development on National Forest System lands (Federal Onshore Oil and Gas Leasing Reform Act of 1987). The reasonably foreseeable development projected for the Selected Alternative, 2005 Revised Forest Plan (see Appendix F) was developed based on the law and the implementing regulations, including the 36 CFR 228E regulations for Forest Service review and approval of surface use plans of operations and is discussed in detail in Chapter 3 of the EIS and in Appendix F. The reasonably foreseeable development included an estimate of the number of wells, miles of access road and pipeline construction, and acres of clearing for well pads, access roads, and pipelines. The development of new gas wells, access roads and associated facilities would occur over 15 years, which is the expected time span for the Revised Forest Plan.

Timber Analysis

Benchmark Analysis

Benchmark analysis is specified in the NFMA regulation in 36 CFR 219.12(e) as part of the Analysis of the Management Situation. Benchmarks approximate maximum economic and biological resource production opportunities and are useful in evaluating the compatibilities and conflicts between individual resource objectives and in defining the range within integrated alternatives can be developed. Selection of benchmarks to develop is dependent upon the revision topics. Benchmarks are primarily modeled in SPECTRUM by changing the objective function and by adjusting constraints. Because the SPECTRUM model was developed primarily to model communities and vegetation structure (with structural changes resulting from prescribed fire and timber harvesting), only one timber related benchmark was developed in addition to one that reflected the current level of management.

The NFMA regulations in 36 CFR 219.27 list management requirements that must be considered in benchmark analysis. The following basic management requirements were included in all of the benchmark SPECTRUM models:

- Non-declining flow and long-term sustained yield
- All suitable timberlands are included in the analysis
- Early seral minimum acreages and mature hardwood and mast requirements

CUR – Current Level Benchmark

This benchmark was the same as Alternative A.

TIM – Maximum Timber Benchmark

This benchmark was used to identify the timber production potential of the Forest, subject to these specifications:

The objective function maximizes timber volume, with a rollover to maximize present new value. The rollover locks in the timber volumes from the timber maximization and then optimizes on costs and revenues.

PNV – Maximum Present Net Value Benchmark

During analysis for the 1990 Amended Forest Plan, this benchmark was needed to help define the range of prescriptive possibilities to be modeled. This helped establish the scope of what might be considered when defining alternatives. During the current Forest Plan Revision, the scope was defined as what needed to change from current management. With this more narrowly refined scope, the Maximum Present Net Value Benchmark did not need to be updated from the original analysis.

MIN – Minimal Level of Management Benchmark

During analysis for the 1990 Amended Forest Plan, this benchmark was needed to help define the range of prescriptive possibilities to be modeled. This helped establish the scope of what might be considered when defining alternatives. During the current Forest Plan Revision, the scope was defined as what needed to change from current management. With this more narrowly refined scope, the Minimum Level of Management Benchmark did not need to be updated from the original analysis.

Timber Suitability

The National Forest management Act (NFMA) of 1976 identifies 'suitability' as "the appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices." During Forest Planning, the Forest Service is required to identify lands unsuited for timber production (16 USC 1604(k); 36 CFR 219.14). This identification process involves three stages of analysis. Stage I analysis identifies lands tentatively suitable for timber production. Stage II analysis is designed to explore the financial aspect of varying intensities of timber management on lands identified as tentatively suitable for timber production from Stage I. Stage III analysis identifies lands as unsuited for timber production under the alternatives selected in the revised Forest Land and Resource Management Plan.

The Ouachita National Forest Interdisciplinary Team (ID Team) determined that, based upon analysis for the 1990 Forest Plan and subsequent Plan Amendments, Timber Suitability had already been well defined. Thus, the only variation in timber suitability among the alternatives relates to the differing amounts of recommended wilderness. This would change the amount of acres available for consideration as suitable for Timber. Otherwise, the initial Stage I through Stage III suitability analysis is that analysis done for the 1990 Forest Plan and subsequent Amendments. The ID Team then balanced the acreage against land ownership totals as of October 1, 2003 (as reflected in the Table B.5).

Table B.5 Timber Suitability Classification

Classification	Acres	Source (Land Class data taken from CISC forest stand database)
Nonforest - Water	4,916	NHD
Nonforest – Roads	15,001	All_arcs.shp – clipped by surfown multiplied by average road width of 22 feet
Nonforest – Admin	780	Land Class 860, 870, 871
Nonforest – Developed Recreation	2,139	Land Class 850
Nonforest from CISC	8.447	All Land Class 100 & 200
Total Nonforest	31,283	See Above
Total Forested	1,748,818	Total NF Acres minus Total Nonforest
Withdrawn - Wilderness	64,469	2002 Lands book pgs. 102, 103, 133
Withdrawn – Scenic Areas	4,195	1990 Plan
Withdrawn – Research Natural Areas	2,035	1990 Plan
Withdrawn – Poteau Mountain Management Area	3,958	1990 Plan
Withdrawn – Botanical Areas	11,456	1990 Plan (Beech Creek – 380; Kerr – 7,876; Rich Mountain – 3,200)
Withdrawn – Wild / Scenic Rivers	14,639	Land Records (Little MO – 4,272 ac & Cossatot – 3,654 ac) + Amendment 34 (Glover and Mountain Fork – 6,713 ac)
Total Withdrawn	100,752	See Above
Not Capable	5,479	Land Class 900
Tentatively Suitable	1,642,587	Total Forest minus Total Withdrawn minus Not Capable
Land not Appropriate for timber production	622,893	278,284 acres riparian plus 344,609 acres of other Land Class 800 lands (excluding those above)
Unsuitable Forest Land	729,124	Total Withdrawn plus Not Capable plus Land not Appropriate for timber production
Total Suitable Forest Land	1,019,694	Total NF Forest Acres minus Unsuitable Forest Land
Total NF Acres	1,780,101	as of 10/1/03

Stage I: Physical Suitability

The first stage of the timber suitability analysis addressed the administrative and physical suitability of the land administered by the Ouachita National Forest. The primary outcome of the Stage I analysis are the acres remaining after analysis is complete. These acres are considered “tentatively suitable.” Stage I lands unsuitable for timber production include:

- Non-Forest lands
- Lands that have been administratively or congressionally withdrawn from timber production by an act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service
- Forest lands incapable of producing industrial wood

Total tentatively suitable acres equals 1,642,587acres.

Stage II: Financial Analysis

The Stage II analysis is designed to explore the financial efficiency of different timber intensities on the lands identified as tentatively suitable for timber production in Stage I. It does not identify any lands as unsuitable for timber production. Stage III analysis considers the results of these financial efficiencies in making the final determination of lands suited for timber production.

Stage II analysis was conducted for the 1990 Amended Forest Plan and set the scope for that and subsequent determinations of Timber suitability. According to Appendix B of the 1990 Final Supplement to the Final Environmental Impact Statement, Land and Resource Management Plan, Page B-33:

> "STAGE 2
> The second stage in the process was to test the tentatively suitable lands against the management prescriptions to determine their economic feasibility and efficiency. All Analysis Areas in the FORPLAN V_II model showed positive Present Net Value (PNV) with the highest PNV typically obtained with a Timber emphasis using clearcutting (97.5 percent). Some of the stands (age 90+) show the highest PNV with a Timber & Wildlife emphasis using clearcutting to create a mixed management type (2.5 percent).
>
> . . . None of the prescriptions had a PNV less than zero. Since all prescriptions generated a positive PNV, no further analysis of economic suitability was required at this point."

Since none of the factors initially considered have changed in a way that would have any impact upon financial efficiency considerations, this stage of the analysis was not repeated. Since that initial determination, the highest PNV (with both the highest costs and revenues) prescription of clearcutting with artificial regeneration has been relegated from widespread application to very limited application where specific conditions warrant. The other prescriptions of seedtree, shelterwood and selection harvesting rely principally upon natural regeneration which has a lower attendant cost and lower harvest revenues due to the retention of a portion of the stand.

Stage III: Identification of Suitable Acres

Lands for which planned periodic timber harvest would preclude the achievement of other non-timber management objectives are subtracted from the tentatively suited acres (Stage I). Since the scope of this Forest Plan Revision analysis examines reasonable changes from current management (Alternative A), the only changes in Timber Suitability acres are related to the amount of lands recommended for wilderness designation. During alternative formulation, the acres shown in Table B.6 were determined to be "not appropriate for timber production." Due to land allocation varying among alternatives, Stage III suitable acres will also vary.

Table B.6 Suitable and Unsuitable Acres Comparison

Alternative	Unsuitable Acres	Suitable Acres
A	729,124	1,019,694
B	729,124	1,019,694
C	730,917	1,017,901
D	759,251	989,567
E	732,590	1,016,228

Analytical Tools Used

IMPLAN

The economic effects to local counties, primarily in terms of employment and income, were estimated using an economic input-output model with Impact Analysis for Planning (IMPLAN). IMPLAN is a commercial software package for personal computers that uses the latest national input-output tables from the Bureau of Economic Analysis. The data consist of national-level technology matrices and estimates of industrial sector activity for final demands, final payments, industry outputs and employment for each county in the U.S. along with state and national trends. The software was originally developed by the Forest Service and is now maintained by the Minnesota IMPLAN Group, Inc (MIG). Data used for the impact analysis were from secondary data for those counties considered to be in the Forest's impact area. The assumption used in this modeling process was that the impact area comprised the counties within the designated county boundaries. The data source used in developing the Ouachita National Forest model for impact purposes was the most recent data available from MIG (2002).

Input-output analysis gives estimates of employment and income for an increase in final demand on certain sectors of the economy. For Forest Service timber, we have looked at the sawmill and roundwood industries where our timber goes as the first processing step in manufacturing. Impacts include all those industries initially impacted as well as those industries linked with supplying inputs to production and workers in those industries who then spend wages in their households (known as direct, indirect, and induced effects, respectively). A Forest Service developed spreadsheet, known as "FEAST" (Forest Economic Analysis Spreadsheet Tool), was used to apply the IMPLAN results to each alternative, which was expressed in units of output. FEAST transformed the dollar impact for a given industry from IMPLAN to the various resource outputs by alternative into a specific employment and dollar output.

Pre-Suppose

Pre-Suppose is a program used to query and sort Forest Inventory and Analysis (FIA) data for use in the growth and yield model. It was developed to assist forest analysts in producing strata for management planning. The program allows the user to evaluate, select or discard plots that fit desired criteria and create support files that directly link to the Suppose interface for the Forest Vegetation Simulator.

Suppose

Suppose is a computer program that was used to simulate the changes in forest vegetation over a long time span at the ‘landscape’ level spatial scope. Suppose accomplished the simulation by creating an input file used by the Forest Vegetation Simulator (FVS) and starting the FVS program that reads and processes the input file. The program contains the desired geographic variant and extensions to the base FVS system. FVS, not Suppose, actually accomplishes the desired simulation.

Forest Vegetation Simulation Model (FVS)

The primary tool for estimating growth and yield used in the SPECTRUM model is the Forest Vegetation Simulator (FVS) model. FVS is an individual-tree, distance-independent, growth and yield model. It has its structural roots in the Stand Prognosis Model developed by Albert Stage from the Intermountain Research Station. Staffs at the USFS Forest Management Service Center in Fort Collins, Colorado, have calibrated numerous variants of the model to specific geographic regions throughout the United States. Each variant uses different species-specific growth and yield equations and assumptions. The southern variant was used for developing yield tables for the Ouachita National Forest SPECTRUM model.

FVS allows the user to calculate estimates of forest stand structure and species composition over time and quantify this information to: 1) describe current and future forest stand conditions; 2) simplify complex concepts of forest vegetation into user defined indices, attributes, etc.; and 3) allow the manager to ask better questions about growth and yield of forested stands and complete analyses to answer those questions. For the purposes of the Ouachita National Forest plan revision, Forest Inventory and Analysis (FIA) data for the Southern Region was in a format that FVS could use. These data are collected by the Forest Inventory and Analysis Unit of the Southern Research Station for each State on a continuous cycle in order to provide unbiased, accurate, current, and relevant forest resource information that meets the diverse needs of land stewardship.

The FVS model structure contains modules for growing trees, predicting mortality, simulating growth reductions due to stocking, calculating tree volumes, and producing reports. The volumes generated from the FVS simulations were subsequently harmonized with the yields generated for the 1990 significant Forest Plan Amendment. This allowed them to better reflect programmatic harvest choices rather than the stand level choices from the FVS simulations.

Development of the SPECTRUM Model

Land management planning is the mechanism for comparing strategic options of differing programmatic mixes of activities and land allocations. Over time these choices will create different conditions across the forest. A forest model allows simultaneous consideration of a mixture of different options spread across the forest. It can evaluate whether desired conditions are feasible when taking all resource management goals and objectives into consideration. This allows managers to evaluate and make decisions about land allocations and future activities. The SPECTRUM model is an evolved version of FORPLAN, a linear programming model that solves for an overall objective, such as maximizing present net worth of benefits and costs. It is an excellent tool for determining the most cost-efficient way to reach objectives and for analyzing the impacts to vegetative conditions over time from various mixes of management activities.

