Appendix B

The Analysis Process

Introduction

This appendix provides additional detail on the processes used in revising the Wayne National Forest's Land and Resource Management Plan (Forest Plan). This information supplements the affected environment and effects analyses found in Chapter 3 of this Final EIS. Detailed information on the process available in other Appendices is referenced but not repeated.

Analyses covered in this appendix include the following major topic areas:

- Public Involvement and Issues Identification (See Appendix A)
- Analyses Prior to the Development of Alternatives
- Development of Alternatives
- Effects Analyses
- Content Analysis of Responses to the Draft EIS and Proposed Revised Forest Plan

These analyses were performed to fulfill the requirements of the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 as amended by the National Forest Management Act (NFMA) of 1976. These Acts require that renewable resource programs be based on a comprehensive assessment of present and anticipated uses. The demand for and supply of renewable resources must be determined through an analysis of environmental and economic impacts. The implementing regulations developed for these acts are in Code of Federal Regulations (CFR), Title 36, Part 219 (36 CFR 219). The Wayne National Forest (WNF) is revising its 1988 Plan under the 1982 version of 36 CFR 219.

Public Involvement and Identification of Issues

The public involvement process and the process used in the identification of issues are fully discussed in Appendix A to this Final EIS. In the interest of saving printing costs and paper, it is not repeated here.

Analyses Prior to Development of Alternatives

Analyses of the Management Situation

The analysis of the management situation is a determination of the ability of the planning area covered by the Forest Plan to supply goods and services in response to society's needs. The primary purpose of this analysis is to provide a basis for formulating a broad range of reasonable alternatives. The analysis may examine the capability of the unit to supply outputs both with and without legal and other requirements.

"Analysis of the Management Situation" reports (AMS) were developed under the 1982 Planning Rules for all Forest resources (36 CFR 219.12(e) and FSH 1909.12 Section 3.4). The AMS reports were prepared using the format shown in Figure B - 1.

_____ **Resource**

Appendix A Introduction

State why this resource is important and tie the importance to our Forest Service Mission.

Existing Management Situation

1. Summarize the existing management plans and the direction included those plans. (Refer to Forest Plan goals and objectives, standards and guidelines, land classifications, forest policies, and forest supplements to manuals or handbooks.)
2. Summarize actual current outputs and activities.
3. Describe projected outputs and activities, if current management direction were to continue into the future. (If different than projections shown in the forest plan, display and explain the differences.)
4. Describe the expected future conditions of the forest, if current management direction were to continue into the future.
5. Describe any known problems with the existing direction or situation.
6. Assess the Forest's capability to supply this resource.
7. Assess the demand for this resource from the Forest.

Conclusions

8. Describe the need and opportunities for the Forest to establish or change management direction.
9. Assess the Forest's ability to resolve the issues and concerns through the planning process.
10. Assess and display the range within which it is possible to formulate alternatives.

REFERENCES:

APPENDICES:

Figure B - 1. Analysis of the Management Situation Format.

Benchmark analyses were prepared as part of the AMS and are described in the next section of this appendix.

Forest specialists prepared the AMS for their area of expertise with input and advice from both Ranger District personnel and Regional Office specialists. As the AMS reports were completed they were posted on the Forest's public web site. The public was informed of the availability of the AMS reports via the Forest's planning newsletter. As is the case of all information that has been placed on the Forest's public web site, the Forest offered to send a printed copy to anyone who requested it.

Descriptions of the processes used by the individual specialists in preparation of their AMS are disclosed in the AMS reports.

The AMS reports located on the Forest's public web site and in the Plan revision hard copy files are hereby incorporated by reference.

Benchmark Analyses

The purpose of benchmark analysis is to define the range within which alternatives can be constructed. There are five benchmark analyses required to meet the minimum management requirements (36 CFR 219.12).

- Minimum level of management
- Maximum Present Net Value (PNV) for both market (timber) and non-market (personal use) commodities
- Maximum PNV for only market commodities
- Current level of management – the selected alternative for the current plan.
- Maximum level of production of selected goods and services.

The current plan looks at timber production (unconstrained, single tree selection, and uneven-aged), maximum late successional, maximum early succession, maximum non-motorized recreation, and maximum ORV use. Many other Forrest's plans only do Maximum timber.

The starting point for conducting the benchmark analyses was to examine and consider the work done for benchmark analyses during development of the 1988 Forest Plan. The benchmark analysis for the original Forest Plan is discussed and explained in the 1986 Draft EIS in Chapter 2, Table 2 - 1 through Table 2 - 7 and in Appendix B to that document, Part 6 (USDA Forest Service, 1987). The analysis done at that time met the requirements of the 1982 planning regulations.

The Forest Operations Research Analyst – with input and advice from the Forest Silviculturist, Regional ORA, and Forest Service Research Scientists – reviewed the 1986 information. The review found that the benchmark modeling and yield table assumptions done in 1986 still portrayed the outside limits for the required benchmarks with the exception of taking into account the new lands that had been added to the WNF since the analysis was completed.

Based on the review, the 1986 Benchmark projections were updated to account for the new acreage acquired by the Forest. Since the 1988 Forest Plan was developed, the Forest has added over 50,000 acres to its land base (the original analysis was based on the 1982 total of 176,787 acres). This change was addressed by assuming that the relationship between the original and acquired acres is such that, on average, the newly acquired acres look like the acres used for the original analysis. The benchmarks were then adjusted proportionally to account for the added acres.

Table B - 1a and 1b present the results of this analysis.

Table B - 1a. Updated Benchmark Analysis

Benefit	Measure	Units	Decade	Benchmarks			
Vegetative Management				Min Level Mgmt.	Max. PNV Market/ Assigned Values	Max. PNV Market Values Only	Max. Timber for 5 Decades
Veg. Comp.	Oak-Hickory	M-Acres	1	150.26	147.49	149.87	146.30
	Mix. Decid. Hardwoods	M-Acres	1	42.82	45.20	42.82	47.97
	Pine & Pine-Oak	M-Acres	1	35.15	45.73	32.51	31.06
	Oak-Hickory	M-Acres	5	152.11	141.01	148.94	138.37
	Mix. Decid. Hardwoods	M-Acres	5	44.01	54.98	44.93	67.93
	Pine & Pine-Oak	M-Acres	5	32.51	29.34	31.45	19.03
Tbr. Quan.	Uneven_age Harvest	MMBF/Yr	1				
	Even-age Harvest	MMBF/Yr	1		3.30	0.79	11.76
	Uneven_age Harvest	MMBF/Yr	5				
	Even-age Harvest	MMBF/Yr	5		8.85	3.30	14.54
	Even-aged Harvest						
	Clearcut	M-Acres/Yr	1		0.79	0.13	3.44
	Shelterwood	M-Acres/Yr	1		0.13		0.53
	Uven-aged Harvest						
	Selection	M-Acres/Yr	1				
	Even-aged Harvest						
	Clearcut	M-Acres/Yr	5		1.85	0.13	2.91
	Shelterwood	M-Acres/Yr	5		0.13	0.40	0.26
	Uven-aged Harvest						
	Selection	M-Acres/Yr	5				
	Even-aged Harvest	MMBF/Yr	1		9.65	2.11	33.57
	Uven-aged Harvest	MMBF/Yr	1				
	Total Harvest Volume	MMBF/Yr	1		9.65	2.11	33.57
	Total Harvest Volume	MMBF/Yr	5		25.24	9.52	41.50
	Long Term Sustained Yield	MMBF/Yr	N/A		33.30	10.44	44.01
	Suitable Timber Land	M-Acres	1		205.37	22.60	218.46
Wdlf. Hab.	Openings	M-Acres	5	1.06	8.46	4.36	4.36
	Small Lakes/Ponds	Acres	5	178.41	178.41	178.41	178.41
	Marshes	Acres	5	22.47	22.47	22.47	22.47
Veg. Div.	Open/Shrubland	M-Acres	1	6.48	6.74	6.74	6.74
	Early Successional	M-Acres	1	7.14	15.59	8.72	29.21
	Intermediate Hardwoods	M-Acres	1	30.79	30.79	30.79	30.79
	Mast Producing Hardwoods (40-99yrs)	M-Acres	1	114.32	111.54	114.32	101.63
	Mast Producing Hardwoods (100+ yrs)	M-Acres	1	40.70	34.76	38.85	32.38
	Open/Shrubland	M-Acres	5	3.44	6.74	6.74	6.74
	Early Successional	M-Acres	5	0.93	19.43	4.36	27.09
	Intermediate Hardwoods	M-Acres	5	2.11	42.42	5.81	74.01
	Mast Producing Hardwoods (40-99yrs)	M-Acres	5	67.14	74.54	68.33	77.71
	Mast Producing Hardwoods (100+ yrs)	M-Acres	5	125.95	61.19	118.55	27.62

Table B - 1b. Updated Benchmark Analysis.

Benefit	Measure	Units	Decade	Benchmarks				
Vegetative Management				Max. Single Tree.	Max. Uneven-aged Mgmt.	Max. Late Succ	Max. Non-motorized	Max Early Succ
Veg. Comp.	Oak-Hickory	M-Acres	1	149.87	148.02	147.62	147.49	149.47
	Mix. Decid. Hardwoods	M-Acres	1	42.82	45.33	45.20	45.20	45.86
	Pine & Pine-Oak	M-Acres	1	32.51	31.85	32.38	32.51	30.00
	Oak-Hickory	M-Acres	5	130.57	138.90	141.01	140.35	139.43
	Mix. Decid. Hardwoods	M-Acres	5	64.10	57.49	54.98	54.71	64.76
	Pine & Pine-Oak	M-Acres	5	30.53	28.81	29.21	30.13	21.01
Tbr. Quan.	Uneven_age Harvest	MMBF/Yr	1	2.70	2.83			
	Even-age Harvest	MMBF/Yr	1			4.23	3.70	8.46
	Uneven_age Harvest	MMBF/Yr	5	5.68	5.51			
	Even-age Harvest	MMBF/Yr	5			8.72	7.14	12.29
	Even-aged Harvest							
	Clearcut	M-Acres/Yr	1			0.93	0.79	1.98
	Shelterwood	M-Acres/Yr	1			0.13		0.26
	Uven-aged Harvest							
	Selection	M-Acres/Yr	1	1.98	1.32			
	Even-aged Harvest							
	Clearcut	M-Acres/Yr	5			1.85	1.45	2.51
	Shelterwood	M-Acres/Yr	5			0.13	0.13	0.26
	Uven-aged Harvest							
	Selection	M-Acres/Yr	5	6.61	3.44			
	Even-aged Harvest	MMBF/Yr	1			12.29	10.57	24.32
	Uven-aged Harvest	MMBF/Yr	1	9.65	10.04			
	Total Harvest Volume	MMBF/Yr	1	9.65	10.04	12.29	10.57	24.32
	Total Harvest Volume	MMBF/Yr	5	20.48	19.69	24.85	20.62	35.02
	Long Term Sustained Yield	MMBF/Yr	N/A	20.48	19.69	30.40	25.90	46.65
	Suitable Timber Land	M-Acres	1	222.42	218.32	210.79	169.69	218.85
Wdlf. Hab.	Openings	M-Acres	5	4.36	4.36	4.36	4.36	4.36
	Small Lakes/Ponds	Acres	5	178.41	178.41	178.41	178.41	178.41
	Marshes	Acres	5	22.47	22.47	22.47	22.47	22.47
Veg. Div.	Open/Shrubland	M-Acres	1	6.74	6.74	6.74	6.74	6.74
	Early Successional	M-Acres	1	N/A	N/A	17.97	16.39	29.74
	Intermediate Hardwoods	M-Acres	1	N/A	N/A	30.79	30.79	30.79
	Mast Producing Hardwoods (40-99yrs)	M-Acres	1	N/A	N/A	110.35	111.14	102.29
	Mast Producing Hardwoods (100+ yrs)	M-Acres	1	N/A	N/A	33.57	34.36	32.38
	Open/Shrubland	M-Acres	5	6.74	6.74	6.74	6.74	6.74
	Early Successional	M-Acres	5	N/A	N/A	19.30	15.86	28.15
	Intermediate Hardwoods	M-Acres	5	N/A	N/A	37.67	31.85	75.73
	Mast Producing Hardwoods (40-99yrs)	M-Acres	5	N/A	N/A	77.18	75.20	78.11
	Mast Producing Hardwoods (100+ yrs)	M-Acres	5	N/A	N/A	63.44	73.61	25.11

Species Viability Analysis

The process used to analyze species viability on the WNF is fully discussed in Appendix E to this Final EIS titled "Plant and Animal Diversity". To save printing costs and paper, it is not repeated here.