In the past, this model has been used to support land allocation decisions; however, for this Revised Forest Plan, those land allocations were essentially determined through the mapping of Management Areas (with the exception of Alternative A which retained Management Areas from the 1990 Amended Forest Plan). The only differences in Management Areas were those due to differences in recommended wilderness by alternative. Within SPECTRUM, only Management Areas with forest conditions were modeled. Vegetation was classified based upon forest community and structure. For those areas with no substantial change in the way the community was to be managed, SPECTRUM was used to track changes over time. Where management changes were considered, there were two options: one was to treat the land with the Current emphasis; and the other was to treat the land with a more intensive Health emphasis. Those lands currently being treated with a Health emphasis were not given a Current emphasis to consider since that commitment had already been made. The best example of this situation is Management Area 22, the Shortleaf Pine / Bluestem Grass Ecosystem and Red Cockaded Woodpecker Habitat. While the Ouachita National Forest model considered timber harvest and applied the required timber harvest policy constraints, the allocative choices in the model were based upon the stated objectives of the Alternative. The timber factors were used to help schedule levels of harvest activity considered to be reasonable based upon expected budgets and other operational factors.

SPECTRUM Model Overview

The model was designed and solved in the following steps:

- Model creation – Designing the SPECTRUM model was the most extensive of the four steps. In this setup the modeler input resource data, specified resource interactions, set goals and objectives, outlined management actions, defined activities and outputs, set the planning horizon, stratified the landscape into similar response areas, and input economic data.

- Matrix Generation – Generating the matrix was the process of converting the input from step one to a matrix of rows and columns that the optimization software can solve.

- Optimization of the Solution – The commercial software C-Whiz was used to solve the matrix. The linear programming solver found the best mix of management actions to meet the management objectives.

- Interpretation of the Solution – The final step in the modeling process was to use the reports and outputs created in SPECTRUM to interpret the results of the optimization and perform sensitivity analysis.

The six basic components of the SPECTRUM model include the following and are discussed individually in this section:

- The planning horizon
- Land stratification
- Management prescriptions
- Activities and outputs and their associated costs and benefits
- Constraints
- Objectives Functions

Planning Horizon

Each SPECTRUM model has a specific time frame known as a 'planning horizon' that may be as short or long as desired and is broken into time periods of 10 years each. The Ouachita National Forest model used a planning horizon of 200 years, with 20 time periods, or decades. Activities and outputs are primarily represented/reported in SPECTRUM on a decadal basis, occurring at the mid-point of the decade.

Land Stratification

Analysis areas are defined as units of land, not necessarily contiguous, which can be considered to be homogeneous with respect to responses to treatments in term of yields, costs, and values received for resource outputs. Since the forest's inherent suitability and accessibility for timber harvesting was analyzed and determined previously, measures such as slope and distance from roads were not considered in this analysis. Management objectives or constraints are also expected to be relatively uniform throughout an analysis area. In SPECTRUM, each analysis area is allowed up to six stratification categories to identify its unique responses to treatments, yields, costs, values, and constraints. The Ouachita National Forest used five 'layers' to stratify the land. They are as follows:

- Layer 1 = Community plus Structure
- Layer 2 = Recreation Zones plus Special recreation areas (roadless, semi-primitive motorized, wilderness, wild & scenic rivers, and scenic areas)
- Layer 3 = Wildlife Areas (MA 21 – designated old growth, Management Area 22 – RCW/SLP Bluestem, walk-in turkey areas, and co-op wildlife management areas
- Layer 4 = Initially Vulnerable Watersheds, but then used as a second community identifier
- Layer 5 = Scenic class 1, 2, or 3

The unique combinations of these five layers are known as "analysis units." The Ouachita National Forest used a combination of Geographic Information system (GIS) data layers to construct its analysis units. A detailed description of the GIS layer development process can be found in the process record.

Layer 1 – Community plus Structure

Layer one is a combination of fourteen NatureServe Communities (a fifteenth community comprising the Red Slough WMA was not included in SPECTRUM) with four structural conditions (grass/forb, shrub, immature [or mid-seral], and mature [or late-seral]). The Ouachita Shortleaf Pine-Oak Forest and Woodland was further subdivided into: Ouachita Shortleaf Pine-Oak Forest; Ouachita Pine-Oak Woodland; and Ouachita Shortleaf Pine-Bluestem and stratified into high and low productivity classes. These terrestrial vegetation communities or "system" types provide species composition as listed in CISC for the broad community/system types from NatureServe for the Ouachita National Forest, as follows:

1.) Ouachita Shortleaf Pine-Oak Forest and Woodland CES202.313
    - 31: Loblolly Pine
    - 32: Shortleaf Pine
    - 22: Slash Pine
    - 12: Shortleaf Pine-Oak
    - 13: Loblolly Pine-Hardwoods
    - 44: Southern Red Oak-Yellow Pine
    - 45: Chestnut Oak-Scarlet Oak-Yellow pine
    - 47: White Oak-Black Oak- Yellow Pine

2.) Ouachita Dry-Mesic Hardwood Forest CES202.708
48: Northern Red Oak-Hickory-Yellow Pine
53: White Oak-Northern Red Oak-Hickory

3.) Ouachita Mesic Hardwood Forest CES202.043
54: White Oak
55: Northern Red Oak
56: Yellow Poplar-White-Northern Red Oaks

4.) Central Interior Highlands Dry Acidic Glade and Barrens CES202.692
11: Eastern Red Cedar-Hardwood
35: Eastern Red Cedar
43: Oak-Eastern Red Cedar

5.) Ouachita Montane Oak Forest CES202.306
49: Bear-Scrub Oaks-Yellow Pine
52: Chestnut Oak (chinquapin)
57: Scrub Oak

6.) Ouachita Dry Oak Woodlands CES202707
60: Chestnut Oak-Scarlet Oak
51: Post Oak-Black Oak

7.) South-Central Interior Large Floodplain CES202.705
40: Hardwood-Pond Pine
82: Black Walnut
95: Chestnut
98: Undrained Flatwoods

8.) Ouachita Riparian CES202.703
46: Bottomland Hardwoods-Yellow Pine
50: Yellow Poplar
58: Sweet Gum-Yellow Poplar
61: Swamp Chestnut Oak-Cherrybark Oak
62: Sweet Gum-Nuttall Oak-Willow
63: Sugarberry-American Elm-Green Ash
64: Laurel Oak-Willow Oak
69: Beech-Magnolia
72: River Birch-Sycamore
75: Sycamore-Pecan-American Elm

9.) West Gulf Coastal Plain Pine-Hardwood Flatwoods CES203.378
(Tiak & Crossett)
31: Loblolly Pine
13: Loblolly Pine-Hardwoods

Data for the community types below were extracted from site records, not CISC data.
10.) Ouachita Novaculite Glade and Woodland CES202.314
11.) Ouachita Mountain Forested Seeps CES202.321
12.) Central Interior Acidic Cliff and Talus CES202.689
13.) West Gulf Coastal Plain Small Stream and River Forest CES203.487
14.) Southern Arkansas Calcareous Prairie CES203.377

Structure is defined by seven categories that are listed below:

NAME	POSITION
Early Seral	grass and forb layer
Seedling/Sapling/Shrub	shrub layer
Immature Forest	subordinate canopy layer
Immature Woodlands	subordinate canopy layer
Mature Forest	dominant canopy layer
Mature Woodlands	dominant canopy layer
Shortleaf Pine/Bluestem	dominant canopy/herbaceous layer

Process criteria for defining structure using CISC variables were as follows:

1. Early seral → stand_cond = 1, 15 and age_year Greater than or Equal to 1998
2. Seedling/Sapling/Shrub → Stand_cond = 1, 13, 14, 15 and age_year Less than 1998
3. Mature Woodland → Condition = [sawtimber (Stand_cond = 3, 6, 8, 10, 12); type = pine and Total_ba Less than or Equal to 70] **OR** [sawtimber (Stand_cond = 3, 6, 8, 10, 12); type = hdwd and Total_ba Less than or Equal to 60]
4. Mature Forest → Condition = [sawtimber (Stand_cond = 3, 6, 8, 10, 12); type = pine and Total_ba Greater than 70] **OR** [sawtimber (Stand_cond = 3, 6, 8, 10, 12); type = hdwd and Total_ba Greater than 60]
5. Immature Woodland → Condition = [pole (Stand_cond = 2, 5, 7, 9, 11); type = pine and Total_ba Less than or Equal to 70] **OR** [pole (Stand_cond = 2, 5, 7, 9, 11); type = hdwd and Total_ba Less than or Equal to 60]
6. Immature Forest → Condition = [pole (Stand_cond = 2, 5, 7, 9, 11); type = pine and Total_ba Greater than 70] **OR** [pole (Stand_cond = 2, 5, 7, 9, 11); type = hdwd and Total_ba Greater than 60]
7. Assumption #1 → Riparian structure = Mature Forest
8. Assumption #2 → Most other polygons with unknown structure = Immature Forest
9. Assumption #3 → If the unknown appeared to be recently acquired, then DOQQs were checked and if stand had appearance of recent regeneration, structure = Seedling/Sapling/Shrub.

High productivity class was then defined as Site Index 60 and above, with Low productivity class defined as Site Index less than 60. Existing range allotments were also identified as part of layer 1, but since no allocative or activity based issues were identified for these allotments, the data was not used in subsequent analysis.

Layer 2 - Recreation Regions plus Special recreation areas (roadless, semi-primitive motorized, wilderness, wild & scenic rivers, and scenic areas)

This layer was derived using Geographic Information Systems (GIS) data. Data representing all Recreation Regions and Special Recreation areas were used to clip those portions of Layer 1 within each of the defined Layer 2 areas. Table B.7 shows the combinations that were used to define Layer 2.

Table B.7 Layer 2 Names and Descriptions

Name	Description
north	north region ordinary
nspm	north region semi-primitive
n_wnss	north region wilderness
nrlss	north region roadless
south	south region ordinary
s_wnss	south region wilderness
s_scen	south region scenic area
nowest	northwest region ordinary
nw_spm	northwest region semi-primitive
east	eastern region - ordinary
ewnss	east region wilderness
espm	east region semi-primitive
sowest	southwest region ordinary
swrlss	southwest region roadless
nrdspm	north region roadless & semi-primitive
nwwnss	northwest region wilderness
srlss	south region roadless
s_wsr	south region wild & scenic river
s_spm	south region semi-primitive
nwrlss	northwest region roadless
erlss	east region roadless

Layer 3 - Wildlife Areas (Management Area 21 – designated old growth, Management Area 22 – RCW/SLP Bluestem, walk-in turkey areas, and wildlife management areas.

This layer was derived using Geographic Information Systems (GIS) data. Data representing the designated wildlife emphasis areas were used to clip those portions of combined Layers 1 and 2 within each of the defined Layer 3 areas. Combinations shown in Table B.8 were used.

Table B.8 Layer 3 Names and Descriptions

Name	Description
22tky	MA 22 walk in turkey areas
MA22	MA 22 slp bluestem rcw hma
21wma	MA 21 wildlife management areas
MA21	MA 21old growth
turkey	walk in turkey areas
WMA	wildlife management areas
nowlf	no special wildlife
WMATky	wildlife management areas & walk in turkey areas
21tky	MA 21 walk in turkey areas

Layer 4 - Initially Vulnerable Watersheds, but then used as a second community identifier

This layer was derived using Geographic Information Systems (GIS) data. Data representing the designated vulnerable watersheds were used to clip those portions of combined Layers 1, 2 and 3 within each of the defined Layer 4 areas. The combinations shown below were used:

nvHUC: HUC
VUHUC

Subsequent information from the Forest hydrologist indicated that vulnerable watersheds would not be needed as a basis for selecting allocations or activities, so Layer 4 was converted to a redundant but simplified way to identify vegetation communities. The following combinations were used:

L4slp: slp bluestem
L4pwdl: pine oak woodland
L4CalP: calcareous prairie community
L4ClfT: cliff & talus community
L4DryO: dry oak community
L4Glad: glade community
L4Mhdw: mesic hardwood community
L4MonO: montane oak community
L4Novc: novaculite community
L4RdSl: red slough community
L4Ripr: riparian community
L4POfr: pine oak forest community
L4Seps: seeps community
L4WGll: west gulf loblolly community
L4DMhd: dry Mesic hardwood community

Layer 5 - Scenic class 1, 2, or 3

This layer was derived using Geographic Information Systems (GIS) data. Data representing Scenic classes 1, 2, and 3 was used to clip those portions of combined Layers 1, 2, 3, and 4 within each of the defined Layer 5 areas. Due to the increase in visual sensitivity from Scenic Class 3 to Scenic Class 1, logging costs were increased to account for the additional coordination and mitigation required. Combinations as shown below were used:

1scene: scenic class 1 (logging cost 20% higher)
2scene: scenic class 2 (logging cost 10 % higher)
3scene: scenic class 3

Vegetation Management Prescriptions

The array of potential vegetation treatments applied to an analysis unit is represented in the SPECTRUM model by sets of actions known as management actions. Generally, a management action in SPECTRUM refers to a set of treatments or practices designed to develop or protect some combination of resources on a particular land type. Eighteen Silviculture treatments were simulated in FVS in order to meet various vegetation manipulations and land management objectives. These prescriptions and their associated treatments are displayed in Table B.9.