Reasonably Foreseeable Development Scenario for Oil and Gas

To help evaluate the oil and gas resources on the WNF, the Division of Mineral Resources of the Bureau of Land Management prepared a Reasonably Foreseeable Development Scenario for Forest. Completed it in January, 2004, this report is included in its entirety in Appendix G to this Final EIS. To save printing costs and paper, it is not repeated here.

A summary of that report follows:

Increased national demand for energy has increased the price producers receive at the wellhead. Consequently, interest in drilling wells on federally owned surface of the WNF has increased. The Forest's Federally owned surface overlies a mix of mineral estate that is classified as either Federal, Reserved, Outstanding, or a combination thereof. Based upon a survey of local oil and gas producers, a forecast of the total number of new wells and associated surface disturbance that will likely occur on Federal surface over the next 10 years, regardless of mineral classification, is shown in Table B - 2 for each of the three organizational units of the Forest:

Table B - 2. Projected Oil and Gas Development over the Next 10 Years.

	Athens Unit	Marietta Unit	Ironton Unit
Number of new wells drilled over next 10 years	24	110	100
Miles of new access road needed	5	21	19
Total acres of surface disturbed by oil & gas drilling activity before reclamation	27	135	110
Total acres of surface needed to support drilled wells that are completed for production (excess disturbance reclaimed)	11	59	51
Number of depleted wells plugged over next 10 years	82	26	0
Total acres reclaimed by plugging depleted wells	45.1	14.3	0

Federally owned minerals make up about 40 percent of the mineral ownership on the WNF. Federal minerals are the only class of mineral estate for which the Forest Service may determine whether land will be made available for oil or gas development. The above projection assumes that:

- All Federal minerals in the Forest are available for lease unless precluded by law.
- All Federal minerals are timely leased upon request with only standard lease stipulations.
- Drilling permits for Federal minerals are timely processed.
- Oil and gas prices remain at or above current levels.

Social Assessment

During 2002 and 2003, the Wayne conducted a social assessment which was completed and published in January 2004.

The purpose of the Social Assessment was to characterize the social and economic environment of the Wayne National Forest by showing the relationship and linkages between National Forest System land and communities.[1] The goal of this assessment was to help the Forest Service and the public to:

- Better understand the relationship between public lands and communities
- Identify specific elements of the current forest plans that may need to be changed
- Assemble the information needed to evaluate trade-offs between options for future forest management.

The information from this assessment points out the WNF's unique position and helps clarifies the Forest's role in, and key contributions to, the local community, the State, and the nation. The assessment can be broadly useful to the Forest and the public, as a basis for well-informed consideration of future alternatives within and beyond the planning process.

The assessment is intentionally broad in scope and multi-faceted to provide a context for Forest Plan revision. It builds a contextually-rich foundation that reveals the parts, amounts, patterns, and dynamics of the area in and around the WNF. It also aids in understanding the history behind the current situation. Findings from the social and economic

[1] 36 CFR 219.1 (b)(14) (1982)

assessment will be used in concert with other resource information and assessments, the analysis of the management situation, need for change and the Notice of Intent. The social assessment will be further used in describing the affected environment; helping to set a reasonable range of alternatives, and providing a baseline for effects analysis of the Forest Plan revision.

The assessment is divided into three primary sections. The first section provides the background to the social landscape of the Forest. This section discusses pre-history, frontier and early industry, and the Federal acquisition of lands that led to the creation of the WNF. It also describes forest planning. The second section focuses on the regional socio-economic conditions in the study area, Southeastern Ohio, including the 12 counties in which the Forest lies. The demographic and economic characteristics of the region are described, including the impacts of National Forest land ownership on local governments. The third section assesses the role of Forest-specific resource industries, both commodity (timber, other wood products, and subsurface commodities such as coal, oil, and gas) and non-commodity (recreation).

The Social Assessment utilized data from a number of publications, Federal agencies not related to the Forest Service, and from a contract to analyze economic and social statistics for Ohio and for the 12 counties in which the WNF owns land (Woods and Poole, 2002). A complete listing of the references used is included in the assessment.

The processes used in preparing the Social Assessment are disclosed in the assessment document. They are incorporated here by reference.

Recreation Feasibility Study

During 2002 and 2003, the WNF prepared a Recreation Feasibility Study. The purpose of this Recreation Feasibility Study was to assist the Forest in developing its current recreation program into one that offers the most appropriate opportunities from a standpoint that considers natural resources, demographics, and local economies. The specific objectives of this study were:

- To determine potential recreational opportunities by taking into account:
    - User demands and trends
    - An outdoor recreation user profile
    - Recreational opportunities currently available in southeast Ohio and nearby states
    - Gaps between demand and offerings

  - The impact of recreational opportunities on surrounding communities.

- To determine how the WNF can position itself to work with local communities to:
  - Better meet public desires and community political agendas
  - Meet the capital investment and maintenance projects needed to implement and sustain the proposed objective.

The study resulted in two documents, an Executive Summary and the detailed Technical Report.

The Technical Report provides the detailed findings of the feasibility study. Findings are reported textually, and graphs and tables are included whenever appropriate. The Technical Report is meant only to provide the reader with a report of these findings, not a report of their implications. The Executive Summary provides the implications of the results, recommendations, and suggestions for further research and monitoring of the recommendations. Both of these documents are available at the WNF supervisor's office.

Methodology

Any recreation feasibility study conducted for the Forest Service must follow the guiding principles of its mission statement. The outcome strategy for the recreation program must balance the diverse interests of citizens while protecting the public lands under Forest Service jurisdiction. In addition, the strategy must take into account the economic impact on the surrounding areas and promote economic development on State, regional, and local levels. Thus, including the opinions of policy makers, business owners, and local recreation users is not only instrumental in insuring a viable recreation program that represents the needs of the local areas, it also allows the Forest Service to meet its mission goals of "listening to people and responding to their diverse needs in making decisions" and "forming partnerships to achieve shared goals" (USDA Forest Service, 2002a).

Data collection for the Recreation Feasibility Study followed these guidelines. Input was obtained from a wide variety of WNF stakeholders, potential users, and existing data sources. Table B - 3 provides an overview of the methods use and the objective for each.

Table B - 3. Overview of Methodologies Utilized in Recreation Feasibility Study.

Methodology	Objective
Secondary Data Review	• Understand national and regional recreation trends. • Identify public attitudes toward uses of the National Forest. • Identify county population and economic indicators. • Identify recreational opportunities and shortfalls.
Stakeholder Interviews	• Determine the knowledge, attitudes, and opinions regarding local recreational activities and opportunities and WNF multiple use programs. • Understand the role of recreation in the area. • Identify issues relevant for developing a working relationships with WNF.
Area Outdoor Recreation Users: Telephone Interviews in 4 urban areas in proximity to WNF	• Identify Recreation Use of Potential Users. • Identify Needs of Recreation Users. • Identify ways to improve recreation enjoyment. • Find the level of awareness and knowledge of WNF. • Develop an area recreation user profile. • Determine the general indicators of regional public use of WNF.
Town Meetings	• Identify recreational opportunities. • Identify entrepreneurial opportunities. • Determine ways for WNF and communities to work together. • Develop criteria to prioritize recreation expansion opportunities.

Secondary Data Review

Two primary sources provided data on national and regional outdoor recreation trends and attitudes toward public lands – the National Survey on Recreation and the Environment (NSRE) (USDA Forest Service, 2002b) and the Recreation Roundtable Survey (RSW, 2000). National public land attitudes and user information was obtained from publications by H. Ken Cordell et al. (Cordell et al., 1999; 2001). In addition, other data presented were obtained from the Ohio Department of Development (ODOD) and the Ohio Department of Natural Resources (ODNR). Finally, map data were gathered from a variety of sources, including Wayne National Forest (WNF), ODNR, American Electric Power Land Management Department, and Mead/Westvaco Paper Company.

Stakeholder Interviews

The first phase of this project was to identify and interview stakeholders from the counties surrounding each of the three WNF Units in addition to relevant state officials. Area stakeholders included local government officials, environmental activists, recreation users, WNF employees, related service or business people, and other community activists. The final number of personal interviews totaled 107. Stakeholders were identified through a three-stage process:

- Potential stakeholders were identified by collecting names of all government (local, county, regional, and state level) officials,

business owners, recreation associations, environmental groups, and other related individuals in the area

- WNF officials provided lists of relevant parties
- During the personal interview, each individual was asked to provide names and telephone numbers of other appropriate individuals.

Interview questions focused on existing and potential recreational opportunities, the role of recreation in the area, perceptions of the WNF, and potential recreation-oriented partnerships. Appendix A to the Recreation Feasibility Study provides the questions asked of stakeholders and a list of the entities represented.

For the purpose of analysis, interviewees were divided into groups across two criteria: stakeholder status or organization and county or area represented. For stakeholder status, such as the type of self-identified organization to which a respondent belonged, seven groups were created. They are:

- Local officials (county commissioner, mayor, OSU extension county agent, chamber of commerce, community action organization, regional planning commission, county engineer)
- Service or business people (economic development, business, private animal reserve)
- Environmental organization officials (environmental association/organization, Resource Conservation and Development [RC&D])
- Public recreation officials (recreation-oriented association, city or county public recreation, citizen, Governor's Office of Appalachia)
- Tourism officials (visitor bureau, Ohio Historical Society, higher education/college or university, Ohio Division of Travel or Tourism, Ohio Travel Association, county historical society, tourism association, college)
- WNF officials
- Park, forest, and reserve officials (ODNR/wildlife/State parks/forestry/natural areas and preserves, park district or county or metro).

As for the counties or regional areas represented among the interviewees, eight groups were created. They are:

- Athens region counties (Perry, Morgan, Athens, Hocking, and Vinton Counties)

- Ironton region counties (Washington, Noble, and Monroe Counties)
- Marietta region counties (Jackson, Gallia, Scioto, and Lawrence Counties)
- WNF
- State agency
- County/metro park district
- Franklin County
- Muskingum County.

Initial content analyses of the interview responses revealed that most responses could be categorized into mutually exclusive and exhaustive themes. Therefore, responses could then be coded into a database and statistically analyzed. Analysis consisted of identifying patterns and comparisons across stakeholder groups and regional units. Statistical analyses (chi-square tests) were conducted to determine significant differences among groups (by stakeholder groups and by WNF Unit). Only statistically significant differences at the $p \leq .10$ level are presented in this report.

Area Outdoor Recreation Users

The second phase of this study was a telephone survey of outdoor recreation users from four urban communities surrounding the WNF: Cincinnati, Cleveland, and Columbus, Ohio, and Charleston, West Virginia. These four areas were identified by WNF staff as primary sources of users of WNF recreation resources. A total of 400 telephone interviews were conducted, with 100 interviews in each of the four urban areas. A random sampling procedure was used, where all potential households with telephones in the target area were eligible to be chosen. Once a household was identified, a second random procedure was used to choose from the adults (18 years or older only) living in the household. Only people who had participated in an outdoor recreational activity within the past year were interviewed.

Area outdoor recreation users were asked a series of questions regarding their recreational activities, satisfaction with activity locations, awareness and perceptions of WNF, and attitudes toward recreation and the natural environment. Appendix B to the Recreation Feasibility Study is a version of the telephone interview questionnaire that has been modified to eliminate the programming used by the computer-assisted software in administering the survey.

A wide range of statistical techniques was used to analyze the telephone survey data. The margin of error for the total sample is $p \leq .05$. However,

when data are presented for the four urban areas, specific outdoor recreation activities, or WNF visitors, the margin of error increases, depending on the number of respondents fitting the criteria. The smaller the group the less reliable the data. Therefore, caution must be taken when viewing these data.

A user profile was created using discriminant analysis and is described in detail in Appendix D of the Technical Report on the Recreation Feasibility Study. Statistically significant differences among groups at the $p \leq .05$ level are presented throughout the report.

Town Meetings

The final phase of this study was to conduct public town meetings. Six town meetings were held in "gateway communities" surrounding WNF. Communities were chosen by WNF staff and represented travel pathways into WNF Units. Notification of the town meetings was sent to area newspapers for publication. In addition, all stakeholders who were interviewed were sent information regarding the town meeting locations and were invited to attend personally and/or to pass on the information to other interested parties. Information on the town meetings was also given to tourism and visitor organizations in the areas surrounding the town meeting locations.

Participants in the town meetings were assigned to groups to discuss one of three questions on recreation, entrepreneurial opportunities, or ways to enhance WNF/community working relationships. The fourth group was asked to provide feedback on how to prioritize these opportunities. Once individuals were assigned to a group, they were asked to write down their ideas individually and then to discuss them as a group to identify their top ranked responses. These responses were then presented to all town meeting participants for discussion. Appendix C provides the town meeting agenda and a listing of the number of participants and the organizations they represented. All individual and group responses were listed for each question and patterns were identified. These patterns are given throughout the Technical Report.

Roadless Area Analysis

The process used in analyzing the potential for roadless areas on the Forest is fully discussed in Appendix C to this Final EIS. To save printing costs and paper, it is not repeated here.

Wild and Scenic Rivers Analysis

The Wild and Scenic Rivers Act of 1968 was passed to provide a process by which a river that is "free flowing" and possesses "outstandingly remarkable" characteristics may be evaluated for Wild and Scenic River designation (USDA Forest Service, 1990)

The Little Muskingum River was identified in the Nationwide Rivers Inventory prepared by the Heritage Conservation and Recreation Service, U.S.D.I., in 1982 for potential inclusion in the Wild and Scenic River System.

The Little Muskingum is a 57-mile long stream that winds across Washington and Monroe Counties in southeastern Ohio. The river runs south from Ethel, Ohio, through the WNF, eventually completing its 57-mile journey to the Ohio River near Cornerville, Ohio. The river corridor ranges from one-half to one mile wide, which includes some of the river's flood zone. Of the 16,700 total acres in the river area corridor, approximately 4,000 acres (24 %) are under National Forest System administration. The Little Muskingum is a slow, relatively shallow river with an average fall of 3 feet per mile. The river is canoeable in the spring and fall, except during periods of high, turbulent water or periods of extreme drought. The river flows through forested, pasture, and farm land. Four historic wooden covered bridges cross the river along its 57-mile course. There is also evidence of roads, mineral activities, utility lines, and timber harvest throughout the corridor. (Final EIS, Appendix D, 1987)

Two additional rivers traverse Southeastern Ohio counties, the Salt Creek and Hocking River, are also listed on the National Rivers Inventory (NRI). However, the eligible segments of these rivers do not fall within WNF boundaries, and therefore are not evaluated by the Forest Service for Wild, Scenic, or Recreation River consideration.

In 2002, the WNF completed the Watershed Integrity Analysis. This analysis provided an assessment of the health or integrity for watersheds containing National Forest System (NFS) lands within the Wayne's proclamation boundaries. The watershed analysis concluded that, with the exception of the Little Muskingum River, rivers/streams within the 15 major watersheds located on the Forest were not considered "outstanding resource waters". In other words, these aquatic systems were not considered exceptional warm water habitats for aquatic species.

Historical Background

The Little Muskingum River was one of 1,524 rivers listed in the U.S. Department of Interior's 1982 Nationwide Rivers Inventory to have potential for inclusion in the Wild and Scenic River System.

When the 1988 Forest Plan was being revised, the Forest Service decided to postpone the eligibility study for the Little Muskingum River until the next Forest planning cycle. The Forest Service's rationale for postponing the eligibility study was based on two key factors:

- Standards and guidelines in the Forest Plan (for Management Area 2.1) would adequately protect the river's values until an eligibility study could be completed.

- The WNF then had an active land acquisition program in the Marietta Unit (location of Little Muskingum River and it would be more appropriate to complete a study at a later date when additional NFS land along the river had been acquired.

American Rivers, Inc. appealed the Forest Service's decision to defer the eligibility study on the premise that Forest Service national direction mandates all potentially eligible rivers within a National Forest's proclamation boundaries be studied during Forest Plan revision or immediately after in a separate study. The Forest Service settled with American Rivers, Inc. by agreeing to begin an eligibility determination study for the Little Muskingum River soon after the Forest Plan was revised. (USDA Forest Service, 1990)

An evaluation team involving Forest Service specialists and an advisory committee that included key local stakeholders was formed to study the Little Muskingum River's eligibility potential. Many other Federal, State, and private organizations specialists contributed to this study. The Little Muskingum River Eligibility Determination for Wild and Scenic River System study was completed in January 1990, and a copy of this study is filed at the Forest supervisor's office in Nelsonville, Ohio, and its Marietta ranger district office.

An evaluation team involving Forest Service specialists and an advisory committee that included key local stakeholders were formed to study the Little Muskingum River's eligibility potential. Many other federal, state, private organizations specialists also contributed to this study. The Little Muskingum River Eligibility Determination for Wild and Scenic River System study was completed in January 1990. A copy of this study is filed at the Wayne's headquarters in Nelsonville, OH and its Marietta office.

The Little Muskingum River's natural characteristics were examined against the criteria set forth in the Forest Service Handbook (FSH 1902.12, Chapter 8) for wild, scenic, and recreation Rivers. The 1990 study found the Little Muskingum River to contain no values that were considered "outstandingly remarkable" and therefore was determined to ineligible for Wild, Scenic, or Recreation (WSR) River nomination. One of the primary reasons for the river's ineligibility determination was its close proximity to roads, bridges, utility corridors, oil and gas wells, farms, residences, and small towns. This was confirmed during visits and discussion with American Rivers, Inc. Public Lands Specialist (Jamie Fosburgh) and the Forest Service's national Wild and Scenic Rivers' Coordinator (Dean Lundeen). Furthermore, there was consensus among the interested public that the river did not qualify under the national WSR system (USDA Forest Service, 1990).

However, the Evaluation Team felt the river's characteristics could improve over time and that it should be re-evaluated for Wild, Scenic, or

Recreation River consideration in the next 10 to 20 years. This conclusion was based on two assumptions:

- The land within the river corridor would continue to revert from farm and pasture land to forest at a somewhat rapid pace.
- The Forest Service land acquisition program would continue to acquire more land along the river corridor at a rapid rate. (USDA Forest Service, 1990)

A March 2003 review of the Forest's land status atlas found less than 200 acres of additional river frontage had been acquired by the Forest Service since 1990. GIS was used to view 1996 digital ortho quads (latest quads) to get an overall picture of how the landscape surrounding the river corridor appeared since the 1990 study. Numerous farms, pastures, and other developments clearly remained. New information on watershed conditions was collected and analyzed through a detailed ecological analysis of the Little Muskingum watershed in May 2002. Results from this analysis provided no new information about the river that could be considered "outstandingly remarkable". Additionally, the Forest Service conducted a Forest-wide watershed integrity analysis for all fifth level watersheds on the WNF in 2002. This study not only supports the conclusion of previous studies that the Little Muskingum River did not meet the criteria for WSR, but also confirmed that all other streams and rivers on the Forest lacked the unique character to qualify for WSR consideration.

The State of Ohio Wild and Scenic River's Coordinator (Bob Gable) was also consulted to determine if any WNF rivers/streams qualify for State wild and scenic river nomination. According to him, of all the WNF rivers and streams inventoried and analyzed in the State's 1991 river study, only the Little Muskingum River qualified for State Wild and Scenic River designation. However, for a river to be nominated for State Wild and Scenic River status, it must also have local support to proceed with a study for subsequent designation, which the Little Muskingum River lacked. The State readdressed potential designation in 2002 and again found strong local opposition to considering a designation. The State has no plans to pursue designation for the Little Muskingum River.

Therefore, based on the findings listed above and the WSR criteria in Forest Service Handbook (FSH 1902.12, Chapter 8), the Forest Service concluded that no rivers or streams on the WNF were eligible for national Wild, Scenic, or Recreation River nomination.

Management

When the 1988 Forest Plan was developed, no Wild and Scenic Rivers were designated on the WNF, and therefore, no guidelines or other direction is included in the current Forest Plan to manage this resource.

Nevertheless, the Forest Service made a conscious decision to manage the Little Muskingum River for recreational purposes under the standards and guidelines for Management Area 2.1. It is managed primarily for and promoted as a canoeing and fishing river.

In discussions of allocating lands to various management areas during the Forest Plan revision process, it was recommended that the Little Muskingum River continue to be managed in a "River Corridor" allocation under all alternatives.

Development of Alternatives

This section describes the process used by the Forest Service to develop and formulate the alternatives being considered for implementation for the Wayne National Forest. These alternatives provide a framework for meeting the purpose and need for Plan revision as discussed in Chapter 1. All alternatives are considered viable; yet provide varying amounts of goods and services that can be offered to the public.

General Process of Developing the Alternatives

The first step was to listen to the public. Since the Notice of Intent (NOI) to revise the Plan was published in February 2002, the Forest Service received over 600 pages of input from interested citizens and organizations in the form of letters and verbal contacts. Content analysis derived from three public meetings prior to the NOI and 10 post-NOI public meetings provided a good understanding of what our citizens wanted to see from the Forest. This gave the planning staff a clear understanding of what key issues should drive the alternatives, what were minor issues that would not drive alternatives, and issues that were beyond Forest Service jurisdiction.

Our second step was for our own Forest specialists to do an Analysis of the Management Situation (AMS) within their own disciplines, giving detailed accounting of current Plan direction and where there was room for improvement. The AMS parameters asked specialists to elaborate on current Plan strategies, how well the Forest had progressed and to suggest where changes needed to be made. (See Analysis of the Management Situation section of this Appendix.)

Assemblage of several studies were undertaken to help with the AMS and further development of alternatives. They included:

- Recreation Feasibility Study
- Assessment of Roadless Areas and Wild and Scenic River Eligibility
- Subsurface (Minerals) Ownership Database and Geographic Information System Mapping
- Species Viability Evaluations
- Social Assessment
- Roads Assessment
- Silvicultural Systems Workshop
- Issues and Alternative Development Papers

Additionally advice was sought from professional societies and other government agencies:

- Reasonably Foreseeable Development Scenario for Oil and Gas Resources (Bureau of Land Management)
- Broad-scale Ecological Assessment/Western Allegheny Plateau Assessment (The Nature Conservancy)
- Threatened and Endangered Species Plan Amendment (based upon the USDI Fish and Wildlife Service Biological Opinion)

Our third main step was to once again go to the public, present an overview of the issues identified and asked them to participate in three workshops around the State to collaborate on developing the themes to help shape alternatives. Prior to these collaborative workshops, the interdisciplinary team had not met to develop alternatives. This delay was deliberate, to allow the team to gain insight and ideas from the public before the Forest Service undertook its part in developing the alternatives.

At these workshops, the three issues that would drive the alternatives were identified. Three other issues of concern to the public that could be addressed in similar fashion across all alternatives were also identified.

Issues that vary by alternative include:

- Vegetation
- Recreation
- Minerals

Issues addressed the same way in all alternatives:

- Watershed Health
- Land Ownership
- Roadless Areas, Wilderness, and Wild and Scenic River Recommendations.

Range of Alternatives

The National Environmental Policy Act requires that a “no-action alternative” be considered. A no-action alternative in this case would mean the continued implementation of the current Forest Plan, including its 13 Amendments.

The Forest Plan interdisciplinary team discussed all public input received from the collaborative workshops, grouping together similar ideas and themes. Based on the groupings of ideas and input received during the public workshops and the information developed during the analyses of the management situation, the Forest Service developed alternatives to the no-action alternative. During this process, several new management area

prescriptions were developed to respond to issues and ideas raised by the public and by Forest Service employees.

Some alternatives were considered and eliminated from future study for specific reasons outlined in Chapter 2 of the Final EIS associated with this Appendix. Alternatives that were eliminated from detailed study are still part of the range of alternatives considered (40 CFR 1502.14(a)).

This stage of the development of alternatives resulted in four alternatives to the no-action Alternative (Alternatives B through E). As the alternatives were being developed, it became obvious that some of the proposed changes that made sense for Alternatives B through E would also make sense even if the Forest were managed under the no-action alternative. After discussion on-Forest and with the NEPA and Planning Specialists in the Forest Service Regional Office, the no-action alternative was modified (treating the revision as a multi-faceted Forest Plan Amendment).

After Alternatives A through E were developed conceptually, reviewed, and, in some cases, modified, they were approved by the Forest Leadership Team. After this approval, the interdisciplinary team discussed the concepts and how the Forest's land base might be allocated to put the concepts to work. Discussions included physical and ecological conditions as well as social and economic concerns/desires. These discussions resulted in a draft mapping of land allocations (management areas).

The draft mapping of management areas was reviewed and critiqued by Forest Service field personnel who were intimately familiar with the actual ground conditions. Based on this input, adjustments were made to the management areas, including location of boundaries on readily identifiable ground features wherever possible. These changes then went to the Forest Leadership Team for approval.

The Eastern Regional Forester verbally approved the range of alternatives, A through E, on February 5, 2004. The 5 alternatives were posted on the Forest's public Web site and presented to the public in a newsletter.

During the spring and early summer of 2004, as Forest resource specialists analyzed effects of the alternatives, it became apparent that the range of alternatives could be expanded to better address the initial issues related to roadless and wilderness conditions. As a result of public involvement, a new alternative, Alternative F, was developed. The primary focus of this alternative was to increase land allocated to a management prescription that did not allow commercial timber harvesting and where non-motorized dispersed recreation would be emphasized.

After discussions on the Forest, this additional alternative was presented to, and verbally approved by, the Regional Forester for inclusion in the analysis.

Overview of the Alternatives

Alternative A – Current direction (no action). Emphasis on mature forest habitat with limited active management.

Alternative B – Emphasis on even-aged successional mosaic. A mix of age-classes is created, including early successional habitat.