Table B.9 Vegetation Management Prescriptions

Vegetation Management Rx	Forest Health Prescribed Fire	Thinnings	Regeneration Harvest
selection (current - selection)	n/a	ten year periodic entry	n/a
current pine-oak	n/a	once every 20 years	At 60-200 yrs
health shortleaf pine / bluestem	burn 3 times per 10 year period	once every 10 years	At 160-220 yrs
health pine-oak forest	burn 2 times per 10 year period	once every 10 years	At 80-130 yrs
health dry-mesic hdwd	burn 2 times per 10 year period	once every 20 years	At 110-190 yrs
health west gulf loblolly	burn 3 times per 10 year period	n/a	At 70-90 yrs
health pine-oak woodland	burn 3 times per 10 year period	once every 10 years	At 70-220 yrs
current West Gulf Loblolly	n/a	once every 10 years	At 50-100 yrs
Current - regeneration only	n/a	n/a	At 60-200 yrs
Health embeds	burn frequency varies by specific community	n/a	n/a

Activities, Outputs and Conditions

Vegetation Management Prescriptions applied to Analysis Areas impose a selected set of activities to create a flow of outputs and a set of conditions over time. This information is aggregated into forest-wide totals to provide measures by alternative. Table B.10 lists all Activities, Outputs, and Conditions considered in the SPECTRUM model.

Table B.10 Activities, Outputs, and Conditions Considered in the SPECTRUM Model.

Name	Description	Units
LTSY	PREDEFINED: Long Term Sustained Yield	mcf
SAV	PREDEFINED: Stand Average Volume	mcf
INV	Inventory volume	mcf
ASQ	PREDEFINED: Allowable Sale Quantity	mcf
canopy	canopy closure score (1 to 4)	score
earlys	acres of early seral condition	acres
mids	acres of mid seral condition	acres
lates	acres of late seral condition	acres
ppole	pine pole harvest	mcf
psaw	pine sawtimber harvest	mcf
hpole	hardwood pole harvest	mcf
hsaw	hardwood sawtimber harvest	mcf
spbhaz	acre of pine BA GTEQ 100 = high hazard	acre
oakdec	acre of oak decline hazard SI EQLT 60 & BA EQGT 75	acre
seltbr	sell timber - used to accumulate cost of timber operations	dollars
whlstd	whole stand volume	mcf
deer	deer habcap	deer
turkey	turkey habcap	turkey
quail	quail habcap	quail
pwdpkr	pileated woodpecker habcap	wdpkrs
prwrbh	prairie warbler habcap	wrblrs
sctang	scarlet tanager habcap	tngers
frcc1	acres in Fire Regime Condition Class 1	acres
frcc2	Acres in Fire Regime Condition Class 2	acres
frcc3	Acres in Fire Regime Condition Class 3	Acres
RXburn	Total acres of prescribed burning	acres
MastHD	Acres of Mast producing Hardwood (age GTEQ 5)	acres
hlthac	acres in ecosystem health prescription	acres
sobudget	place to enter periodic program budget	m_dollars
hdwtot	total hardwood cubic volume	mcf
pintot	pine total cubic volume	mcf
harvac	acres harvested	acres
achlth	acres of health RX	acres
burncost	links costs to acres of output RXburn	dollars
okdcal	acres allocated for oak decline calc	acres
spbalc	acres allocated for spb haz calc	acres
alloc	acres allocated for ycmp	acre
CReac	current even aged acres	acre
age1	acres of age class 1	acres
matpin	pine age 8+	acres

Costs and revenues associated with these activities and flows were based upon programmatic budgets and timber appraisal values. Outputs representing wildlife species were based upon yield coefficients used for project level analysis. Conditions expressed as acres represent the acres that are in that specific condition either due to vegetation management or natural changes over time. For details, see the planning process records on file in the Ouachita NF Supervisor's Office.

Constraints

The SPECTRUM model constructed for each alternative was basically identical in terms of the Analysis Areas; Vegetation Management Prescriptions available; and the Activities, Outputs, and Conditions that could occur. What made each Alternative different was the amount of Activities, Outputs, and Conditions specified and the locations where Vegetation Management Prescriptions might be applied. These differences were specified by model behavior rules called Constraints. Several constraints were developed for the SPECTRUM model in response to standards and objectives and the management requirements in the NFMA regulations. These constraints either had to do with timber flow characteristics or species diversity requirements.

The Following SPECTRUM constraints were applied to all alternatives.

- Long Term Sustained Yield (LTSY) constraint was used to ensure that the harvest of timber in the last decade is not greater than the long-term timber production capacity of the Forests. Long-term sustained yield capacity was computed using the acreage scheduled to each regeneration prescription applied in the model.

- The Perpetual Timber Harvest constraint was used to ensure that the remaining timber inventory would allow achievement of non-declining harvest levels beyond the modeling horizon. To achieve this condition the constraint required that the Forest contain as much timber inventory volume at the end of the last decade as the Forest would have, on average, under the management intensities selected in the analysis. Without this constraint the SPECTRUM model would have no reason to leave any inventory at the end of the planning period to sustain timber harvest levels into perpetuity.

- The Non-Declining Yield constraint was used to ensure that the harvest of timber in a decade was greater than or equal to the harvest of timber in the previous decade. This constraint indirectly limited the model to a lower present net value and reduced flow of timber in the early decades but also provided community economic and social stability through the controlled flow of timber.

- Each alternative was modeled with the same objective function: to solve for the maximization of present net value.

- Constraints were also established to set a minimum and maximum for Early Seral condition from forest regeneration; to set minimum acreages for mature hardwoods and pines and for hard mast; and to set the amount of acres suitable for timber harvest.

- Each alternative then had constraints to establish the initial Allowable Sale Quantity; specify the acres allocated to uneven-aged harvest and to allow specific Vegetation Management Prescriptions on specific communities or geographic areas.

Objective Function

The objective function allows specification of an overall objective to be met in a given run of the model while all constraints otherwise specified are met. The SPECTRUM models for all of the Ouachita NF alternatives were designed to solve for the most economical manner in which to accomplish those inherent objective. Therefore, all of the alternatives had an objective function to solve for maximum present net value for all activities and outputs.

Social and Economic Analysis

The purpose of this portion of Appendix B is to provide interested readers with additional details regarding the social and economic analyses. This section does not provide sufficient information to replicate the analysis. For that level of detail, the companion specialist reports contained in the administrative record should be consulted.

The Models

Economic effects to local counties were estimated using Impact Analysis for Planning (IMPLAN) Professional 2.0, an economic input/output model. IMPLAN is a software and database system that uses the latest economic data, such as national input/output tables from the Bureau of Economic Analysis. The software and data were originally developed by the Forest Service and are now maintained by the Minnesota IMPLAN Group, Inc (MIG). Data used for the impact analysis were from secondary data for the eighteen counties considered to be in the forests impact areas. The assumption used in this modeling process was that the impact area comprised the counties within the forest's designated county boundaries and represents a functional economic area. The data source used in developing the Ouachita National Forest models for impact purposes was the 2002 IMPLAN data set available from MIG. Model construction within IMPLAN aggregates all the counties selected for inclusion within the impact area.

Input/output analysis gives estimates of employment and income for an increase in final demand on certain sectors of the economy. For National Forest timber, for example, we looked at the sawmill and pulpwood industries where the timber goes as the first processing step in manufacturing. Impacts include all those industries initially impacted as well as those industries linked with supplying inputs to production, as well as workers in those industries who spend wages in their households (known as direct, indirect and induced effects). Thus, the impact assumes a new demand is made on the economy and estimates what the new increase in final demand will mean in employment and income to the economy. Input/output modeling (an equity analysis which tells how income and jobs are distributed throughout and economy for a given economic impact) has nothing to do with benefit cost (an efficiency analysis which estimates how efficient monies are spent on investment activities).

Dependency Analysis

The IMPLAN model was used to assess the economic dependencies of the Ouachita National Forest planning area. Economic dependency is a way of assessing the strength (what drives the economy) of regional or local economies. Regional economies generally depend on their exports to grow most local income and employment. Based on these data, it is reasonable to estimate economic dependency by examining an area's export base. The export base analysis done for this EIS measured the total contribution of one sector, or industry, to the economy. Industries can import and export similar commodities. Those industries having more exports than imports are considered "basic", and thereby allow "new" money to enter the economy. Basic industries allow an economy to grow.

Diversity Analysis

Using IMPLAN employment and income reports, forest planners illustrated the relative importance of major sectors and industries, such as wood products, and tourism. Employment, industrial output, and labor income to workers and proprietors were contrasted to the total for the entire forest economy to gauge the percentage relationship between the two. Using IMPLAN models from two years (1990 and 2000) a change in economic characteristics in illustrated. The Shannon Weaver Entropy Indexes were also used to show relative diversity of counties, and the state.

Forest Contribution and Economic Impact Analyses

An impact analysis describes what happens when a change in final demand sales occurs for goods and services in the model region. Changes in final demand sales are the result of multiplying production data (e.g., head months of grazing or recreation visitor trips) times sales. Economic impacts were estimated for 2005, using the expenditure data for recreation, wildlife and hunting (U.S. Forest Service's National Visitor Use and Monitoring data) stumpage estimates for timber, market prices for minerals, and estimated animal allotment prices for Range. NVUM data were used by Daniel J. Stynes and Eric White, Michigan State University, July 2002 to estimate spending profiles of recreation users.

Impacts to local economies are measured in two ways: employment and labor income. Employment is expressed in jobs. A job can be seasonal or year-round, fulltime, or part time. Labor income includes both employee compensation (pay plus benefits) and proprietor's income (i.e. self employed).

Data Sources

The IMPLAN model was used to determine economic (employment and labor income) consequences in selected sectors. Because input/output models are linear, multipliers or response coefficients need only be calculated once per model and then applied to the direct change in final demand. A Forest Service developed spreadsheet known as "FEAST" (Forest Economic Analysis Spreadsheet Tool) was used to organize the resource data by alternative and IMPLAN response coefficients to derive the economic consequences by alternative and resource. In other words, FEAST uses the response coefficients from IMPLAN and the resource data by alternative to estimate the economic consequences. Levels of dollar activity by alternative are stated in Table B.11.

Table B.11 Budget and Employment Data Used for the FEAST Model

Resource	Units	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Recreation	M $	1,675	1,675	1,675	1,675	1,675
Timber	M $	7,645	7,610	7,812	7,597	7,602
SWA	M $	633	633	633	633	633
Range	M $	140	140	140	140	140
Minerals	M $	201	201	201	201	201
Wildlife & Fish	M $	1,940	1,940	1,940	1,940	1,940
Protection (includes Fire, EM, Lands, Engineering)	M $	10,515	10,655	11,335	10,747	10,869
Forest Service Employment						
Permanent	Persons	300	300	300	300	300
Other than Permanent	Persons	75	75	75	75	75

Timber

Sales Data: Timber revenue was estimated by using timber stumpage values ($ per CCF) multiplied by estimated production harvest levels for each alternative.

Use of the Model: Hardwood and softwood sawtimber are processed through the sawmill industry. Hardwood and softwood round wood are assumed to be processed at the pulp mill. In the absence of a pulp mill in the local economy, round wood is assumed to be exported out of the analysis area. Impacts represent the economic activity occurring in all sectors and supporting components associated with the final demand output of the timber industries described above. For the Ouachita National Forest, pulp mills do not exist in the analysis area. Therefore, it was assumed that round wood was exported out of the impact area.

Range

Sales Data: The best available data for agriculture is found in the *2002 Census of Agriculture*. From this census, data for county level inventory and animals sold were used. This information was used to estimate the market value of animals sold in the local economy (total sales) and the proportion that was attributable to the Forest Service. Animal months of grazing on forest land were provided by alternative by the resource specialists. This unit of use information was placed in FEAST to link with IMPLAN impact response coefficients to yield an impact for the range resource per unit of grazing (AUM).

Recreation Wildlife & Fish

Expenditure Data: Recreation and Wildlife and Hunting trips were derived from the 2001 National Visitor Use and monitoring survey (NVUM). The NVUM survey is conducted for one quarter of the national forests each year. The resulting calculations yielded trips for local and non-local Day use, on National Forest Overnight use, and off National Forest Overnight Use. These use metrics were entered into FEAST to link with IMPLAN impact response coefficients to yield an impact for recreation and wildlife resources.