Alternative C – Emphasis on mature forest habitat, more semi-primitive non-motorized recreation opportunities and constraints on oil and gas development.

Alternative D – Emphasis on a combination of mature forest habitat and active ecological restoration.

Alternative E – Emphasis on active ecological restoration.

Alternative F – Emphasis on non-motorized dispersed recreation and ecological restoration.

How the Alternatives Would Address Vegetation Management

This chart shows how the alternatives vary in addressing the vegetation management/wildlife habitat issue.

Table B - 4. Habitat Conditions Produced by Alternative.

Habitat Conditions Produced	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. E Mod	Alt. F
Grassland Mosaic	0	0	5,334	5,334	5,334	5,334	5,334
Successional Mosaic	0	160,488	22,946	42,536	57,562	54,580	35,779
Mature Forest	200,421	39,944	142,194	112,251	77,367	78,220	68,249
Old Forest	18,470	18,470	23,649	18,947	23,650	26,632	54,551
Approaching Historical Range of Variability	0	0	17,869	21,923	48,078	47,225	48,078
Veg Mgt Only for Maintaining or Enhancing Other Values	19,162	19,151	26,061	37,062	26,062	26,062	26,062

Note: Numbers are total acres.

Alternative A is current Plan direction. Most of the Forest would be allocated to management areas with an objective of mature forest habitat; no early successional habitat would be created.

Alternative B would emphasize creation of early successional habitat. Most of the Forest would be allocated to management areas with an objective of a mosaic of age classes, produced mainly through even-aged timber harvest.

Alternatives C, D, E, and E Modified would provide varying combinations of mature forest, mature forest with repeated prescribed fire

for ecological restoration (historic forest prescription), and mosaic of varying age classes.

Alternative F would provide much of the same as Alternatives C, D, E, and E Modified, but places greater emphasis, by acreage, to increasing future old forest.

How the Alternatives Would Address Recreation

Table B - 5. Recreation Opportunity Spectrum Objectives by Alternative.

ROS Classification	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. E_{mod}	Alt. F
Rural	1,839	1,839	4,078	4,078	4,078	4,078	4,078
Roaded Natural	217,744	226,611	209,530	224,386	219,683	216,701	206,853
Semi-primitive Non-motorized	18,470	9,603	24,445	9,589	14,292	17,274	27,122

Note: Numbers are total acres.

Table B - 5 shows how the alternatives would vary in addressing recreation. The alternatives vary within a small range in terms of the amount of area allocated to developed recreation and to semi-primitive non-motorized recreation.

Rural – The Forest's campgrounds, picnic areas, and other developed recreation sites with significant recreation facilities. Minor developments, such as trailhead parking lots, are generally not included, unless located near larger sites.

Roaded Natural – Recreation experience in a natural setting (forested landscape without major facilities such as campgrounds) with roads and motorized travel. This includes areas allocated to off-highway vehicle (OHV) trails and to areas of the Forest without OHV trails.

Semi-Primitive Non-Motorized (SPNM) – Back-country recreation experience without roads or motorized travel and relatively little interaction with other visitors. Areas that provide this kind of experience are very limited on the Wayne because of the Forest's extensive road network. Most of the Forest's road mileage is comprised of State, county and township roads over which the Forest Service has no jurisdiction. Therefore, SPNM is more an objective to move toward, than an existing condition, over most of the management area.

How the Alternatives Address Oil and Gas Development

Table B - 6. Surface Occupancy Conditions by Alternative.

Surface Occupancy Conditions	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. E_{mod}	Alt. F
Surface Occupancy Allowed	209,113	217,981	200,887	215,742	211,039	208,057	198,209
No Surface Occupancy	28,953	20,086	37,166	22,311	27,014	29,996	39,844

Note: Numbers are total acres.

This chart shows how the alternatives would vary in the amount of area designated as no surface occupancy (NSO) for oil and gas development. The current Plan designates some management areas (about 11% of the Forest) as NSO.

The alternatives vary little because law and regulation direct the Forest Service to make oil and gas available for development unless there is a compelling surface resource protection reason to apply NSO.

Note that NSO applies only to areas when both the surface and subsurface Federal are in ownership. Access and surface occupancy must be provided for privately owned minerals (reserved and outstanding rights) under Federal surface ownership, even within management areas with NSO.

Management Area Acreage by Alternative

Table B-7 lists the acreages of the different management areas for each alternative. Maps of the six alternatives, showing how the management areas are distributed, are available in electronic or hard copy versions.

Table B - 7. Acres in Management Areas by Alternative

Mgt Area	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. E_{mod}	Alt. F
Candidate Areas	981	981	981	981	981	981	981
Developed Recreation	1,839	1,839	4,078	4,078	4,078	4,078	4,078
Diverse Continuous Forest	155,408	12,079	98,292	83,405	55,089	55,267	45,971
Diverse Continuous Forest with OHVs	45,010	27,851	43,901	29,846	22,278	22,953	22,278
Forest and Shrubland Mosaic	0	143,329	22,946	42,536	57,562	54,580	35,779
Forest and Shrubland Mosaic with OHVs	0	17,159	0	0	0	0	0
Future Old Forests	18,470	9,603	23,649	8,793	13,496	16,478	26,326
Future Old Forests With Mineral Activity	0	8,867	0	10,154	10,154	10,154	28,225
Grassland and Forest Mosaic	0	0	5,334	5,334	5,334	5,334	5,334
Historic Forest Restoration	0	0	17,869	17,869	26,456	26,278	26,456
Historic Forest Restoration with OHVs	0	0	0	14,054	21,622	20,947	21,622
Research Natural Areas	117	117	117	117	117	117	117
River Corridors	8,682	8,682	12,544	12,544	12,544	12,544	12,544
Special Areas	7,546	7,546	7,546	7,546	7,546	7,546	7,546
Timbre Ridge Lake	0	0	796	796	796	796	796
Total Acreage	238,053	238,053	238,053	238,053	238,053	238,053	238,053

Recreation Opportunity Spectrum Inventory/Assignment Process

Introduction

The Recreation Opportunity Spectrum (ROS) system was used to delineate, define, and integrate outdoor recreation opportunities in the forest planning process in accordance with the ROS Users Guide and Forest Service Manual 2300.

The ROS system defines six recreation opportunity classes that provide different settings and opportunities for recreation use: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban. Each ROS class may be divided into subclasses to better reflect local conditions.

ROS maps will assist the public in understanding and identifying with:

- The type of settings (landscapes) provided
- The types of transportation permitted
- The social setting to expect
- The level of management and infrastructure.

Planning steps in which ROS can be utilized include:

- Defining Existing Conditions
- Assessments of current management direction
- Defining Desired Conditions
- Developing Alternatives
- Analyzing Effects of Alternatives
- Defining the Preferred Alternative
- Determining actions necessary to move from existing to desired (Implementation)
- Measuring effects of actions / implementation (Monitoring)

Five mapping criteria are used in defining the physical, social and managerial setting of each landscape.

Physical Setting	Social Setting	Managerial Setting
Remoteness	User Density	Managerial regimentation
Size	--	--
Evidence of humans	--	--

Highly developed sites, high visitor use, and low scenic integrity may exhibit rural or even urban ROS class characteristics. In contrast,

dispersed and/or primitive recreation sites, low to moderate visitor use, and moderate to high scenic integrity may exhibit roaded natural to semi-primitive ROS class characteristics.

Existing ROS Inventory Process

The following narrative describes the ROS inventory process on the WNF. Using the geographic information system's (GIS) geophysical analytical capabilities and interdisciplinary team input, the following steps were used to implement ROS and integrate it into the planning process.

STEP 1 – Determining the Physical Setting

A physical setting inventory considering remoteness, size of area, and evidence of humans was completed for all Forest lands to determine their ROS class eligibility. Using GIS technology, all roads and motorized trails on the Forest were mapped. This includes improved and unimproved Forest Service roads, non-Forest Service roads, and motorized trails within the Forest's proclamation boundary. For this analysis, maintenance level (ML) 2 (open, natural surfaced, high clearance vehicle roads) through 5 roads (open, paved roads) are considered "better than primitive" roads, and ML 1 roads (closed roads) and motorized trails are identified as "primitive" roads.

The following lists the physical setting criteria were used to determine ROS class eligibility and the results from the inventory:

Primitive

Criteria: Areas of at least 5,000 acres and at least 3 miles from any road would be eligible for the primitive ROS class.

Results: No lands on the WNF met the remoteness or size criteria for the Primitive ROS class.

Semi-primitive Non-motorized

Criteria: Areas of at least 2,500 acres and at least one-half mile but not more than 3 miles from any roads or motorized trails would be eligible for the semi-primitive non-motorized ROS class. It may include the existence of primitive roads and non-motorized trails.

Results: No lands on the WNF met the remoteness or size criteria for the semi-primitive non-motorized ROS class.

Semi-primitive Motorized

Criteria: Areas of at least 2,500 acres in size and within one-half mile from any "primitive" (maintenance level 1) road or motorized trail, but not closer than one-half mile from "better than primitive" road would be eligible for the semi-primitive motorized ROS class. Motorized trails are included in the "primitive" road category.

Results: No lands on the WNF met the remoteness or size criteria for the semi-primitive motorized ROS class.

Roaded Natural

Criteria: Areas within one-half mile from any "better than primitive" or "classified" (maintenance level 3 or above) road and a structure density of 5 or fewer structures per square mile would be eligible for the Roaded Natural ROS class. No land size criteria apply to this ROS class.

Results: 144,449 acres on the WNF met the criteria for the Roaded Natural ROS class.

Rural

Criteria: No distance criteria and no land size criteria apply to this ROS class. However, an area should have a structure density of greater than 5 structures per square mile to be eligible for the Rural ROS class.

Results: 91,900 acres on the WNF met the criteria for the Rural ROS class.

Urban

Criteria: No distance criteria and no land size criteria apply to this ROS class. Areas that are within incorporated towns/villages would be eligible for the urban ROS class.

Results: 1,703 acres on the WNF met the criteria for the Urban ROS class.

STEP 2 – Determining the Social Setting

In addition to using the physical setting criteria, some social criteria were used to determine ROS class eligibility. Using GIS, the Forest mapped the existing carrying capacity of each developed recreation sites in terms of recreation visitor days (RVDs).

Visitor use numbers were also used where use numbers were reliable, such as for trail activity. Actual campground and day use visits were sketchy, therefore, the Forest relied more on employees' knowledge of those sites' historical use. Results from the National Visitor Use Monitoring (NVUM) were not available when the inventory was completed.

Knowing where the highest concentration of recreation sites, site capacities, and use helps the Forest to better assign the appropriate ROS class to an area. Generally, areas with high concentration of recreation sites or with high recreation facilities development and capacities would best align with the Rural or Urban ROS classes. Conversely, areas of lower concentration of recreation sites, recreation facilities development, and capacities would better align with the primitive or semi-primitive ROS classes.

STEP 3 – Determining the Managerial Setting

The amount and kinds of management restrictions placed on certain areas of the Forest determines its managerial settings. Higher management restrictions or controls (i.e. rules/regulations, signing, fees, etc.) are generally associated with ROS classes at the more developed setting end of the ROS spectrum, such as Rural or Urban.

The managerial setting criterion was not mapped for the Forest during the inventory process, however, it was considered to help the Forest complete its ROS inventory. A general assumption was made that the more developed a recreation site was or the more use it receives, the more restrictions were placed on visitors' actions. Therefore, areas on the Forest with the highest concentration of developed recreation sites were given a Roaded Natural, Rural, or Urban ROS setting depending on the degree of development. The reverse is true for lesser developed recreation site. They would be aligned with the Semi-primitive Non-motorized ROS setting.

Tabular Results of Existing ROS Inventory

Table B - 8. Existing Roaded Natural ROS Acres by Alternative and Management Area.

Management Areas	Inventoried (Existing) ROS Acres by Alternative and Mgmt. Area (Roaded Natural)						
	A	B	C	D	E	E_{mod}	F
Developed Recreation	133	133	1,612	1,612	1,612	1,612	1,612
River Corridors	3,583	3,583	4,934	4,934	4,934	4,931	4,934
Timbre Ridge Lake	0	0	294	294	294	294	294
Diverse Continuous Forest	88,969	5,846	53,771	43,762	28,423	28,387	24,841
Diverse Continuous Forest w/ OHV	32,254	21,041	31,323	20,081	15,115	15,539	15,115
Historic Forest	0	0	14,528	14,517	18,831	18,842	18,831
Historic Forest w/ OHV	0	0	0	11,240	16,206	15,782	16,206
Forest-Shrubland Mosaic	0	83,119	12,970	25,610	34,012	32,689	21,766
Forest-Shrubland Mosaic w/ OHV	0	11,213	0	0	0	0	0
Grassland-Forest Mosaic	0	0	3,095	3,095	3,095	3,095	3,095
Research Natural Areas	81	81	81	81	81	81	81
Future Old Forest	13,541	8,169	15,972	7,400	10,023	11,346	17,230
Future Old Forest w/ Mineral Activity	0	5,375	0	5,952	5,952	5,949	14,574
Special Areas	5,184	5,184	5,184	5,184	5,184	5,184	5,184
Candidate Areas	708	708	708	708	708	708	708
Total	144,453	144,452	144,472	144,470	144,470	144,428	144,471

Table B - 9. Existing Rural ROS Acres by Alternative and Management Area.