While some analysts may not include resident (people within 50 miles of the impact area) participation in local economy impacts because there may be substitution opportunities for local residents to spend their discretionary dollar, we decided to include resident expenditures in the local economy with the caveat that these expenditures were "associated" with the impacts not "responsible" for causing the impacts. The logic for making this statement is that local recreation users have many choices for their recreation expenditures. If some people choose not to recreate on national forest land, they may recreate in another manner such as go to sporting events or a movie. The dollars would still be spent in the local economy causing a similar impact, but the provider of recreation would be a different party.

Federal Expenditures & Employment

Forest Service Expenditure Data: Planners applied budget constraints to every alternative. This budget constraint was also used to help estimate the total forest expenditures (salary and non-salary), some of which had local economic effects. Budget object codes, from the National Finance Center, for 2002-2004 were averaged and used to constrain total forest expenditures.The proportion of funds spent by resource programs varies by the alternative according to the theme for that alternative. Forest Service employment was estimated by the forest staff based on examination of historical Forest Service obligations.

Use of the Model: To obtain an estimate of economic impacts related to Forest Service spending, salary and non-salary portions of the impact were handled separately. Non-salary expenditures were determined by using the budget object code information noted above. This spending profile was run through the model for non-salary expenditures to develop response coefficients (jobs and income) per one million dollars, and the results multiplied by total forest non-salary expenditures. FEAST was again used to perform these calculations. Local sales to the federal government are treated in the same manner as exports.

IMPLAN includes a profile of personal consumption expenditures for several income categories; the average compensation for an employee on the Ouachita National Forest fell in the category of $30,000-$39,999. An IMPLAN profile for this spending range was used to estimate the economic effects.

Revenue Sharing – 25% Fund Payments

Expenditure Data: Until September 30, 2001, Federal law required that 25 percent of all gross revenues from national forest activities be returned to States and counties in which those national forest lands exist. Twenty-Five Percent Fund Payments were applied to schools and roads according to state laws. An IMPLAN profile of expenditures was developed from within the county forest boundary model for 1) the highway construction sector and 2) local educational institutions. Because counties *may* choose to continue payments under the older formula, traditional payments were analyzed (we assumed 25 percent of payments went to roads and 75 percent to education). For those counties that choose or remain on "full payments" under the 2000 law, the Secure Rural Schools and Community Self-Determination Act, the impacts would not vary by alternative. The impact of the fixed payment was not calculated.

Use of the Model: The national expenditure profile for state/local government education (schools) and local model estimates for road construction (roads) are provided within IMPLAN. An IMPLAN project consisting of these two sectors was developed. The IMPLAN project was used to estimate a response coefficient (jobs and labor income per $1 million of 25% fund payments). These response coefficients were loaded into FEAST and linked to the estimated 25% fund payments by alternative to estimate employment and labor income effects.

Output Levels

Output levels for each item listed previously can be viewed in various Forest FEAST spreadsheets files contained in the administrative record. These amounts are also located in the corresponding resource sections of the FEIS.

Present Net Value

The 1982 National Forest Management Act (NFMA) implementing regulations (*36 CFR 219.1*) state that forest plans must "…provide for multiple use and sustained yield of goods and services from the National Forest System in a way that maximizes long term net public benefits in an environmentally sound manner." Net public benefits is defined as the overall value to the Nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not.

Present net value (PNV) is one of the criteria used to determine net public benefits (NPB) in benchmarks and alternatives. It is the difference between the discounted value of all outputs which were assigned a price in the revision and all Forest Service management and investment costs over the analysis period. The PNV converts all costs and benefits over the 50 year planning period to a common point in time. Other benefits of public land management cannot be measured using dollar values. These non-priced benefits are another criteria used to determine NPB.

Each alternative was determined and analyzed to achieve its goals and objectives in a manner that produced the greatest PNV while meeting all specified costs and objectives for non-priced benefits. Thus, the PNV of each alternative estimated the value of priced benefits while accounting for the costs of producing priced benefits, non-priced benefits, and meeting management requirements. The PNV of each alternative can then be compared directly (See Table 3.95 in the FEIS for values by Alternative).

Financial and Economic Efficiency Analysis

Financial efficiency is defined as how well the dollars invested in each alternative produce revenues to the agency. Economic efficiency is defined as how well the dollars invested in each alternative produce benefits to society. Present Net Value (PNV) is used as an indicator of financial and economic efficiency.

The Ouachita National Forest used a Microsoft Office Excel electronic spreadsheet to calculate PNV for each alternative over a 50-year period. A four percent real discount rate, prescribed by Forest Service Handbook (FSH) 1909.17, was used. Decadal and 50 year cumulative present values for program benefits and costs as well as present net values are the product of this spreadsheet. For each decade, an average annual resource value was estimated; an annuity was created for the decade, discounted from the mid-point of the decade to the first year of the decade; and then each decade annuity was discounted to 2005.

The financial values for range came from RPA estimates and updated to 2005 dollars; for timber from average stumpage prices provided by the Forest; for minerals from market prices for minerals from the Minerals Management Service; and prices for recreation and wildlife from RPA updated to 2005 dollars and transformed to NVUM unit measurements. As shown in Table B.12, all values are in 2005 constant dollars.

Table B.12 Display of the Economic Values Were Used for Each Resource

Economic Benefits and Financial Revenue Values (in 2005 Dollars)	
Range ($/AUM)	
Cattle/Horses	4.53
Timber ($/MCF):	
Sawtimber Softwood	1,199.47
Sawtimber Hardwood	366.15
Roundwood Softwood	70.64
Roundwood Hardwood	13.66
Minerals:	
Dimension Stone ($/Metric Ton)	6.00
Crushed Stone ($/Metric Ton)	3.37
Limestone ($/Metric Ton)	NA
Clay ($/Ton)	NA
Petroleum ($/Barrel)	NA
Natural Gas ($/ thousand cubic meter)	156.44
Recreation ($/Visit):	
Camping, Picnicking, Swim.	9.66
Mech. Travel, Viewing Scenery	7.50
Hiking, Horseback Riding, Water Travel	3.37
Winter Sports	40.61
Wilderness (backpacking)	20.80
Other	60.25
Wildlife ($/Visit):	
Hunting	32.36
Fishing	64.19
Wildlife Watching	38.56

Timber values are based on Forest harvest values; Recreation and Wildlife are values based on non-market values in the USDA Forest Service “Resource Pricing and Valuation Procedures for the Recommended 1990 RPA Program”; Mineral value taken from local forest price information and historical prices from the U.S. Minerals Management Service

Demographic and Economic Data Reviewed for this Analysis

Table B.13 and the following tables summarize census and economic data for the Forest impact area (counties with National Forest System land) and the States of Arkansas and Oklahoma. The term “Boundary Counties,” which appears in many of the following tables, refers to counties that include lands of the Ouachita National Forest.

Table B.13 Ouachita National Forest Counties Total Population, 1980–2000 (Source: U.S. Bureau of Census)

Area Name	1980	1990	1980-90 % Increase	2000	1990-2000 % Increase
Arkansas	**2,286,435**	**2,350,725**	**2.81**	**2,673,400**	**13.73**
Ashley	26,538	24,319	-8.36	24,209	-0.45
Garland	70,531	73,397	4.06	88,068	19.99
Hot Spring	26,819	26,115	-2.63	30,353	16.23
Howard	13,459	13,569	0.82	14,300	5.39
Logan	20,144	20,557	2.05	22,486	9.38
Montgomery	7,771	7,841	0.90	9,245	17.91
Perry	7,266	7,969	9.68	10,209	28.11
Pike	10,373	10,086	-2.77	11,303	12.07
Polk	17,007	17,347	2.00	20,229	16.61
Saline	53,161	64,183	20.73	83,529	30.14
Scott	9,685	10,205	5.37	10,996	7.75
Sebastian	95,172	99,590	4.64	115,071	15.54
Yell	17,026	17,759	4.31	21,139	19.03
Oklahoma	**3,025,290**	**3,145,585**	**3.98**	**3,450,654**	**9.70**
LeFlore	40,698	43,270	6.32	48,109	11.18
McCurtain	36,151	33,433	-7.52	34,402	2.90
Forest Total	**451,801**	**469,640**	**3.95**	**543,648**	**15.76**

Table B.14 Ouachita National Forest Boundary Counties Population Characteristics, 1980–2000 (Source: US Bureau of Census)

County	Title	1980	% of Total	1990	% of Total	2000	% of Total
Ashley	Population Black	7,237	27.27	6,631	27.27	6,561	27.10
	Population White	19,230	72.46	17,483	71.89	16,892	69.78
	Other	71	0.27	205	0.84	756	3.12
	Total Minority	7,308	27.54	6,836	28.11	7,317	30.22
	Total Population	26,538		24,319		24,209	
Garland	Population Black	5,756	8.16	5,562	7.58	6,873	7.80
	Population White	64,106	90.89	66,893	91.14	78,250	88.85
	Other	669	0.95	942	1.28	2,945	3.34
	Total Minority	6,425	9.11	6,504	8.86	9,818	11.14
	Total Population	70,531		73,397		88,068	
Hot Spring	Population Black	3,014	11.24	2,875	11.01	3,115	10.26
	Population White	23,626	88.09	23,026	88.17	26,508	87.33
	Other	179	0.67	214	0.82	730	2.41
	Total Minority	3,193	11.91	3,089	11.83	3,845	12.67
	Total Population	26,819		26,115		30,353	
Howard	Population Black	2,486	18.47	2,917	21.50	3,126	21.86
	Population White	10,858	80.67	10,590	78.05	10,525	73.60
	Other	115	0.85	62	0.46	649	4.54
	Total Minority	2,601	19.32	2,979	21.96	3,775	26.40
	Total Population	13,459		13,569		14,300	
Logan	Population Black	307	1.52	255	1.24	236	1.05
	Population White	19,630	97.45	20,004	97.31	21,690	96.46
	Other	207	1.03	298	1.45	560	2.49
	Total Minority	514	2.55	553	2.69	796	3.54
	Total Population	20,144		20,557		22,486	
Montgomery	Population Black	11	0.14	2	0.03	27	0.29
	Population White	7,688	98.93	7,727	98.55	8,822	95.42
	Other	72	0.93	112	1.43	396	4.28
	Total Minority	83	1.07	114	1.46	423	4.57
	Total Population	7,771		7,841		9,245	
Perry	Population Black	133	1.83	165	2.07	177	1.73
	Population White	7,098	97.69	7,730	97.00	9,762	95.62
	Other	35	0.48	74	0.93	270	2.64
	Total Minority	168	2.31	239	3.00	447	4.37
	Total Population	7,266		7,969		10,209	
Pike	Population Black	414	3.99	396	3.93	392	3.47
	Population White	9,907	95.51	9,650	95.68	10,403	92.04
	Other	52	0.50	40	0.40	508	4.49
	Total Minority	466	4.49	436	4.33	900	7.96
	Total Population	10,373		10,086		11,303	
Polk	Population Black	2	0.01	0	0.00	32	0.16
	Population White	16,837	99.00	17,063	98.36	19,155	94.69
	Other	168	0.99	284	1.64	1,042	5.15
	Total Minority	170	1.00	284	1.64	1,074	5.31
	Total Population	17,007		17,347		20,229	

County	Title	1980	% of Total	1990	% of Total	2000	% of Total
Saline	Population Black	1,458	2.70	1,294	2.00	1,838	2.20
	Population White	51,361	96.60	62,148	96.80	79,575	95.30
	Other	342	0.60	741	1.20	2,116	2.50
	Total Minority	1,800	3.30	2,035	3.20	3,954	4.70
	Total Population	53,161		64,183		83,529	
Scott	Population Black	2	0.02	0	0.00	25	0.23
	Population White	9,585	98.97	10,023	98.22	10,285	93.53
	Other	98	1.01	182	1.78	686	6.24
	Total Minority	100	1.03	182	1.78	711	6.47
	Total Population	9,685		10,205		10,996	
Sebastian	Population Black	4,916	5.17	5,597	5.62	7,086	6.16
	Population White	87,566	92.01	88,686	89.05	94,745	82.34
	Other	2,690	2.83	5,307	5.33	13,240	11.51
	Total Minority	7,606	8.00	10,904	10.95	20,326	17.67
	Total Population	95,172		99,590		115,071	
Yell	Population Black	352	2.07	394	2.22	310	1.47
	Population White	16,551	97.21	17,071	96.13	18,312	86.63
	Other	123	0.72	294	1.66	2,517	11.91
	Total Minority	475	2.79	688	3.88	2,827	13.38
	Total Population	17,026		17,759		21,139	
LeFlore	Population Black	983	2.42	1,111	2.57	1,065	2.21
	Population White	36,340	89.29	36,885	85.24	38,657	80.35
	Other	3,375	8.29	5,274	12.19	8,387	17.43
	Total Minority	4,358	10.71	6,385	14.76	9,452	19.64
	Total Population	40,698		43,270		48,109	
McCurtain	Population Black	3,849	10.65	3,437	10.28	3,200	9.30
	Population White	28,402	78.56	24,899	74.47	24,267	70.54
	Other	3,900	10.79	5,097	15.25	6,935	20.16
	Total Minority	7,749	21.44	8,534	25.53	10,135	29.46
	Total Population	36,151		33,433		34,402	
Forest Total	Population Black	30,920	**6.84**	30,636	**6.52**	34,063	**6.27**
	Population White	408,785	**90.48**	419,878	**89.40**	467,848	**86.06**
	Other	12,096	**2.68**	19,126	**4.07**	41,737	**7.68**
	Total Minority	43,016	**9.52**	49,762	**10.59**	75,800	**13.95**
	Total Population	451,801		469,640		543,648	
Arkansas Total	Black Population	373,768	**16.35**	373,454	**15.89**	418,950	**15.67**
	White Population	1,890,322	**82.68**	1,944,393	**82.71**	2,138,598	**80.00**
	Other	22,345	**0.98**	32,878	**1.40**	115,852	**4.33**
	Total Minority	396,113	**17.33**	406,332	**17.29**	534,802	**20.00**
	Total Population	2,286,435		2,350,725		2,673,400	
Oklahoma Total	Black Population	204,674	**6.77**	232244	**7.68**	260,968	**8.63**
	White Population	2,597,791	**85.87**	2587439	**85.53**	2,628,434	**86.88**
	Other	222,825	**7.37**	325,902	**10.77**	561,252	**18.55**
	Total Minority	427,499	**14.13**	558,146	**18.45**	822,220	**27.18**
	Total Population	3,025,290		3,145,585		3,450,654	

Table B.15 Ouachita National Forest Boundary Counties Population per Square Mile, 1990–2000 (Source: US Bureau of Census)

County	1990 Density	1990 Population	1990 Weighted Avg.	2000 Density	2000 Population	2000 Weighted Avg.
Ashley	26.4	24,319	642,022	26.3	24,209	636,697
Garland	108.2	73,397	7,941,555	130.0	88,068	11,448,840
Hot Spring	42.5	26,115	1,109,888	49.4	30,353	1,499,438
Howard	23.1	13,569	313,444	24.3	14,300	347,490
Logan	29	20,557	596,153	31.7	22,486	712,806
Montgomery	10	7,841	78,410	11.8	9,245	109,091
Perry	14.5	7,969	115,551	18.5	10,209	188,867
Pike	16.7	10,086	168,436	18.7	11,303	211,366
Polk	20.2	17,347	350,409	23.5	20,229	475,382
Saline	88.6	64,183	5,686,614	115.5	83,529	9,647,600
Scott	11.4	10,205	116,337	12.3	10,996	135,251
Sebastian	185.7	99,590	18,493,863	214.6	115,071	24,694,237
Yell	19.1	17,759	339,197	22.8	21,139	481,969
LeFlore (OK)	27.3	43,270	1,181,271	30.3	48,109	1,457,703
McCurtain (OK)	18	33,433	601,794	18.6	34,402	639,877
Forest Total		469,640	37,734,943		543,648	52,686,612
Forest Weighted Average	80.3			96.9		
Arkansas	45.1			51.3		
Oklahoma	45.8			50.3		

Table B.16 Ouachita National Forest Boundary Counties Percent Rural Population, 1980 (Source: USDA Forest Service)

County	1980 Percent	1980 Population	1980 Weighted Avg.
Ashley	48.7	26,538	12,925
Garland	45.5	70,531	32,075
Hot Spring	62.1	26,819	16,656
Howard	66.2	13,459	8,905
Logan	61.7	20,144	12,435
Montgomery	100.0	7,771	7,771
Perry	100.0	7,266	7,266
Pike	100.0	10,373	10,373
Polk	69.7	17,007	11,853
Saline	58.4	53,161	31,035
Scott	72.7	9,685	7,043
Sebastian	17.1	95,172	16,320
Yell	78.7	17,026	13,405
LeFlore (OK)	62.4	40,698	25,390
McCurtain (OK)	67.9	36,151	24,564
Forest Weighted Avg.	52.7	451,801	238,016
Arkansas	48.4	2,286,435	1,106,879
Oklahoma	32.7	3,025,290	990,208

Table B.17 Ouachita National Forest Boundary Counties Percent Rural Population, 1990 (Source: USDA Forest Service)

County	1990 Percent	1990 Population	1990 Weighted Avg.
Ashley	47.6	24,319	11,588
Garland	41.8	73,397	30,689
Hot Spring	64.5	26,115	16,838
Howard	65.8	13,569	8,930
Logan	63.6	20,557	13,079
Montgomery	100.0	7,841	7,841
Perry	100.0	7,969	7,969
Pike	100.0	10,086	10,086
Polk	68.4	17,347	11,872
Saline	51.4	64,183	33,005
Scott	70.4	10,205	7,181
Sebastian	18.8	99,590	18,733
Yell	79.0	17,759	14,037
LeFlore (OK)	66.0	43,270	28,572
McCurtain (OK)	67.3	33,433	22,515
Forest Weighted Avg.	51.7	469,640	242,935
Arkansas	46.5	2,350,725	1,092,527
Oklahoma	32.3	3,145,585	1,015,502

Table B.18 Ouachita National Forest Boundary Counties Percent Rural Population, 2000 (Source: USDA Forest Service)

County	2000 Percent	2000 Population	2000 Weighted Avg.
Ashley	50.9	24,209	12,317
Garland	36.7	88,068	32,311
Hot Spring	69.9	30,353	21,225
Howard	66.2	14,300	9,471
Logan	71.2	22,486	16,000
Montgomery	100.0	9,245	9,245
Perry	100.0	10,209	10,209
Pike	100.0	11,303	11,303
Polk	74.3	20,229	15,040
Saline	49.7	83,529	41,540
Scott	72.9	10,996	8,018
Sebastian	21.0	115,071	24,126
Yell	81.3	21,139	17,177
LeFlore (OK)	69.3	48,109	33,322
McCurtain (OK)	70.8	34,402	24,344
Forest Weighted Avg.	52.5	543,648	285,648
Arkansas	47.6	2,673,400	1,271,560
Oklahoma	34.7	3,450,654	1,196,088

Table B.19 Ouachita National Forest Boundary Counties Per Capita Income, 1990–2000 (Source: US Bureau of Census)

County	1990 Per Capita Income	1990 Per Capita Income in 2000 $'s	2000 Per Capita Income	1990-2000 % Real Average Annual Change
Ashley	9,696	12,799	15,702	2.1
Garland	11,873	15,672	18,631	1.7
Hot Spring	9,164	12,096	15,216	2.3
Howard	9,563	12,623	15,586	2.1
Logan	8,283	10,934	14,527	2.9
Montgomery	8,343	11,013	14,668	2.9
Perry	8,848	11,679	16,216	3.3
Pike	9,220	12,170	15,385	2.4
Polk	8,884	11,727	14,063	1.8
Saline	11,677	15,414	19,214	2.2
Scott	8,360	11,035	13,609	2.1
Sebastian	12,361	16,317	18,424	1.2
Yell	9,400	12,408	15,383	2.2
LeFlore (OK)	8,752	11,553	13,737	1.7
McCurtain (OK)	8,291	10,944	13,693	2.3
Forest Weighted Avg.	9,647	12,559	15,737	2.3
Arkansas	10,520	13,886	16,904	2.0
Oklahoma	11,893	15,699	17,646	1.2

Table B.20 Ouachita NF Boundary Counties Unemployment Rate, 1995–2001 (Source: US Bureau of Census)

County	1995	1996	1997	1998	1999	2000	2001
Ashley	5.9	6.8	7.6	9.3	8.1	7.3	9.1
Garland	5.0	4.9	4.6	5.1	4.5	3.9	4.3
Hot Spring	4.9	5.0	5.7	6.0	4.3	4.8	6.0
Howard	4.5	5.9	5.7	6.0	5.3	4.5	5.5
Logan	4.9	5.0	4.9	6.3	5.2	4.1	5.4
Montgomery	3.8	4.2	3.8	4.3	3.6	3.5	4.2
Perry	6.4	6.5	7.2	7.7	6.1	7.1	7.2
Pike	4.9	5.9	5.4	5.1	4.7	5.1	5.5
Polk	3.7	4.6	4.7	4.0	3.8	3.9	4.4
Saline	2.6	2.9	3.1	3.0	2.6	2.9	3.3
Scott	3.1	3.4	3.0	3.5	2.6	2.9	3.5
Sebastian	4.6	5.0	4.5	4.4	3.4	3.3	4.0
Yell	3.6	3.6	4.3	4.7	3.9	4.0	3.3
LeFlore (OK)	7.5	6.8	6.9	7.8	5.4	4.4	5.8
McCurtain (OK)	9.4	9.2	9.2	8.6	6.5	6.0	6.3
Forest Weighted Avg.	5.5	5.6	5.6	5.9	4.7	4.4	5.1
Arkansas	4.9	5.4	5.3	5.5	4.5	4.4	5.1
Oklahoma	4.7	4.1	4.1	4.5	3.4	3.0	3.8

Table B.21 Ouachita NF Boundary Counties Percent of Individuals in Poverty, 1980–2000 (Source: US Bureau of Census)

County	1980 Percent Poverty	1980 Population	1990 Percent Poverty	1990 Population	2000 Percent Poverty	2000 Population
Ashley	20.9	26,538	20.9	24,319	17.5	24,209
Garland	15.5	70,531	18.0	73,397	14.6	88,068
Hot Spring	16.9	26,819	18.6	26,115	14.0	30,353
Howard	16.1	13,459	18.6	13,569	15.5	14,300
Logan	22.3	20,144	19.3	20,557	15.4	22,486
Montgomery	22.7	7,771	23.8	7,841	17.0	9,245
Perry	16.7	7,266	20.3	7,969	14.0	10,209
Pike	18.5	10,373	17.9	10,086	16.8	11,303
Polk	23.0	17,007	18.5	17,347	18.2	20,229
Saline	9.6	53,161	9.3	64,183	7.2	83,529
Scott	23.9	9,685	21.9	10,205	18.2	10,996
Sebastian	13.3	95,172	13.1	99,590	13.6	115,071
Yell	19.8	17,026	17.1	17,759	15.4	21,139
LeFlore (OK)	20.1	40,698	22.5	43,270	19.1	48,109
McCurtain (OK)	24.1	36,151	30.2	33,433	24.7	34,402
Total		451,801		469,640		543,648
Forest Weighted Avg.	17.0		17.5		14.8	
Arkansas	19.0		19.0		16.0	
Oklahoma	13.4		16.7		14.7	

Table B.22 Ouachita NF Boundary Counties Total Transfer Payments, 1970–1991 (2000 $'s*) (Source: U.S. Bureau of Census)

Area Name	1970	1975	1980	1985	1990	1991
	$					
Ashley, AR	36,115	58,992	68,888	74,003	78,547	83,397
Garland, AR	116,346	201,494	226,828	660,911	323,932	345,212
Hot Spring, AR	35,453	71,210	71,560	202,358	90,733	95,337
Howard, AR	19,225	34,214	39,056	102,762	46,344	48,215
Logan, AR	32,931	60,013	72,111	185,161	81,608	86,747
Montgomery, AR	11,096	17,757	20,816	60,109	27,550	28,864
Perry, AR	10,909	19,802	21,214	58,867	27,526	28,767
Pike, AR	15,829	25,293	28,010	77,988	33,655	36,505
Polk, AR	27,231	44,992	51,475	143,362	62,497	65,835
Saline, AR	38,544	105,578	119,013	341,677	175,874	188,536
Scott, AR	14,457	24,870	27,214	69,821	33,480	35,012
Sebastian, AR	113,668	210,579	243,364	613,191	302,446	313,874
Yell, AR	24,606	44,358	52,171	137,732	59,638	64,067
LeFlore, OK	79,560	113,021	123,822	364,549	153,158	160,797
McCurtain, OK	65,907	96,538	101,819	269,260	119,618	124,971
Forest County Total	641,877	1,128,710	1,267,359	3,467,207	1,616,605	1,706,136
Arkansas Total	3,022,006	5,262,227	6,029,362	16,515,775	7,598,406	7,972,411
Oklahoma Total	4,356,595	6,564,989	7,126,704	20,617,827	9,399,962	9,754,696

*Nominal data converted to 2000 $'s by the Consumer Price Index Price Deflators

Table B.23 Ouachita NF Boundary Counties Total Transfer Payments, 1992–1997 (2000 $'s*) (Source: U.S. Bureau of Census)