Management Areas	Inventoried (Existing) ROS Acres by Alternative and Mgmt. Area (Rural)						
	A	B	C	D	E	E_{mod}	F
Developed Recreation	1,706	1,706	2,466	2,466	2,466	2,466	2,466
River Corridors	5,051	5,051	7,569	7,569	7,569	7,601	7,569
Timbre Ridge Lake	0	0	502	502	502	502	502
Diverse Continuous Forest	65,261	6,247	44,009	39,331	26,476	26,477	20,931
Diverse Continuous Forest w/ OHV	12,264	6,628	12,086	9,270	6,947	7,149	6,947
Historic Forest	0	0	3,341	3,341	7,306	7,304	7,306
Historic Forest w/ OHV	0	0	0	2,816	5,139	4,939	5,139
Forest-Shrubland Mosaic	0	59,015	9,656	16,416	23,227	21,567	13,811
Forest-Shrubland Mosaic w/ OHV	0	5,636	0	0	0	0	0
Grassland-Forest Mosaic	0	0	1,901	1,901	1,901	1,901	1,901
Research Natural Areas	36	36	36	36	36	36	36
Future Old Forest	4,927	1,434	7,677	1,392	3,472	5,131	8,986
Future Old Forest w/ Mineral Activity	0	3,493	0	4,205	4,205	4,205	13,651
Special Areas	2,362	2,362	2,362	2,362	2,362	2,362	2,362
Candidate Areas	273	273	273	273	273	273	273
Totals	91,880	91,878	91,878	91,878	91,881	91,913	91,879

Table B - 10: Existing Urban ROS Acres by Alternatives and Management Areas.

Management Areas	Inventoried (Existing) ROS Acres by Alternative and Mgmt. Area (Urban)						
	A	B	C	D	E	E_{mod}	F
Developed Recreation	0	0	0	0	0	0	0
River Corridors	41	41	41	41	41	41	41
Timbre Ridge Lake	0	0	0	0	0	0	0
Diverse Continuous Forest	1,169	0	512	310	187	364	200
Diverse Continuous Forest w/ OHV	493	183	493	493	216	265	216
Historic Forest	0	0	0	0	320	143	320
Historic Forest w/ OHV	0	0	0	0	276	227	276
Forest-Shrubland Mosaic	0	1,169	320	522	325	324	202
Forest-Shrubland Mosaic w/ OHV	0	310	0	0	0	0	0
Grassland-Forest Mosaic	0	0	337	337	337	337	337
Research Natural Areas	0	0	0	0	0	0	0
Future Old Forest	0	0	0	0	0	0	110
Future Old Forest w/ Mineral Activity	0	0	0	0	0	0	0
Special Areas	0	0	0	0	0	0	0
Candidate Areas	0	0	0	0	0	0	0
Totals	1,703	1,703	1,703	1,703	1,702	1,701	1,702

ROS Objective Assignment Process

All lands on the Forest, except areas where recreation use is essentially excluded, were administratively assigned an ROS objective under each alternative. This was done to provide a reasonable range of ROS classes in each alternatives and to communicate to the public the variation in potential recreation settings. These ROS objective assignments were based primarily on the management emphasis or desired future condition (DFC) of each proposed management areas. Generally, management areas with a DFC of providing the highest access to the Forest and the highest facilities development (i.e., Develop Recreation Management Area) were assigned the ROS objective Rural. Conversely, management areas with the a DFC of providing the lowest access to the Forest in terms of road development and providing the greatest opportunity for solitude (i.e. Future Old Forest Management Area) were assigned an ROS objective Semi-primitive Non-motorized. ROS assignment acres will vary across the alternatives because of the management area acreage allocation for each alternative.

A description of each ROS setting characteristics can be found in the ROS User's Guide and Appendix A of the National ROS Inventory Mapping Protocol.

The following tables, Table B-11 through B-13, display the ROS objectives acreages by alternatives and management areas.

Table B - 11. Semi-Primitive Non-Motorized ROS Objective Assignment by Alternatives and Management Areas (acres).

Management Areas	Semi-Primitive Non-Motorized Objective Assignment by Alternatives and Management Areas (Acres)						
	A	B	C	D	E	E_{mod}	F
Developed Recreation	--	--	--	--	--	--	--
River Corridors	--	--	--	--	--	--	--
Timbre Ridge Lake	0	0	796	796	796	796	796
Diverse Continuous Forest	--	--	--	--	--	--	--
Diverse Continuous Forest w/OHV	--	--	--	--	--	--	--
Historic Forest	--	--	--	--	--	--	--
Historic Forest w/OHV	--	--	--	--	--	--	--
Forest-Shrubland Mosaic	--	--	--	--	--	--	--
Forest-Shrubland Mosaic w/OHV	--	--	--	--	--	--	--
Grassland-Forest Mosaic	--	--	--	--	--	--	--
Research Natural Areas	--	--	--	--	--	--	--
Candidate Areas	--	--	--	--	--	--	--
Special Areas	--	--	--	--	--	--	--
Future Old Forest	18,470	9,603	23,649	8,793	13,496	16,478	26,326
Future Old Forest w/Mineral Activity	--	--	--	--	--	--	--
Total	18,470	9,603	24,445	9,589	14,292	17,274	27,122

Table B - 12. Roaded Natural ROS Objective Assignment by Alternatives and Management

Management Areas	Roaded Natural Objective Assignment by Alternatives and Management Areas (Acres)						
	A	B	C	D	E	E_{mod}	F
Developed Recreation	--	--	--	--	--	--	--
River Corridors	8,682	8,682	12,544	12,544	12,544	12,544	12,544
Timbre Ridge Lake	--	--	--	--	--	--	--
Diverse Continuous Forest	155,408	12,079	98,292	83,405	55,089	55,267	45,971
Diverse Continuous Forest w/ OHV	45,010	27,851	43,901	29,846	22,278	22,953	22,278
Historic Forest	0	0	17,869	17,869	26,456	26,278	26,456
Historic Forest with OHV	0	0	0	14,054	21,622	20,947	21,622
Forest-Shrubland Mosaic	0	143,329	22,946	42,536	57,562	54,580	35,779
Forest-Shrubland Mosaic w/ OHV	0	17,159	0	0	0	0	0
Grassland-Forest Mosaic	0	0	5,334	5,334	5,334	5,334	5,334
Research Natural Areas	117	117	117	117	117	117	117
Candidate Areas	981	981	981	981	981	981	981
Special Areas	7,546	7,546	7,546	7,546	7,546	7,546	7,546
Future Old Forest	--	--	--	--	--	--	--
Future Old Forest w/Mineral Activity	0	8,867	0	10,154	10,154	10,154	28,225
Total	217,744	226,611	209,530	224,386	219,683	216,701	206,853

Table B - 13. Rural ROS Objective Assignment by Alternatives and Management Areas (acres).

Management Areas	Rural Objective Assignment by Alternative and Management Area (Acres)						
	A	B	C	D	E	E_{mod}	F
Developed Recreation	1,839	1,839	4,078	4,078	4,078	4,078	4,078
River Corridors	--	--	--	--	--	--	--
Timbre Ridge Lake	--	--	--	--	--	--	--
Diverse Continuous Forest	--	--	--	--	--	--	--
Diverse Continuous Forest w/ OHV	--	--	--	--	--	--	--
Historic Forest	--	--	--	--	--	--	--
Historic Forest with OHV	--	--	--	--	--	--	--
Forest-Shrubland Mosaic	--	--	--	--	--	--	--
Forest-Shrubland Mosaic w/ OHV	--	--	--	--	--	--	--
Grassland-Forest Mosaic	--	--	--	--	--	--	--
Research Natural Areas	--	--	--	--	--	--	--
Candidate Areas	--	--	--	--	--	--	--
Special Areas	--	--	--	--	--	--	--
Future Old Forest	--	--	--	--	--	--	--
Future Old Forest w/ Mineral Activity	--	--	--	--	--	--	--
Total	1,839	1,839	4,078	4,078	4,078	4,078	4,078

Effects Analyses

Timber Management Modeling

The forest planning analysis problem can be stated as follows: Given a fixed area of land, what activities should be allowed to each land unit over the next 150 years to achieve the desired future conditions and still meet all physical, operational and regulatory constraints. To do this, the forest land area is divided into smaller homogeneous areas called analysis units. The planning horizon of 150 years is divided into fifteen 10-year periods. A computer program called Spectrum is used to analyze the forest planning alternatives. Spectrum is a decision support model, developed and supported by the Forest Service, which can simultaneously analyze the trade off between the many goals, constraints, management activities, timing options and land types which are necessary to manage a large forest. Spectrum uses a linear program software program called C-Whiz, which in turn uses the Simplex method.

Prior to the Spectrum analysis there was considerable work done to prepare data for input to the Spectrum model. This work included: identification of lands tentatively suitable for timber harvest (per 36 CFR 219.14); analysis unit development; timber yield table development; economic information development; management prescription development; and determination of suitable acreage within each alternative. The current and proposed Forest Plan Standards and Guidelines provided a framework for constraints, the design of analysis units and the development of possible timber management actions. Costs associated with various harvest activities and revenue from timber sales by product were developed as additional inputs to the model. Outputs from the timber harvest schedule model included an allowable sale quantity (ASQ) for each alternative, the timber management schedules to achieve each ASQ, and some indicators to track specific types of wildlife habitat. The analysis uses acreage figures derived from Geographic Information System (GIS) data.

Suitability Criteria for Spectrum Model

In order to use the Spectrum model, timber stands must be classified as suitable or unsuitable for harvesting. The CDS (Combined Data System) database was used, in conjunction with the vegetation GIS layer, to determine suitability. In the CDS, individual stands have a LSC (Land Suitability Classification) code which identifies stand characteristics. Using these codes, unsuitable stands were removed from the dataset, leaving the suitable areas for the Spectrum analysis.

Starting with landbase of 233,638 acres, stands were removed for the following LSC codes:

- 8,679 acres – Non-forested
  - LSC 100 – Open water
  - LSC 200 – Non-forested land
  - LSC 210 – Designated Wildlife Openings
- 1,577 acres – Withdrawn from timber production
  - LSC 300 – Administratively Withdrawn

    (These are stands in Research Natural Areas, Special Areas and Candidate Special Areas. Since the plan, regardless of alternative, calls for an expansion of the number of these areas, stands not coded 300 but in one of these planned areas were also classified as unsuitable. The vegetation layer and alternative management areas layers were used to make this determination.)
- 1,218 acres – Not physically suited for timber production
  - LSC 720 – Irreversible damage

    (Stands with this code are on steep slopes of 55% grade or greater, have unstable soils or have a unique ecosystem.)
- 38,232 acres – Not appropriate for timber production
  - LSC 740 – Strip mined land
  - LSC 800 – Not presently appropriate for timber production
  - LSC 801 – Other resource precludes timber production

    (This category includes riparian areas, wildlife habitat, threatened and endangered species habitat and recreation areas.)
  - LSC 810 – Other use
  - LSC 820 – Timber production not cost effective
- 8,779 acres
  - No LSC Code
- 59 acres – The CDS database also has a site index for each stand.

  (Stands with a site index of less than 35 were also determined to be unsuitable.)

After the removal of the unsuitable acres, 175,094 acres of suitable land remained for the Spectrum model.

Spectrum chooses among alternative solutions, given a set of constraints and an objective such as maximizing income or timber volume. The model evolved from the Forplan optimization model that was used in the initial round of forest planning. Spectrum version 2.6 was used for for the WNF Forest Plan revision. As a tool, the model is flexible and can be adapted to the needs of each individual planning problem. The model scheduled timber harvesting for the next 15 decades and provided an estimate of long-term sustained yield (LTSY) capability for each of the Plan alternatives.