Area Name	1992	1993	1994	1995	1996	1997
	$					
Ashley, AR	93,709	97,316	97,861	101,989	103,898	105,884
Garland, AR	380,942	398,411	399,358	417,573	426,180	441,326
Hot Spring, AR	104,619	109,186	107,743	114,229	116,082	121,341
Howard, AR	52,130	53,451	54,117	55,992	57,849	59,413
Logan, AR	90,688	91,574	91,792	95,157	110,513	108,637
Montgomery, AR	31,553	32,662	33,475	35,169	36,192	37,496
Perry, AR	32,809	33,009	34,668	35,311	36,895	37,696
Pike, AR	39,267	40,694	40,355	42,441	42,530	43,380
Polk, AR	71,954	75,260	76,996	80,794	82,240	84,778
Saline, AR	204,427	214,315	227,300	237,420	278,900	269,573
Scott, AR	37,795	38,919	39,120	41,934	43,291	45,586
Sebastian, AR	347,259	359,147	363,662	380,465	389,011	397,159
Yell, AR	70,750	74,181	73,406	76,480	78,066	80,469
LeFlore, OK	179,252	179,375	184,797	195,393	199,119	192,987
McCurtain, OK	138,418	136,081	142,878	149,598	150,303	134,599
Forest County Total	1,875,570	1,933,582	1,967,529	2,059,946	2,151,068	2,160,325
Arkansas Total	8,713,807	9,024,652	9,151,554	9,580,467	9,828,807	10,042,695
Oklahoma Total	10,671,642	10,846,262	11,223,664	11,651,966	11,849,960	11,874,443

*Nominal data converted to 2000 $'s by the Consumer Price Index Price Deflators

Table B.24 Ouachita NF Boundary Counties Total Transfer Payments, 1998–2000 (2000 $'s*) (Source: U.S. Bureau of Census)

Area Name	1998	1999	2000	Real Average Rate of Change (%)
	$			
Ashley, AR	107,467	106,195	106,015	3.7
Garland, AR	450,974	444,441	448,440	4.6
Hot Spring, AR	123,303	122,602	123,396	4.2
Howard, AR	59,573	58,492	58,466	3.8
Logan, AR	104,301	105,049	105,906	4.0
Montgomery, AR	38,672	39,730	40,848	4.4
Perry, AR	38,056	37,565	39,638	4.4
Pike, AR	44,320	44,625	44,711	3.5
Polk, AR	85,326	84,724	85,404	3.9
Saline, AR	265,717	275,417	292,886	7.0
Scott, AR	46,026	44,903	45,888	3.9
Sebastian, AR	402,618	403,023	410,791	4.4
Yell, AR	82,637	81,822	82,423	4.1
LeFlore, OK	196,062	200,227	199,643	3.1
McCurtain, OK	135,478	136,129	135,579	2.4
Forest County Total	2,180,528	2,184,942	2,220,034	4.2
Arkansas Total	10,196,103	10,201,767	10,382,800	4.2
Oklahoma Total	12,134,895	12,377,425	12,770,090	3.6

*Nominal data converted to 2000 $'s by the Consumer Price Index Price Deflators

Table B.25 Ouachita National Forest Boundary Counties Female Head of Households with Children Present, 2000 (Source: U.S. Bureau of Census)

Area Name	1990 Households	1990 Female Head of Household Children Present	1990 Households with Female Head of Household (%)	2000 Households	2000 Female Head of Household Children Present	2000 Households with Female Head of Household (%)
Ashley County	8,886	528	5.9	9,384	718	7.7
Garland County	30,823	1,596	5.2	37,813	2,258	6.0
Hot Spring County	10,148	554	5.5	12,004	742	6.2
Howard County	5,032	330	6.6	5,471	413	7.5
Logan County	7,665	407	5.3	8,693	512	5.9
Montgomery County	3,079	121	3.9	3,785	132	3.5
Perry County	3,109	113	3.6	3,989	205	5.1
Pike County	3,872	112	2.9	4,504	214	4.8
Polk County	6,840	228	3.3	8,047	402	5.0
Saline County	23,032	1,064	4.6	31,778	1,890	5.9
Scott County	3,934	141	3.6	4,323	223	5.2
Sebastian County	39,349	2,059	5.2	45,300	3,238	7.1
Yell County	6,941	349	5.0	7,922	484	6.1
LeFlore County, OK	12,130	883	7.3	17,861	1,071	6.0
McCurtain County, OK	9,323	1,009	10.8	13,216	1,181	8.9
Forest County Total	174,163	9,494	5.5	214,090	13,683	6.4
Oklahoma Total	1,207,235	74,167	6.1	1,342,293	94,403	7.0
Arkansas Total	891,665	55,835	6.3	1,042,696	76,774	7.4

Table B.26 Ouachita National Forest Counties Average Household Size, 2000 (Source: U.S. Bureau of Census)

Area Name	1990 Average Household Size	2000 Average Household Size
Ashley County	2.7	2.6
Garland County	2.4	2.3
Hot Spring County	2.6	2.5
Howard County	2.7	2.6
Logan County	2.7	2.5
Montgomery County	2.5	2.4
Perry County	2.6	2.5
Pike County	2.6	2.5
Polk County	2.5	2.5
Saline County	2.8	2.6
Scott County	2.6	2.5
Sebastian County	2.5	2.5
Yell County	2.6	2.6
LeFlore County, OK	3.6	2.6
McCurtain County, OK	3.6	2.6
Forest County Average	2.7	2.5
Oklahoma Average	2.6	2.5
Arkansas Average	2.6	2.5

Table B.27 Ouachita NF Boundary Counties Housing Units and Vacancies, 1990–2000 (Source: US Bureau of Census)

Area Name	1990 Total Number of Units	1990 Number of Vacant Units	1990 Vacant Units (%)	2000 Total Number of Units	2000 Number of Vacant Units	2000 Vacant Units (%)	1990-2000 Change in Housing Units (%)
Ashley County	9,820	884	9.00	10,615	1,274	12.00	8.1
Garland County	37,966	7,214	19.00	44,953	7,192	16.00	18.4
Hot Spring County	11,378	1,252	11.00	13,384	1,338	10.00	17.6
Howard County	5,600	616	11.00	6,297	819	13.00	12.4
Logan County	8,539	939	11.00	9,942	1,292	13.00	16.4
Montgomery County	4,269	1,195	28.00	5,048	1,262	25.00	18.2
Perry County	3,702	629	17.00	4,702	705	15.00	27.0
Pike County	4,550	683	15.00	5,536	1,052	19.00	21.7
Polk County	7,732	928	12.00	9,236	1,201	13.00	19.5
Saline County	24,602	1,476	6.00	33,825	2,030	6.00	37.5
Scott County	4,485	538	12.00	4,924	591	12.00	9.8
Sebastian County	43,621	4,362	10.00	49,311	3,945	8.00	13.0
Yell County	7,868	944	12.00	9,157	1,190	13.00	16.4
LeFlore County, OK	18,029	2,163	12.00	20,142	2,216	11.00	11.7
McCurtain County, OK	13,828	1,659	12.00	15,427	2,160	14.00	11.6
Forest Total	205,989	25,483	12.40	242,499	28,267	11.70	17.7
Arkansas Total	1,000,667	109,488	10.90	1,173,043	130,347	11.10	17.2
Oklahoma Total	1,406,499	200,364	14.00	1,514,400	172,107	11.00	7.7

Table B.28 Ouachita NF Boundary Counties Median Housing Values, 1990–2000 (Source: U.S. Bureau of Census)

Area Name	4/1/1990 $	1990 Value in 2000 $'s	4/1/2000 $	1990-2000 Percent Real Change
Ashley County	38,700	51,084	55,700	0.87
Garland County	53,000	69,960	85,900	2.07
Hot Spring County	39,500	52,140	63,100	1.93
Howard County	36,900	48,708	55,600	1.33
Logan County	33,900	44,748	54,000	1.90
Montgomery County	31,800	41,976	54,000	2.55
Perry County	33,000	43,560	58,700	3.03
Pike County	32,600	43,032	49,600	1.43
Polk County	35,700	47,124	57,100	1.94
Saline County	58,700	77,484	93,700	1.92
Scott County	31,800	41,976	48,000	1.35
Sebastian County	48,700	64,284	73,300	1.32
Yell County	37,600	49,632	60,600	2.02
LeFlore County, OK	35,300	46,596	51,600	1.03
McCurtain County, OK	29,400	38,808	44,500	1.38
Forest Average	38,440	50,741	60,360	1.75
Arkansas Average	46,000	60,720	72,800	1.83
Oklahoma Average	47,600	62,832	70,700	1.19

Table B.29 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (Year 2000$'s) Industry Output*	1990 Percentage of Total	2000 Industry Output $	2000 Percentage of Total	1990-2000 Percent Real Annual Change
Other Agriculture	1,038.6	5.4	1,072.9	4.3	0.3
Range	126.4	0.7	117.6	0.5	-0.7
Total Agriculture	1,165.0	6.1	1,190.5	4.8	0.2
Minerals	1,577.1	8.3	151.9	0.6	-20.9
Construction	1,684.7	8.8	2,136.1	8.6	2.4
Other Manufacturing	5,758.3	30.2	7,629.6	30.7	2.9
Wood Products	1,003.0	5.3	1,357.3	5.5	3.1
Pulp & Paper	1,039.2	5.4	1,178.2	4.7	1.3
Furniture & Fixtures	176.8	0.9	231.8	0.9	0.0
Total Wood Based	2,219.0	11.6	2,767.4	11.1	2.2
Total Manufacturing	7,977.3	41.8	10,396.9	41.8	2.7
Transportation & Public Utilities	1,224.4	6.4	1,575.6	6.3	2.6
Wholesale & Retail Trade	1,337.0	7.0	2,329.3	9.4	5.7
Finance, Insurance, Real Estate	1,347.4	7.1	2,397.6	9.6	5.9
Services	2,046.8	10.7	3,390.1	13.6	5.2
Government	690.2	3.6	1,315.5	5.3	6.7
Other Misc.	23.5	0.1	1.8	0.0	-22.6
Totals	19,073.5	100.0	24,885.4	100.0	2.7

Table B.30 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 Employment	1990 Percentage of Total	2000 Employment	2000 Percentage of Total	1990-2000 Percent Real Annual Change
Other Agriculture	11,649	5.2	14,337	5.1	2.1
Range	848	0.4	3,017	1.1	13.5
Total Agriculture	12,497	5.6	17,355	6.1	3.3
Minerals	1,352	0.6	961	0.3	-3.4
Construction	19,153	8.6	22,793	8.1	1.8
Other Manufacturing	38,564	17.3	44,541	15.7	1.5
Wood Products	7,780	3.5	8,759	3.1	1.2
Pulp & Paper	4,513	2.0	3,807	1.3	-1.7
Furniture & Fixtures	2,416	1.1	2,516	0.9	0.0
Total Wood Based	14,709	6.6	15,082	5.3	0.3
Total Manufacturing	53,273	23.9	59,623	21.1	1.1
Transportation & Public Utilities	9,542	4.3	10,565	3.7	1.0
Wholesale & Retail Trade	39,394	17.7	53,102	18.8	3.0
Finance, Insurance, Real Estate	9,890	4.4	13,526	4.8	3.2
Services	48,157	21.6	70,931	25.1	3.9
Government	27,619	12.4	32,683	11.6	1.7
Other Misc.	2,160	1.0	1,370	0.5	-4.5
Totals	223,037	100.0	282,909	100.0	2.4

Table B.31 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (Year 2000$'s) Employee Compensation	1990 Percentage of Total	2000 Employee Compensation ($)	2000 Percentage of Total	1990-2000 Percent Real Annual Change
Other Agriculture	66.0	1.4	65.9	1.0	0.0
Range	4.2	0.1	5.6	0.1	2.9
Total Agriculture	70.2	1.5	71.5	1.1	0.2
Minerals	40.2	0.8	27.2	0.4	-3.8
Construction	378.5	7.9	419.1	6.6	1.0
Other Manufacturing	1,197.6	25.1	1,355.4	21.3	1.2
Wood Products	224.8	4.7	264.6	4.2	1.6
Pulp & Paper	245.5	5.1	221.2	3.5	N/M
Furniture & Fixtures	56.2	1.2	62.0	1.0	0.0
Total Wood Based	526.5	11.0	547.9	8.6	0.4
Total Manufacturing	1,724.1	36.2	1,903.3	29.8	1.0
Trans. & Public Utilities	309.2	6.5	336.7	5.3	0.9
Wholesale & Retail Trade	661.4	13.9	937.0	14.7	3.5
Finance, Insurance, Real Estate	186.4	3.9	225.9	3.5	1.9
Services	898.0	18.8	1,418.4	22.2	4.7
Government	485.0	10.2	1,026.7	16.1	7.8
Other Misc.	15.2	0.3	10.7	0.2	-3.4
Totals	4,768.2	100.0	6,376.4	100.0	2.9

Table B.32 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (2000$'s) Proprietor Income	1990 Percentage of Total	2000 Proprietor Income ($)	2000 Percentage of Total	1990-2000 Percent Real Annual Change
Other Agriculture	270.8	29.2	160.3	16.9	-5.1
Range	23.3	2.5	26.0	2.7	1.1
Total Agriculture	294.1	31.7	186.4	19.6	-4.5
Minerals	6.5	0.7	9.4	1.0	3.7
Construction	127.4	13.7	194.1	20.4	4.3
Other Manufacturing	18.4	2.0	36.5	3.8	7.1
Wood Products	23.2	2.5	27.2	2.9	1.6
Pulp & Paper	4.9	0.5	1.6	0.2	N/M
Furniture & Fixtures	(0.2)	0.0	2.0	0.2	0.0
Total Wood Based	27.9	3.0	30.9	3.3	1.0
Total Manufacturing	46.3	5.0	67.4	7.1	3.8
Trans. & Public Utilities	69.1	7.4	70.3	7.4	0.2
Wholesale & Retail Trade	77.0	8.3	95.3	10.0	2.2
Finance, Insurance, Real Estate	15.8	1.7	50.7	5.3	12.4
Services	292.3	31.5	275.9	29.1	-0.6
Government	0.0	0.0	0.0	0.0	0.0
Other Misc.	0.0	0.0	0.0	0.0	0.0
Totals	928.6	100.0	949.5	100.0	0.2

Table B.33 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (2000$'s) Labor Income	1990 Percentage of Total	2000 Labor Income $	2000 Percentage of Total	Percent Real Annual Change 1990-2000
Other Agriculture	336.8	5.9	226.2	3.1	-3.9
Range	27.5	0.5	31.6	0.4	1.4
Total Agriculture	364.3	6.4	257.8	3.5	-3.4
Minerals	46.7	0.8	36.6	0.5	-2.4
Construction	505.9	8.9	613.2	8.4	1.9
Other Manufacturing	1,216.1	21.3	1,391.9	19.0	1.4
Wood Products	248.0	4.4	291.9	4.0	1.6
Pulp & Paper	250.4	4.4	222.9	3.0	-1.2
Furniture & Fixtures	56.0	1.0	64.0	0.9	0.0
Total Wood Based	554.3	9.7	578.8	7.9	0.4
Total Manufacturing	1,770.4	31.1	1,970.7	26.9	1.1
Trans. & Public Utilities	378.3	6.6	407.0	5.6	0.7
Wholesale & Retail Trade	738.4	13.0	1,032.3	14.1	3.4
Finance, Insurance, Real Estate	202.2	3.5	276.6	3.8	3.2
Services	1,190.3	20.9	1,694.3	23.1	3.6
Government	485.0	8.5	1,026.7	14.0	7.8
Other Misc.	15.2	0.3	10.7	0.1	-3.4
Totals	5,696.7	100.0	7,325.9	100.0	2.5

Table B.34 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (2000$'s) Other Property Income	1990 Percentage of Total	2000 Other Property Income $	2000 Percentage of Total	1990-2000 Percent Real Annual Change
Other Agriculture	14.0	0.5	84.9	2.8	19.8
Range	1.5	0.1	4.0	0.1	10.5
Total Agriculture	15.4	0.6	88.8	2.9	19.1
Minerals	656.2	25.0	26.6	0.9	-27.4
Construction	73.4	2.8	67.7	2.2	-0.8
Other Manufacturing	597.6	22.8	527.6	17.3	-1.2
Wood Products	38.7	1.5	110.6	3.6	11.1
Pulp & Paper	106.6	4.1	133.3	4.4	N/M
Furniture & Fixtures	1.2	0.8	14.0	0.5	0.0
Total Wood Based	166.5	6.3	257.9	8.4	4.5
Total Manufacturing	764.1	29.1	785.5	25.7	0.3
Trans. & Public Utilities	267.2	10.2	243.1	8.0	-0.9
Wholesale & Retail Trade	77.6	3.0	310.1	10.1	14.9
Finance, Insurance, Real Estate	661.2	25.2	1,182.9	38.7	6.0
Services	75.9	2.9	222.7	7.3	11.4
Government	23.0	0.9	139.7	4.6	19.8
Other Misc.	8.3	0.3	(8.9)	-0.3	N/M
Totals	2,622.4	100.0	3,058.2	100.0	1.5

Table B.35 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (2000$'s) Total Income	1990 Percentage of Total	2000 Total Income $	2000 Percentage of Total	Percent Real Annual Change 1990-2000
Other Agriculture	350.7	4.2	311.1	3.0	-1.2
Range	29.0	0.3	35.6	0.3	2.1
Total Agriculture	379.7	4.6	346.7	3.3	-0.9
Minerals	702.9	8.4	63.2	0.6	-21.4
Construction	579.4	7.0	681.0	6.6	1.6
Other Manufacturing	1,813.7	21.8	1,919.5	18.5	0.6
Wood Products	286.7	3.4	402.5	3.9	3.4
Pulp & Paper	356.9	4.3	356.2	3.4	0.0
Furniture & Fixtures	77.2	0.9	78.0	0.8	0.0
Total Wood Based	720.8	8.7	836.6	8.1	1.5
Total Manufacturing	2,534.6	30.5	2,756.1	26.5	0.8
Trans. & Public Utilities	645.5	7.8	650.1	6.3	0.1
Wholesale & Retail Trade	816.1	9.8	1,342.4	12.9	5.1
Finance, Insurance, Real Estate	863.4	10.4	1,459.5	14.1	5.4
Services	1,266.2	15.2	1,917.0	18.5	4.2
Government	508.1	6.1	1,166.3	11.2	8.7
Other Misc.	23.5	0.3	1.8	0.0	-22.6
Totals	8,319.2	100.0	10,384.1	100.0	2.2

Table B.36 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (2000$'s) Indirect Business Tax	1990 Percentage of Total	2000 Indirect Business Tax $	2000 Percentage of Total	Percent Real Annual Change 1990-2000
Other Agriculture	5.9	1.0	20.7	1.7	13.3
Range	2.6	0.4	4.4	0.4	5.5
Total Agriculture	8.5	1.4	25.1	2.0	11.4
Minerals	7.7	1.3	5.2	0.4	-3.9
Construction	4.3	0.7	16.0	1.3	14.1
Other Manufacturing	40.6	6.9	76.8	6.2	6.6
Wood Products	2.0	0.3	3.5	0.3	5.9
Pulp & Paper	0.7	0.1	2.9	0.2	0.0
Furniture & Fixtures	0.4	0.1	0.2	0.0	0.0
Total Wood Based	3.1	0.5	6.6	0.5	7.9
Total Manufacturing	43.6	7.4	83.4	6.7	6.7
Trans. & Public Utilities	76.9	13.1	129.4	10.4	5.3
Wholesale & Retail Trade	232.5	39.6	658.4	52.8	11.0
Finance, Insurance, Real Estate	187.8	32.0	267.5	21.5	3.6
Services	26.2	4.5	61.2	4.9	8.8
Government	0.1	0.0	0.0	0.0	0.0
Other Misc.	0.0	0.0	0.0	0.0	0.0
Totals	587.7	100.0	1,246.1	100.0	7.8

Table B.37 Dependency Analysis Aggregated Local Economy for Ouachita NF, 1990–2000; Primary Effects (Copyright MIG 2003)

Industry	1990 (2000$'s) Total Value Added	1990 Percentage of Total	2000 Total Value Added $	2000 Percentage of Total	Percent Real Annual Change 1990-2000
Other Agriculture	581.6	6.3	486.9	3.2	-1.8
Range	47.5	0.5	65.8	0.4	3.3
Total Agriculture	629.1	6.8	552.7	3.6	-1.3
Minerals	94.7	1.0	59.6	0.4	-4.5
Construction	462.6	5.0	940.5	6.2	7.4
Other Manufacturing	2,405.5	26.2	2,824.1	18.6	1.6
Wood Products	71.3	0.8	120.7	0.8	5.4
Pulp & Paper	44.7	0.5	79.3	0.5	N/M
Furniture & Fixtures	30.4	0.3	9.9	0.1	0.0
Total Wood Based	146.4	1.6	209.9	1.4	3.7
Total Manufacturing	2,551.9	27.8	3,034.0	20.0	1.7
Trans. & Public Utilities	1,172.2	12.8	1,524.0	10.0	2.7
Wholesale & Retail Trade	1,319.9	14.4	3,390.4	22.3	9.9
Finance, Insurance, Real Estate	1,181.6	12.9	2,150.7	14.1	6.2
Services	1,210.8	13.2	2,097.6	13.8	5.6
Government	545.5	5.9	1,443.9	9.5	10.2
Other Misc.	$18.2	0.2	9.8	0.1	N/M
Totals	9186.5	100.0	15,203.2	100.0	5.2

Table B.38 Ouachita National Forest Boundary Counties Shannon-Weaver Entropy Indices

County	1990 4 digit Diversity Index	1990 Employment*	Weighted Average	2000 4 digit Diversity Index	2000 Employment*	Weighted Average
Ashley, AR	0.57207	11,881	6,796.76	0.597346	12,797	7,644.24
Garland, AR	0.64753	36,015	23,320.79	0.658643	47,968	31,593.79
Hot Spring, AR	0.63076	9,655	6,089.99	0.665993	11,285	7,515.73
Howard, AR	0.53899	9,333	5,030.39	0.56539	10,963	6,198.37
Logan, AR	0.63554	8,331	5,294.68	0.625572	9,346	5,846.60
Montgomery, AR	0.57235	2,694	1,541.91	0.603336	3,760	2,268.54
Perry, AR	0.57280	2,333	1,336.34	0.6078	2,812	1,709.13
Pike, AR	0.59714	4,119	2,459.62	0.601261	4,828	2,902.89
Polk, AR	0.61921	7,937	4,914.67	0.644385	10,791	6,953.56
Saline, AR	0.63278	17,591	11,131.23	0.639973	24,511	15,686.38
Scott, AR	0.53879	4,292	2,312.49	0.550314	5,425	2,985.45
Sebastian, AR	0.68541	73,857	50,622.33	0.679215	90,251	61,299.83
Yell, AR	0.50439	8,996	4,537.49	0.551486	10,051	5,542.99
LeFlore, OK	0.62335	14,881	9,276.07	0.626879	18,462	11,573.44
McCurtain, OK	0.58363	14,044	8,196.50	0.604751	17,643	10,669.62
Total		225,959	142,861.00		280,893	180,390.56
Weighted Av.	0.632244			0.642204		
Arkansas	0.74039			0.73581		
Oklahoma	0.70993			0.71233		

*Source: U.S. BEA, REIS, Fulltime and Part Time Employment

Table B.39 Ouachita National Forest Boundary Counties Commodity Trade 1990

Industry	1990 Exports (2000 $'s)	% of Total	1990 Imports (2000 $'s)	% of Total	1990 Net Exports ($) (Exports Less Imports)
Other Agriculture	245.2	3.5	259.8	3.6	-15
Range	92.8	1.3	28.4	0.4	64
Total Agriculture	338.1	4.8	288.2	4.0	50
Minerals	583.6	8.3	127.2	1.8	456
Construction	248.2	3.5	0.0	0.0	248
Wood Products	664.7	9.5	202.2	2.8	462
Furniture & Fixtures	95.7	1.4	5.3	0.1	90
Pulp & Paper	752.5	10.7	25.2	0.3	727
Other Manufacturing	3,234.9	46.1	3,123.9	43.2	111
Total Manufacturing	4,747.8	67.7	3,356.7	46.4	1,391
Transportation, & Utilities	171.4	2.4	00.7	8.3	-429
Wholesale & Retail Trade	119.7	1.7	686.3	9.5	-567
Finance, Insurance, Real Estate	294.1	4.2	963.8	13.3	-670
Services	292.9	4.2	1,007.9	13.9	-715
Government	150.5	2.1	35.8	0.5	115
Other Misc.	66.0	0.9	172.4	2.4	-106
Total In Millions of 2000 $'s	7,012.2	100.0	7,239.0	100.0	-226.7

Table B.40 Ouachita National Forest Boundary Counties Commodity Trade 2000

Industry	2000 Exports $	% of Total	2000 Imports $	% of Total	2000 Net Exports $ (Exports Less Imports)
Other Agriculture	224.9	0.0	524.2	4.0	-299.3
Range	9.9	0.0	171.8	1.3	-161.9
Total Agriculture	234.7	2.4	695.9	5.3	-461.2
Minerals	139.8	1.4	192.1	1.5	-52.2
Construction	268.5	2.7	$1.0	0.0	267.5
Wood Products	947.8	9.6	194.8	1.5	753.0
Furniture & Fixtures	128.9	1.3	16.7	0.1	112.2
Pulp & Paper	1,026.9	10.4	255.2	2.0	771.7
Other Manufacturing	5,654.8	57.2	5,329.7	40.7	325.2
Total Manufacturing	7,758.4	78.4	5,796.3	44.3	1,962.1
Transportation, & Utilities	151.2	1.5	852.6	6.5	- 701.3
Wholesale & Retail Trade	200.5	2.0	1,432.4	11.0	- 1,232.0
Finance, Insurance, Real Estate	516.5	5.2	1,769.9	13.5	- 1,253.4
Services	515.6	5.2	2,021.1	15.5	- 1,505.5
Government	21.7	0.2	35.4	0.3	- 13.7
Other Misc.	85.0	0.9	283.3	2.2	- 198.3
Total In Millions of $'s	9,892.0	100.0	13,080.0	100.0	- 3,188.0