Timber Harvest Schedule Model – Process Overview

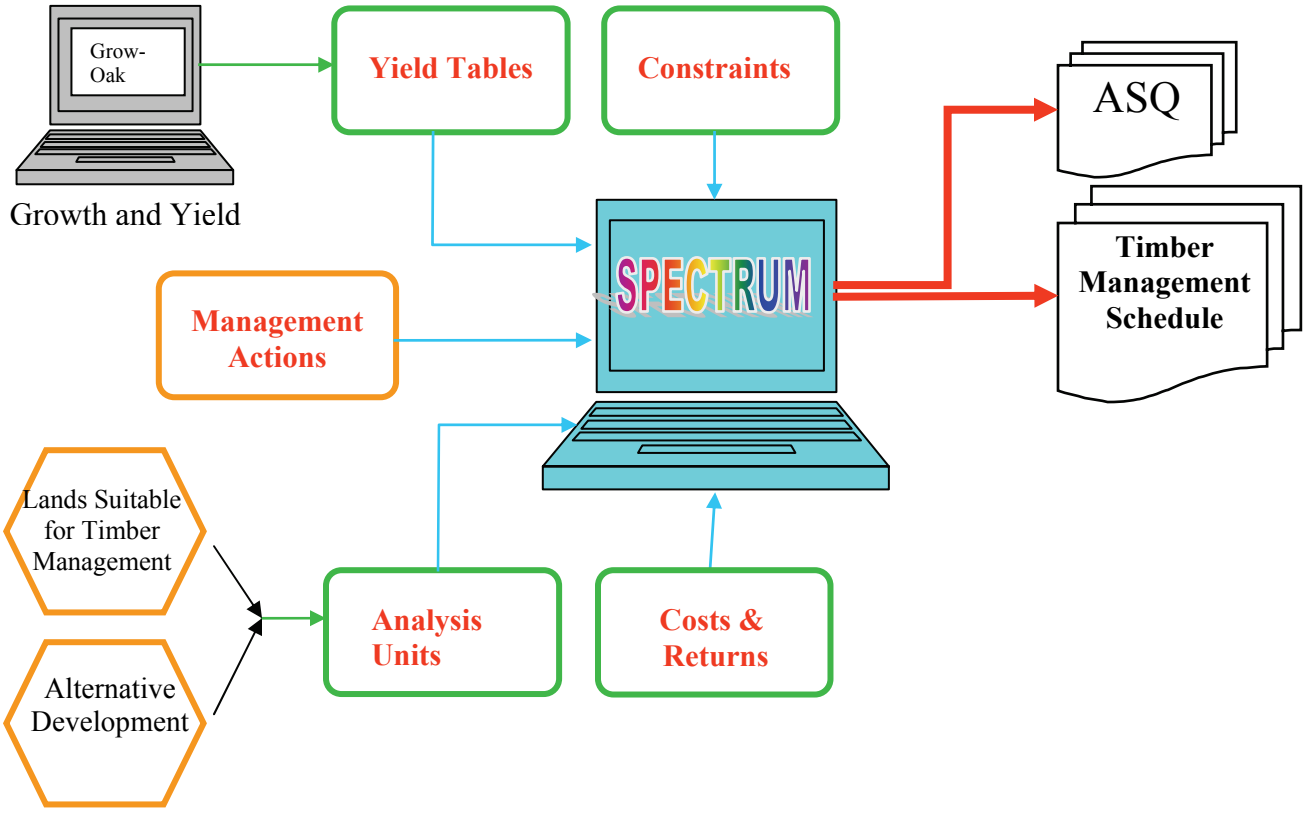

Figure B - 2. Timber Harvest Schedule Model – Process Overview

The results of the Spectrum model are not intended to be interpreted as an exact prediction of timber outputs. The actual timber harvest will be influenced by factors that we cannot know or cannot be modeled, such as climate change, national policy, and demand for wood products. The model is used only to estimate the relative differences between Plan alternatives. These differences will be one of many factors used to choose the preferred alternative.

There are two basic components of the Spectrum model the analysis units and the yield tables. The analysis units are basic land allocation units used by the model. The analysis units are defined by five levels of delineator (Table B - 14). Over a thousand different analysis units are potentially available. The yield tables provide the volume of trees available for harvest by 10-year age class. The Forest chose to use the same yield tables that were developed for the current Forest Plan (USDA, Forest Service, 1987 [DEIS], B3-42). Based on input from the WNF's Forest Silviculturist and the researchers with the Northeast Forest Experiment Station in Delaware, Ohio, the planning interdisciplinary team believed these tables to be both accurate and adequate for the Plan revision calculations.

Table B - 14. Layers Considered in Developing Analysis Units.

District	Athens Ironton	
Management Area	CA DR DCF DCF/O FSM FSM/O FOF FOFMA	9. GFM 10. HF 11. HFORV 12. RNA 13. RC 14. SA 15. TRL
Cover Type	Hardwood Pine	
Age Class	0-19 20-39 40-59 60-79 80-100 100+	
Condition Class	Good Sites – Valley bottoms Average Sites – Midslopes Poor Sites – Ridge Tops	

Analysis units and yield tables are linked by possible management actions. The model calculates potential timber harvest by first determining which management actions apply to each of the analysis units. The management actions were designed to cause the model to duplicate the vegetative conditions envisioned for the various management areas (Chapter 3). Openings would be created by simulating clear-cutting – two aged stands created by simulating partial harvests – and multiple age stands created by simulating selective single tree harvests. The model assigns the one management action to the analysis unit that will maximize the present value of the Forest. Management actions are each associated with a yield table. The volume harvested is calculated by multiplying the acres in the analysis area by the volume in the yield table.

A number of directions, also called constraints, were applied to the model. These constraints were developed to recognize the reality of how the Forest will have to conduct timber harvesting within the suitable base. The constraints were chiefly used to insure that management actions were applied to the management area at the level and intensity needed to meet Plan goals.

Examples of constraints that were applied on the suitable base are presented in Table B - 15.

Table B - 15. Examples of Constraints used in the Spectrum Model.

Description of Constraint	Purpose of Constraint
Uneven age harvested acres in any given decade is >= the previous decade	Insure that harvested acres are evenly distributed through time.
Even age harvest acres >=0	Insure that there will be some even aged harvest in every decade
Even age harvested acres in any given decade is >= the previous decade	Insure that harvested acres are evenly distributed and non-declining through time.
Economic activity is >= 0 in all the decades	Insures that economically viable timber harvest will be modeled in each decade.
Uneven aged acres in RC <= 80% and >= 75% of total acres in RC	Between 75 and 80 percent of the acres in the RC management area will receive uneven age management.
Uneven aged acres in FSM <= 25% and >= 10% of total acres in FSM	Between 10 and 25 percent of the acres in management area FSM with receive uneven age management.
Acres of young hardwood in FSM <= 8 % of total acres in FSM	Insure that up to 8 percent of the FSM management area is kept in wildlife openings
Uneven aged acres in DCF <= 85% and >= 75% of total acres in DCF	Between 75 and 80 percent of the acres in the DFC management area will receive uneven age management.
Uneven aged acres in GFM <= 10 % and >= 1 % of total acres in GFM	Between 1 and 10 percent of the acres in management area GFM with receive uneven age management.

Spectrum is a linear programming model. It assumes that the relationship between outputs and the land base are linear, e.g., twice the number of similar acres yields twice the outputs. Other resource programs such as recreation are not addressed by Spectrum because their relationship with the land base is not linear. Spectrum builds a matrix of coefficients and transfers the file to a linear programming package for problem solution. Typical size of a matrix generated and solved for an alternative was on the order of 1,700 rows by 13,400 columns. The model then writes a report and produces a data file that contains the results. The data file can then be analyzed through comparisons with information in other databases.

Model Assumptions

Assumptions made for modeling timber management area prescriptions, allocations, outputs, and scheduling activities are:

- The Forest Land and Resource Management Plan (Plan) will be a strategic plan that will guide broad land-based decisions to implement certain goals and objectives.
- "On-the-ground" decisions will utilize the standards and guidelines from the Plan and any applicable implementation guides, to meet the strategic goals and objectives of the Plan.
- That the models used in this analysis are sufficient for strategic planning.
- That each alternative would use the same standards and guidelines and that only the area of land allocated to a management area would vary. Each alternative uses the same tentatively suitable timber lands for the timber harvest scheduling analysis.
- The Combined Data System's stand exam data is sufficiently accurate to use in the modeling.
- ASQ applies only to areas that permit commercial timber harvest by management area assignment.
- ASQ will not decrease between successive decades.
- Once lands are entered under a particular management strategy (uneven- vs. even-aged) and intensity (frequency of entry to harvest), that strategy and intensity will continue indefinitely on those lands without interruption.
- Two-aged prescriptions that initially involve regeneration harvest will be followed by an even-aged treatment strategy that includes thinning.
- The application of the Spectrum model on this Forest has a very limited spatial component, which does not consider adjacency and sale layout considerations. The model's results will have to be adjusted in order to make the results better reflect actual practice.
- Treatment schedules will be constructed to allow for extensions from the optimally designed treatment strategy in order to provide a robust set of modeling options consistent with maintaining non-declining yield.
- Timber road reopening/construction/improvement costs will continue to be paid by the successful bidder and is reflected as part of the stumpage value.

Species Viability

The process used in analyzing species viability on the WNF is fully discussed in Appendix E to this Final EIS entitled "Plant and Animal Diversity". In the interest of saving printing costs and paper, it is not repeated here.

Economic Analysis

Introduction

This portion of the appendix is intended to provide additional details regarding the economic impact analysis. It should provide the reader with a general understanding of the methods used and some of the models employed in the process. In this context, economic impacts refer to the effect, or impact, a change in the economic environment will have on jobs and income. The changes that are introduced to the economic environment reflect the changes in activity levels, such as recreational use and levels of timber harvest, that are present in each of the alternatives. These various levels of activity cause the number of jobs and income to change. Comparing the levels of change in income and employment from current and between alternatives provide the basis for most of the economic effects analysis in Chapter 3 of the Final EIS.

Defining the Economic Impact Analysis Area

The economic impact analysis area was defined as the counties that the WNF lies within or that have economic ties to the Forest: Athens, Gallia, Hocking, Jackson, Lawrence, Monroe, Morgan, Noble, Perry, Scioto, Vinton, and Washington. Since the counties are well connected through public road networks, it is reasonable to consider the counties as an entire area rather than individually. Additionally, most of the data available for economic research is available at the county level and therefore the counties provided a reasonable area in which to examine the economic activity and measure the Forest's economic impact. Researchers also concluded that it was appropriate to measure local effects, since the most significant economic impacts of activities on the Forest can often be felt by communities adjacent to or in close proximity to the Forest. The area of these counties captures all the towns adjacent to the Forest. It also includes some other larger communities that are geographically separated from the Forest but tend to be a primary source for goods and services for the adjacent communities.

By defining the economic impact analysis as this region, the data is therefore grouped together without geographical distinction or sub area categorization made within the models except where the activities on the Forest are isolated for the impact analysis. As the socio-economic affected environment section of Chapter 3 recognized, there are some economic qualitative differences present between the counties.

Economic Impact Analysis Methodology

IMPLAN Model

Economic effects were estimated using an economic input-output model developed with IMPLAN Professional 2.0. The early version of this

software was originally developed by the Forest Service and has since been taken over by a private company, Minnesota IMPLAN Group, Inc. (MIG, Inc.). The model uses national input-output tables from the Bureau of Economic Analysis (BEA), secondary economic data at the county level from a variety of public sources, and proprietary procedures to develop an input-output model for a study area.

The Regional Economist assisted the WNF in developing its IMPLAN model. The income and employment data was derived from 2000 data, the most recent available data at the time.

Subsequent analysis was performed using an electronic worksheet tool (FEAST). FEAST was developed by the Forest Service's Inventory and Monitoring Institute to apply the coefficients and multipliers generated in IMPLAN to varying levels of inputs by alternative and display the outputs in terms of impacts on employment and labor income.

The impacts to local economies in the model are expressed in terms of employment and labor income. Employment is expressed in jobs; a job can be seasonal or year-round, full-time or part-time. The number of jobs is computed by averaging monthly employment data from state sources over one year. The income measure used was labor income in 2003 dollars. Labor includes both employee compensation (pay plus benefits) and proprietor's income (e.g. profits by self-employed).

Timber

Information on timber stumpage values was derived from the timber volumes projected by the Spectrum model. Total revenues were calculated by multiplying these volumes by the average stumpage values of the most recent timber sales on the Forest.

Recreation

Estimating the economic impacts of recreation on the Forest involved these steps:

- Determine how many visitors by recreational activity recreate on the Forest in a year. The number of visitors is converted to a standardized unit of measure termed a recreational visitor day (RVD) using an activity dependent length-of-stay factor. The basic numbers were taken form a formal survey of Forest users (National Visitor Use Monitoring Survey [NUVM], USDA Forest Service, 2004)) conducted in 2003 and 2004.
- Determine how much money the average visitor spends within the analysis area, by recreational activity, on a daily basis. This is referred to as a spending profile. Recreation spending categories used were based on NVUM national level averages.

- By recreational activity, multiply the number of RVDs by the activity's spending profile to estimate the amount of money recreational visitors spend during a recreational visit to the Forest.

Economic Efficiency Analysis

Introduction

The economic efficiency analysis evaluates the alternatives in terms of their net public benefit. Net public benefit is defined as the "…overall long-term 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 "(36 CFR 219.3). It is very important to understand that these estimates are based on gross speculation as to future events and their impact on the WNF. These estimates are intended only as one measure to compare alternatives. The estimates presented here should not be used as predictions of the actual economic impact of the WNF. In this context, these various activities are generally timber related activities. Other activities, such as those related to recreation and minerals, while important, do note vary significantly between alternatives and were negligible compared to the impact of timber sales. Information as to the value of the resources was also very difficult to quantify. For the above reasons, this analysis does not include speculation as to the future value of minerals and recreation. The economic analysis uses net present value (NPV) to estimate an alternative's overall net public benefit.

Methodology

The economic efficiency analysis employs many of the inputs used in the economic impact analysis for the first decade. The economic and financial efficiency analysis extends the time horizon on these inputs to a period of 100 years instead of the average annual for the first decade of implementation used in the economic impact analysis. The NPV calculation, using an annual discount rate of four percent, is then calculated over the entire 100 year period to estimate the long-term value.

Table B - 16. Employment by Program by Alternative (Average Annual, Decade 1).

	Total Number of Jobs Contributed					
Resource	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Recreation	187	191	184	191	189	183
Wildlife and Fish	72	74	71	74	73	70
Grazing	0	0	0	0	0	0
Timber	35	145	184	189	191	156
Minerals	87	88	86	88	88	86
Payments to States/Counties	3	7	7	7	7	6
Forest Service Expenditures	177	189	189	190	190	189
Total Forest Management	560	694	720	740	738	689
Percent Change from Current	---	23.8%	28.5%	32.1%	31.6%	23.0%

Table B - 17. Labor Income by Program by Alternative (Average Annual, Decade 1; $1,000,000).

	Millions of dollars					
Resource	**Alt. A**	**Alt. B**	**Alt. C**	**Alt. D**	**Alt. E**	**Alt. F**
Recreation	$3.9	$4.0	$3.8	$4.0	$3.9	$3.8
Wildlife and Fish	$1.6	$1.6	$1.5	$1.6	$1.6	$1.5
Grazing	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Timber	$1.1	$4.4	$5.6	$5.7	$5.8	$4.7
Minerals	$2.6	$2.6	$2.6	$2.6	$2.6	$2.5
Payments to States/Counties	$0.1	$0.2	$0.2	$0.3	$0.2	$0.2
Forest Service Expenditures	$7.3	$7.8	$7.8	$7.9	$7.9	$7.8
Total Forest Management	$16.5	$20.7	$21.6	$22.1	$22.0	$20.6
Percent Change from Current	---	25.8%	31.0%	34.2%	33.8%	25.4%

Table B - 18. Employment by Major Industry by Alternative (Average Annual, Decade 1).

	Total Number of Jobs Contributed					
Industry	**Alt. A**	**Alt. B**	**Alt. C**	**Alt. D**	**Alt. E**	**Alt. F**
Agriculture	10	11	10	11	11	10
Mining	4	5	4	5	5	4
Construction	68	72	70	72	72	69
Manufacturing	35	98	122	125	126	105
Transportation, Communication, & Utilities	15	20	20	21	21	19
Wholesale trade	16	20	21	22	22	20
Retail trade	141	156	155	160	159	152
Finance, Insurance, & Real Estate	17	21	22	22	22	21
Services	121	141	142	147	146	138
Government (Federal, State, & Local)	134	149	150	153	152	148
Miscellaneous	2	2	2	2	2	2
Total Forest Management	560	694	720	740	738	689
Percent Change from Current	---	23.8%	28.5%	32.1%	31.6%	23.0%

Table B - 19. Labor Income by Major Industry by Alternative (Average Annual, Decade 1; $1,000,000).

	Millions of dollars					
Industry	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Agriculture	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Mining	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Construction	$1.7	$1.8	$1.8	$1.9	$1.8	$1.8
Manufacturing	$1.3	$3.3	$4.0	$4.1	$4.1	$3.5
Transportation, Communication, & Utilities	$0.7	$0.9	$1.0	$1.0	$1.0	$0.9
Wholesale trade	$0.7	$0.8	$0.9	$0.9	$0.9	$0.8
Retail trade	$2.2	$2.5	$2.5	$2.6	$2.5	$2.4
Finance, Insurance, & Real Estate	$0.5	$0.6	$0.6	$0.6	$0.6	$0.6
Services	$2.6	$3.1	$3.1	$3.2	$3.2	$3.0
Government (Federal, State, & Local)	$6.6	$7.4	$7.4	$7.6	$7.5	$7.4
Miscellaneous	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Forest Management	$16.5	$20.8	$21.6	$22.2	$22.1	$20.7
Percent Change from Current	---	25.7%	30.9%	34.0%	33.6%	25.3%

Table B - 20. Forest Service Revenues and Payments to Counties (Annual Avg, Decade 1; $1,000,000)

Forest Service Program	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Recreation	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Wildlife and Fish	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Grazing	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Timber	$0.2	$0.8	$0.9	$0.9	$0.9	$0.7
Minerals	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Soil, Water & Air	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Protection	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Revenues	$0.4	$1.1	$1.2	$1.2	$1.2	$1.0
Payment to States/Counties	$0.1	$0.3	$0.3	$0.3	$0.3	$0.3

Table B - 21. Current Role of Forest Service-Related Contributions to the Area Economy

	Employment (jobs)		Labor Income ($ million)	
Industry	Area Totals	FS-Related	Area Totals	FS-Related
Agriculture	11,857	10	$116.2	$0.2
Mining	4,000	4	$107.8	$0.1
Construction	22,223	68	$705.9	$1.7
Manufacturing	39,270	35	$1,809.0	$1.3
Transportation, Communication, & Utilities	13,828	15	$605.2	$0.7
Wholesale trade	10,163	16	$365.2	$0.7
Retail trade	62,876	141	$959.8	$2.2
Finance, Insurance, & Real Estate	15,130	17	$321.5	$0.5
Services	85,894	121	$2,304.5	$2.6
Government (Federal, State, & Local)	53,488	134	$2,011.9	$6.6
Miscellaneous	1,817	2	$15.8	$0.0
Total	320,548	560	$9,322.8	$16.5
Percent of Total	100.0%	0.2%	100.0%	0.2%

NPV Inputs and Assumptions

Timber

The volume of timber sales was derived from Spectrum model volume output estimates per decade. Revenues for these sales are averages of actual average revenues of recent timber sales. Timber program costs were based on estimates of the average cost of the most recent sales.

Economic Efficiency Results

The results of the economic efficiency estimates are shown in Table B-22. The timber program is the major contributor to the net present value of the Forest. The "other resources" category includes both recreation and minerals. The small differences seen across alternatives demonstrate that these activities are treated very much the same for all alternatives. The important distinction one must realize is that financial efficiency does not consider the value of non-monetary activities on the Forest. These types of activities would by primarily connected to recreational activates and as explained above would not vary significantly between alternatives.

Table B - 22. Net Present Value (NPV*) of Plan Alternatives ($MM).

	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt E $_{mod}$	Alt. F
Timber Revenue	$260.4	$2,777	$1,251	$1,274	$1,262	$1,248	$1,008
Timber Cost	$-240.1	$-766	$-365.5	$-514	$-626	$-618	$-539
Other Revenue	$273.0	$281.2	$270.3	$281.2	$275.7	$275.7	$267.5
Total	$293.3	$2,292.2	$1,155.8	$1,041.2	$911.7	$905.7	$736.5

*NPV calculated over 100 years at a 4% discount rate

Alternative B is the most financially efficient of the alternatives when considered over a 100 year period. This is due to a mix of treatment strategies that emphasizes even-aged timber management to produces a relatively steady flow of net revenue. Alternative A has the lowest ASQ and produces the least net revenue in the first 10 decades. This alternative has a heavily constrained output in the first three decades which is the primary cause of the overall lower NPV. Alternatives C, D, E, and E_{mod} would produce very similar timber outputs. The major difference between them is that Alternative D shows lower costs because it would produce more volume using relatively less costly even-aged management techniques. Alternative F would generate the second lowest timber volume and this is reflected in its NPV.

Scenery Management System Inventory and Assignment Process

Introduction

This appendix documents the Scenery Management System (SMS), a process implemented by the WNF concurrent with the Forest Plan revision. SMS presents a systematic approach for determining the relative value of scenery in and around a national forest. SMS is similar to the Visual Management System (VMS) but updates methodology, terminology, and is designed to be a valuable tool in developing desired future conditions and high quality settings in the context of ecosystem management. SMS follows a sequence of steps to inventory the Forest's existing scenic integrity and to produce a new set of scenic integrity objectives (SIO) for each Plan alternative.

The Handbook for Scenery Management, Agriculture Handbook No. 701, gives a detailed explanation of the SMS process. This appendix documents the Forest's interpretation of national direction and explains the use of the geographical information system (GIS) for data analysis and map production. Using GIS saves substantial analysis time, yields high quality map products, and allows flexibility to make changes more rapidly. The process ensures equitable consideration of scenery in development of plan alternatives and full integration with management of other resources. This appendix describes nine primary steps for integrating the SMS into the planning process. Other SMS components, such as standards and guidelines, and monitoring requirements, are included in the Forest Plan. The steps are as follows:

- Analyze existing scenic integrity
- Determine landscape character
- Determine inherent scenic attractiveness
- Map seen area and distance zones
- Determine constituent concern levels
- Determine initial scenic class assignments
- Consolidate scenic class assignments
- Assign scenic integrity objectives to management areas
- Analyze and ensure consistency with ROS.

Since the last Forest Plan revision (1988), changes have occurred in the Forest's social and ecological landscape.

SMS Inventory Process

Step 1: Analyze Existing Scenic Integrity

Existing scenic integrity (ESI) is defined as the current state of the landscape considering previous human alterations. Although ESI is not a direct contributor to final scenic class assignments, it serves multiple purposes in forest planning and provides important benchmarks for decision-making

Utilizing GIS technology, the Forest mapped its ESI using several land information layers to determine the extent of land disturbances in the landscape over the past decade. Land satellite imagery showing land and forest cover type, as well as strip mine and oil and gas development overlays were used. Numerical values were given for each land cover type with "1" having the lowest land value and "9" having the highest. (See Table B - 23)

Table B - 23. Land Characteristic Values for Determining ESI.

Land Characteristics	Points
Open Water	9
Low Intensity Residential	5
High Intensity Residential	3
Commercial/Industrial/Transportation	2
Bare Rock/Sand/Clay	1
Quarries/Strip Mines/Gravel Pits	1
Transitional	3
Deciduous Forest	9
Evergreen Forest	9
Mixed Forest	9
Shrubland	7
Orchards/Vineyards/Other	5
Grasslands/Herbaceous	5
Pasture/Hay	5
Row Crops	3
Small Grains	3
Fallow	3
Urban/Recreational Grasses	3
Woody Wetlands	9
Emergent Herbaceous Wetlands	9
Oil and Gas Wells	3

Source: WNF Forest Plan Project File for Scenery Management

To simplify the analysis, land values were lumped by watersheds and an ESI rating was assigned to each watershed (See Tables 24 and 25).