Table B.41 Ouachita National Forest Boundary Counties Payments to States and Counties (x 000 in 2003 $'s*) (Source: USDA Forest Service)

Area Name	1985 $'s in 2003 $'s	1986 $'s in 2003 $'s	1987 $'s in 2003 $'s	1988 $'s in 2003 $'s	1989 $'s in 2003 $'s	1990 $'s in 2003 $'s	1991 $'s in 2003 $'s
Ashley County	3.3	3.3	2.4	3.8	2.5	1.8	1.2
Garland County	205.5	211.4	144.2	247.0	157.7	113.4	82.5
Hot Spring County	0.7	0.7	0.5	0.7	0.5	0.3	0.2
Howard County	2.4	2.5	1.8	2.8	1.9	1.3	0.9
Logan County	73.1	78.3	56.4	101.5	73.3	81.8	39.7
Montgomery County	590.5	607.4	437.6	717.3	466.3	338.9	242.8
Perry County	179.3	184.5	131.7	213.9	137.9	98.2	69.5
Pike County	4.4	4.6	3.2	5.3	4.0	2.9	2.0
Polk County	380.3	390.9	279.0	455.3	294.0	209.4	145.4
Saline County	102.6	105.5	75.3	122.3	78.9	56.1	39.1
Scott County	686.5	705.9	504.7	821.1	529.9	377.4	261.5
Sebastian County	28.6	29.4	21.0	34.1	22.0	15.6	10.9
Yell County	377.4	389.5	277.6	456.2	298.0	226.5	149.5
LeFlore County, OK	395.9	407.4	290.4	471.5	303.5	215.6	151.9
McCurtain County, OK	82.9	85.4	60.8	98.5	63.3	45.0	31.0
Forest Total	3,113.4	3,206.6	2,286.6	3,751.4	2,433.8	1,784.1	1,228.3
Arkansas	3,234.3	3,372.2	2,417.8	4,143.6	2,849.5	2,501.9	1,447.8
Oklahoma	478.9	492.7	351.2	570.0	366.9	260.6	183.0

*Deflated by GNP Price Deflator

Table B.42 Ouachita National Forest Boundary Counties Payments to States and Counties, 1992–1998 (x 000 in 2003 $'s*) (Source: USDA Forest Service)

Area Name	1992 $'s in 2003 $'s	1993 $'s in 2003 $'s	1994 $'s in 2003 $'s	1995 $'s in 2003 $'s	1996 $'s in 2003 $'s	1997 $'s in 2003 $'s	1998 $'s in 2003 $'s
Ashley County	2.4	3.2	3.6	5.0	4.3	4.5	6.6
Garland County	169.0	221.4	246.0	343.7	312.2	319.9	471.0
Hot Spring County	0.5	0.6	0.7	1.0	0.8	0.8	1.3
Howard County	1.8	2.4	2.6	3.7	4.0	4.1	6.0
Logan County	69.3	96.9	108.9	148.9	135.9	173.1	179.9
Montgomery County	493.3	648.8	716.6	1,001.6	868.0	889.8	1,315.2
Perry County	141.9	187.9	210.7	294.3	256.7	263.9	389.8
Pike County	4.1	5.4	6.0	8.4	16.8	17.2	40.7
Polk County	293.2	393.2	434.2	607.3	528.9	544.9	811.0
Saline County	78.0	104.3	115.2	161.0	143.5	147.1	217.4
Scott County	525.5	707.1	780.8	1,090.9	957.9	983.3	1,453.1
Sebastian County	21.5	28.9	32.0	44.6	49.2	50.4	74.5
Yell County	294.0	396.4	439.0	612.0	532.2	561.9	793.7
LeFlore County, OK	308.4	410.4	454.6	639.5	567.7	584.0	865.0
McCurtain County, OK	62.1	83.5	92.6	129.2	327.4	347.1	513.2
Forest Total	2,465.1	3,290.5	3,643.4	5,091.1	4,705.4	4,891.9	7,138.4
Arkansas	2,795.5	3,764.6	4,197.8	5,784.7	5,241.4	5,925.8	7,407.4
Oklahoma	370.5	470.1	547.2	768.6	895.0	931.1	1,378.1

*Deflated by GNP Price Deflator

Table B.43 Ouachita National Forest Boundary Counties Payments to States and Counties, 1999–2003 (x 000 in 2003 $'s*) (Source: USDA Forest Service)

Area Name	1999 $'s in 2003 $'s	2000 $'s in 2003 $'s	2001 $'s in 2003 $'s	2002 $'s in 2003 $'s	2003 $'s in 2003 $'s	Real Avg. Annual Change (%) 1985-1998
Ashley County	6.7	5.7	2.7	0.8	2.6	-1.2
Garland County	481.4	404.3	195.6	57.7	434.1	4.2
Hot Spring County	1.3	1.0	0.5	0.2	0.5	-1.4
Howard County	6.1	5.2	2.5	0.8	2.4	0.0
Logan County	74.7	63.0	44.2	39.4	40.6	-3.2
Montgomery County	1,344.0	1,133.8	1,356.3	1,211.1	1,250.7	4.3
Perry County	398.4	336.0	161.9	47.7	370.2	4.1
Pike County	41.6	35.1	16.9	5.0	16.1	7.5
Polk County	828.7	698.5	337.0	749.9	658.2	3.1
Saline County	222.2	187.3	90.3	26.7	207.7	4.0
Scott County	1,484.9	1,249.7	1,288.7	1,215.7	1,394.9	4.0
Sebastian County	76.2	64.2	66.5	59.8	61.7	4.4
Yell County	758.4	639.6	722.7	643.5	664.5	3.2
LeFlore County, OK	883.9	745.8	967.1	901.3	769.8	3.8
McCurtain Co., OK	524.4	442.5	296.3	288.2	458.6	10.0
Forest Total	7,132.9	6,011.9	5,549.4	5,247.7	6,332.6	4.0
Arkansas	8,978.5	7,558.5	7,476.0	7,192.4	8,475.0	7.7
Oklahoma	1,689.0	1,759.0	2,372.0	2,752.0		

*Deflated by GNP Price Deflator

Table B.44 Ouachita NF Boundary Counties Payments in Lieu of Taxes Payments 1991–1996* (Source: USDA Forest Service)

Area Name	1991 Funds in 2000 $'s	1992 Funds in 2000 $'s	1993 Funds in 2000 $'s	1994 Funds in 2000 $'s	1995 Funds in 2000 $'s	1996 Funds in 2000 $'s
Ashley County	307	1,242	1,717	1,363	1,405	1,305
Garland County	24,372	85,319	115,503	87,820	93,301	86,343
Hot Spring County	8,224	8,285	8,115	7,544	8,089	7,214
Howard County	12,272	12,930	12,892	11,877	12,832	11,470
Logan County	40,474	14,208	75,563	75,221	79,208	72,832
Montgomery County	43,407	133,954	228,178	160,184	167,686	160,243
Perry County	12,038	33,444	61,828	42,094	45,626	88
Pike County	13,815	15,732	16,064	14,598	15,615	4,128
Polk County	25,276	65,580	125,977	86,410	90,855	5,622
Saline County	6,691	17,047	32,959	27,414	23,514	191
Scott County	45,293	109,316	194,638	62,924	152,898	22,682
Sebastian County	25,617	45,543	9,276	8,392	12,377	38,552
Yell County	31,370	100,516	143,748	125,841	128,174	124,754
LeFlore County, OK	31,093	30,859	39,473	27,121	31,084	26,793
McCurtain County, OK	11,492	41,524	60,733	47,731	49,784	47,161
Forest Total	331,742	715,498	1,126,663	786,536	912,449	609,380
Arkansas	1,177,743	1,546,659	2,013,388	1,765,698	1,925,258	1,825,666
Oklahoma	984,827	963,828	977,997	885,297	960,709	943,280

*Dollars Converted to 2000 by the Consumer Price Index Deflator

Table B.45 Ouachita NF Boundary Counties Payments in Lieu of Taxes Payments 1997–2002*
(Source: USDA Forest Service)

Area Name	1997 Funds in 2000 $'s	1998 Funds in 2000 $'s	1999 Funds in 2000 $'s	2000 Funds in 2000 $'s	2001 Funds in 2000 $'s	2002 in 2000 $'s
Ashley County	1,168	1,366	993	1,075	1,566	1,664
Garland County	81,595	3,160	104,652	123,198	141,274	150,147
Hot Spring County	6,998	7,193	10,473	14,501	14,839	15,771
Howard County	11,303	11,603	12,177	16,642	17,184	18,263
Logan County	68,566	70,604	70,615	99,957	108,049	114,836
Montgomery County	135,936	172,855	181,596	190,487	238,726	253,721
Perry County	0	0	0	50,407	64,518	68,570
Pike County	5,260	2,325	4,064	23,146	24,979	26,548
Polk County	5,464	5,592	5,926	102,030	131,100	139,335
Saline County	187	191	195	26,548	34,335	36,492
Scott County	20,339	25,199	24,184	176,519	229,179	243,574
Sebastian County	36,798	37,424	37,796	63,603	52,663	55,971
Yell County	108,825	129,552	132,421	149,116	182,168	193,610
LeFlore County, OK	28,022	26,801	28,056	39,479	40,393	0
McCurtain County, OK	105,587	75,111	75,932	65,460	93,509	99,382
Forest Total	616,119	658,977	689,079	1,142,168	1,374,481	1,417,886
Arkansas	1,687,942	1,827,144	1,906,944	2,445,372	2,723,442	2,894,507
Oklahoma	981,058	911,628	925,835	1,253,232	1,298,278	1,379,826

*Dollars Converted to 2000 by the Consumer Price Index Deflator

Table B.46 Pre-Existing Project Decisions to offer Timber Sales that May not be Fully Implemented before the Revised Forest Plan goes into Effect

Caddo-Womble Ranger District		
Smith Mountain	Sharptop	C-75 & 76
C-9, 10 & 17	C-12	C-23
C-3 & 4	C-64	C-123
Walnut Creek	Fulton Branch	Joplin
Silver	District-wide SPB	District-wide
Salvage		
Cold Springs Ranger District		
Dutch Creek	Freedom	Logan Side
Kingdoodle	Jack Pigeon	Pilot Mountain
North Waldron Ridge	Scott Side	Harvey
Hazel Creek	District-wide SPB	
Fourche-Jessieville-Winona Ranger District		
C-485,486, 518 & 519	Little Big Cove	Gafford
Lower Brushy	Cedar Creek	Porter Creek
Commercial Thin (Loblolly)	Middle North Fork	Crossett Exp.
Forest		
District-wide SPB	District-wide Salvage	Irons Fork
Cedar Creek West	Lower Lake Winona	Avant
Trace Creek	Little Bear Creek	Rock Creek
Huston	DxS Harvest	
Mena-Oden Ranger District		
Cedar Creek	Little Texas	District-wide SPB
Blackfork	Upper Fiddlers Creek	Lower Brushy
Clearfork		
Oklahoma Ranger District		
Big Creek	District-wide Salvage	Glover
C-1801	C-1811	C-1804
Panther Creek	Wildhorse	Redbank
C-1814, 1815 & 1916	Kiamichi	
Poteau Ranger District		
Stevens Branch	District-wide SPB	Lake Hinkle
East Black Fork Creek	HFI Sales	

Table B.47 Pre-Existing Project Decisions for which Timber Harvests are Complete (but which may have other related resource actions that are not fully implemented prior to the effective date of the Revised Forest Plan)

Caddo-Womble Ranger District		
South Fork	Hogjaw	Mount Ida
Williams Creek	C-15	C-22
C-24	C-25	C-26
C-27		
Cold Springs Ranger District		
Square Rock	East Newman	West Newman
Right Hand Sugar Creek	Haletown	East Fork
Jack Creek	C-203	C-236
Fourche-Jessieville-Winona Ranger District		
Baker	Wilson	Hopper
Upper Brushy	Chopoff	Danville
Upper Lake Winona (Phase III)	Browns Creek	Lower North Fork
Upper North Fork		
Mena-Oden Ranger District		
Johnson Creek	Chula II	Chula Old Growth
Robertson Creek Old Growth	Board Camp	Buck Knob
South Rick Mountain	Irons Fork	Twomile
Oklahoma Ranger District		
C-1808	Cedar Creek	Brushy Creek
Poteau Ranger District		
Oliver Branch	Fourche Mountain	Mill Creek
Round Mountain	Fourche River Access	Fork River

Table B.48 Pre-Existing Project Decisions for Non-Timber Related Projects (may have some Activities not Completed prior to the Effective Date of the Revised Forest Plan)

Caddo-Womble Ranger District		
O'Neal Land Exchange	Greenland Sales	Albert Pike
Fourche-Jessieville-Winona Ranger District		
Ouachita Girl Scout Camp	Acquired Lands TSI	
Mena-Oden Ranger District		
Shady Lake Acquired Lands TSI	Wolf Pen Gap	Mine Closures
Oklahoma Ranger District		
Broken Bow Office		
Poteau Ranger District		
Little Pines		