Table B - 24. ESI Value Range

ESI Rating	ESI Numerical Range
High	Greater than 8.0
Moderate	7.46 through 8.0
Low	Less than or equal to 7.45

Source: WNF Forest Plan Project File for Scenery Management

Table B - 25. Average ESI Values by Watersheds

Watersheds	Average ESI	ESI Rating	WNF Acres	Acres in Watershed
Ohio River below Fishing Cr. (WV) to above Leith Run	7.78	Moderate	8,673	31,394
Ohio River from above Leith Run to above Middle Island	8.13	High	7,513	12,968
Ohio River below Middle Island Cr. (WV)	7.77	Moderate	3,274	15,503
Crane-nest Fork above Rich Fork	7.87	Moderate	444	16,845
Rich Fork	7.88	Moderate	1,567	14,322
Little Muskingum River below Rich Fk. above Witten Fork	7.71	Moderate	3,119	13,561
Witten Fork	7.93	Moderate	4,678	27,091
Little Muskingum River below Witten Fk. to above Cl. Fk.	7.76	Moderate	4,957	23,494
Clear Fork	7.63	Moderate	5,099	31,220
Little Muskingum River below Clear Fk. to above Arch. Fk	7.67	Moderate	8,800	23,247
Archers Fork	7.96	Moderate	6,322	11,854
Fifteen Mile Creek	8.04	High	3,184	13,096
Little Muskingum River below Archers Fk. to Ohio River	7.82	Moderate	4,681	26,615
East Fork Duck Cr. below Elk Fk. to above Middle F	7.65	Moderate	312	25,784
Paw Paw Creek	7.71	Moderate	1,181	14,997
Duck Creek below confluence of E. Fk. and W. Fk.	7.97	Moderate	24	15,818
Duck Creek from Stanleyville to Ohio River	7.68	Moderate	130	11,856
Five-mile Creek	7.66	Moderate	430	9,188
Hocking River below Five-mile Cr. to above Monday Crk.	7.61	Moderate	7,947	26,903
Monday Creek headwaters to above L. Monday Creek	7.77	Moderate	12,908	23,405
Little Monday Creek	7.47	Moderate	2,302	16,070
Monday Creek below L. Monday Cr. to Hocking River	7.84	Moderate	9,900	17,306
Snow Fork	8.03	High	8,061	17,428
Sunday Creek headwaters above E. Branch	7.59	Moderate	3,506	15,434
East Branch Sunday Creek	8.22	High	5,895	21,188
West Branch Sunday Creek	7.99	Moderate	3,142	27,190
Sunday Creek below E. Branch to Hocking R.	8.18	High	6,583	24,961
Hocking River below Monday Cr. to above Sunday Cr.	7.75	Moderate	2,785	14,119
McDougall Branch above Mush Run	7.08	Low	1	8,955
Mush Run	7.64	Moderate	318	8,427
Hocking River from Athens to above Willow Cr.	7.95	Moderate	8	11,721
East Branch Raccoon Creek above West Branch	7.58	Moderate	4,348	12,762
West Branch Raccoon Creek above East Branch	7.14	Low	62	14,536
Raccoon Creek below W. Branch to above Brushy Fk.	7.36	Low	36	10,413
Brushy Fork	7.92	Moderate	1,333	21,625
Hewett Fork	8.08	High	1,012	25,942
Elk Fork above Wolf Run	8.36	High	386	20,965
Raccoon Creek below Indian Cr. to Ohio R.	7.66	Moderate	156	52,675
Symmes Creek headwaters above Black Fk.	7.71	Moderate	453	36,121
Black Fork [except Dirtyface Cr.]	8.05	High	2,411	31,490
Dirtyface Creek	8.37	High	4,869	8,632
Symmes Creek below Black Fk. to above Sand Fk.	8.01	High	5,204	9,805
Sand Fork	7.44	Low	2,842	27,169
Symmes Creek below Sand Fk. to above Buffalo Crk.	7.88	Moderate	5,463	15,990
Buffalo Creek	8.44	High	9,040	11,205
Symmes Creek below Buffalo Cr. to above Long Cr. [	7.59	Moderate	1,592	11,872
Johns Creek	8.23	High	7,880	14,471
Long Creek	7.81	Moderate	283	9,931
Symmes Creek below Long Cr. to Getaway	8.07	High	7,589	37,484
Ohio River below Ice Cr. to above L. Sandy R.(KY)	8.21	High	1,754	10,255
Storms Creek	8.30	High	8,861	23,601
Ginat Creek	8.25	High	272	8,821
Pine Creek headwaters above Hales Cr.	8.23	High	13,137	21,349
Hales Creek	7.66	Moderate	3,610	20,632
Pine Creek below Hales Cr. to above L. Pine Cr.	8.14	High	12,631	24,759
Little Pine Creek	8.27	High	8,636	18,874
Sperry Fork	8.22	High	4,259	7,128
Pine Creek below L. Pine Cr. to Ohio R. [except Sp	7.93	Moderate	511	18,344
Lick Run	8.19	High	186	6,772
Frederick Cr.	7.91	Moderate	357	10,039

Source: WNF Forest Plan Project File for Scenery Management

Step 2: Determine Landscape Character

Landscape character descriptions were determined for the Forest, each focusing on key attributes found consistently throughout the WNF. Landscape descriptions give an overview of landform patterns, water characteristics, vegetation patterns, and cultural elements. Describing the Forest's landscape character not only gives a picture of the Forest landscape settings, but also provides context for completing the analysis. Landscape descriptions were developed within the ecological framework as described in the 1997 WNF Ecological Classification Handbook, and historical information acquired from Forest specialists (Archeologist, Foresters, etc.).

The WNF lies within one of Ohio's oldest landscape, the Southern Unglaciated Allegheny Plateau Section (221E). The Forest occurs in a fairly homogenous landscape when compared to other national forests in the Eastern Region. The Land Type Associations (LTAs) on the Wayne are likely to be found in the East and West Hocking Plateaus (Ironton and Athens Units) and the Ohio Valley Hills (Marietta Unit) Subsections (USDA Forest Service, 1999).

Step 3: Determine Constituent Concern Levels

Concern levels measure the degree of public importance and can be divided into three categories: levels 1, 2, and 3. A rating of 1 represents the highest level of public concern, sensitivity, or importance, and 3 denotes the lowest. Criteria found on pages 4 through 8 and 4 through 9 of the Scenery Management Handbook for mapping concern levels were used.

Due to the limited time that it had to complete the scenery management inventory, the Forest elected not to mail out visitor surveys to obtain constituent information related to scenery (as recommended by the SMS Handbook). However, the Forest rated the concern levels of travelways and use areas based on district employees' inputs and their professional knowledge and experience of public views and concerns for the Forest's scenic resources. Additionally, comments about scenery received during the Forest Plan scoping process and open houses were also considered.

All roads, trails, canoeable streams, lakes, developed recreational areas, or areas on the Forest where scenery is considered important were identified, assigned a concern level, and hand mapped. Once concern levels were hand mapped, the information was digitized into the Forest's GIS system to eventually produce the Forest's landscape visibility map.

Step 4: Map Seen Areas and Distance Zones

Distance zones were used to map the seen area (areas that can be "seen" from the inventoried use areas and travelways). Using GIS, distance zones as seen from use areas and travelways were mapped as foreground, middle ground, or background. Foreground was determined to be from 0 to ½ mile; middle ground was from ½ mile to 4 miles; and background was greater than 4 miles. After GIS ran the distance zone analysis, it was determined that the Forest has no "background". This was expected due to relatively high road density and the absence of large topographic relief, such as mountains, on the Forest.

Using GIS, concern level information extracted from Step 3 were combined with foreground and middleground distance zone information from Step 4 to produce a Forest landscape visibility map and a distance zone/concern level matrix.

Step 5: Determine Inherent Scenic Attractiveness

The inherent scenic attractiveness (ISA) analysis measures the scenic importance of a landscape based upon human perceptions of the intrinsic beauty of landform, rock form, vegetation patterns, and water characteristics. Forest landscape character descriptions serve as frames of reference for determining ISAs. Features are compared singularly or in combination with those features found in a characteristic landscape. Using this comparison, an area's overall inherent scenic attractiveness can be determined.

The three ISA classifications are:

- Class A – Distinctive
- Class B – Typical or common
- Class C – Undistinguished

District and Supervisor's Officer employees were involved in assigning ISAs to all Forest lands. These lands were based on the employees' perceptions of the inherent beauty of each area's natural features and character. An ISA classification of "A" was assigned to areas with land features or natural characteristics that were considered unique or special to the Forest; ISA classification of "B" was assigned to areas with features or natural characteristics that are common to the Forest; and ISA classification of "C" was assigned to areas with features or natural characteristics that are unexceptional to the Forest, such as unreclaimed mined areas.

These classifications were used along with distance zones and concern levels to produce scenic class assignments.

Step 6: Determine Scenic Class Assignments

Using GIS, scenic classes were assigned by analytical correlation of the inherent scenic attractiveness classes, the distance zones and concern levels in accordance with the matrix displayed as Table 26. Scenic classes define the relative value of scenery on all lands and helped determine how scenic resources were allocated during the alternative development process.

Table B - 26. Scenic Class Assignment Matrix

ISA	Distance Zones and Concern Levels					
	FG1	MG1	FG2	MG2	FG3	MG3
A	1	3	2	4	3	4
B	1	4	2	5	4	5
C	2	5	4	7	6	7

Source: WNF Forest Plan Project File for Scenery Management and Scenery Management Handbook

Step 8: Assign Scenic Integrity Levels to Management Areas

The interdisciplinary team determined how scenic classes would be allocated to each management area to yield SIO assignments, as Table B - 27 illustrates. Management area boundaries are based on Desired Future Condition (DFC) boundaries, and they vary by Forest Plan alternative. Assigning SIOs by management area is the most logical and ecologically sound method because the relative management concern for scenery is linked closely to assigned management area DFCs.

Table B - 27. Scenic Integrity Objective Assignment Matrix

	Scenic Classes				
Management Areas	1	2	3	4	5
Candidate Area	H	H	M	M	M
Developed Recreation	H	H	H	H	H
Diverse Continuous Forest	H	M	M	M	L
Diverse Continuous Forest w/OHV	H	M	M	M	L
Forest and Shrubland Mosaic	H	M	M	M	L
Future Old Forest	H	H	M	M	L
Future Old Forest w/Mineral Activity	H	H	M	M	L
Grassland and Forest Mosaic	H	H	M	M	L
Historic Forest	H	M	M	M	L
Historic Forest w/OHV	H	M	M	M	L
Research Natural Area	H	H	M	M	M
River Corridor	H	H	M	M	M
Special Area	H	H	M	M	M
Timbre Ridge Lake Area	H	H	H	H	H

Scenic Integrity Levels

Source: WNF Forest Plan Project File for Scenery Management

Scenic class assignment maps were produced for each Forest Plan alternative. Scenic class maps vary between alternatives based on their management area differences. Maps for each district and alternative are not shown, but are contained in the Forest Plan process records. Scenic Integrity Objective Assignments by Alternative are displayed in Table B - 27 below.

Proposed scenic integrity levels for the selected alternative become the scenic integrity objectives (SIOs) for the Revised Forest Plan.

Table B - 28. Scenic Integrity Objective Assignments by Alternative (Acres and % of Forest)

Scenic Integrity Objectives	Alt. A (acres and %)	Alt. B (acres and %)	Alt. C (acres and %)	Alt. D (acres and %)	Alt. E (acres and %)	Alt. E_{mod} (acres and %)	Alt F. (acres and %)
High	63,693 (27%)	63,693 (27%)	71,147 (30%)	68,615 (29%)	71,147 (30%)	72,033 (30%)	79,337 (33%)
Moderate	166,164 (70%)	166,164 (70%)	158,709 (67%)	161,241 (68%)	158,709 (67%)	157,823 (67%)	150,519 (64%)
Low	8,156 (3%)	8,156 (3%)	8,156 (3%)	8,156 (3%)	8,156 (3%)	8,156 (3%)	8,156 (3%)

Source: WNF Forest Plan Project File for Scenery Management

Step 9: Analyze and Ensure Consistency with ROS

Assigned SIOs were evaluated for consistency with minimum SIOs required for each ROS objective. (See Table 29)

Table B - 29. ROS/SIO Minimum Consistency Crosswalk

ROS Objective	SIOs
Semi-primitive non-motorized	High
Rural*	Moderate or higher
Roaded Natural	Low to Moderate

Source: WNF Forest Plan Project File for Scenery Management

Rural ROS objectives on the Forest are assigned only to the Developed Recreation Management Areas. However, the scenic resources in this management area are considered important to visitors. and therefore have been assigned higher scenic integrity levels. For this reason, no less than a "Moderate" SIO for minimum consistency have been assigned to the Rural ROS objective.

Table B - 30. Trail Outputs by Alternatives.

Trail Activity	Trail Outputs by Alternatives							Current Density or Miles
	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. E_{mod}	Alt F.	
New OHV Trail Construction (Density Range - miles/sq.mi)	3.2 to 6.4 mi/mi^2	3.2 to 6.4 mi/mi^2	2.0 to 3.5 mi/mi^2	2.0 to 3.5 mi/mi^2	2.0 to 3.5 mi/mi^2	2.4 to 3.5 mi/mi^2	2.0 to 3.5 mi/mi^2	Current Average Density: .98 mi/mi^2
New OHV Trail Construction (mileage range)	109 to 184 miles	109 to 184 miles	21 to 124 miles	21 to 154 miles	21 to 124 miles	21 to 124 miles	21 to 91 miles	Existing miles of OHV trails: 116 miles
New Hiking Trail Construction (mileage range)	5 to 14 miles	5 to 14 miles	5 to 30 miles	5 to 30 miles	5 to 30 miles	5 to 30 miles	5 to 30 miles	Existing miles of hiking trails: 81 miles
New Equestrian Trail Construction (mileage range)	5 to 30 miles	5 to 30 miles	5 to 50 miles	5 to 50 miles	5 to 50 miles	5 to 50 miles	5 to 50 miles	Existing miles of horse trails: 65 miles
New Mtn. Bike Trail Construction (mileage range)	15 to 30 miles	15 to 30 miles	15 to 30 miles	15 to 30 miles	15 to 30 miles	15 to 30 miles	15 to 30 miles	Existing miles of mtn. bike trails: 0 miles exclusively for mtn. bike use.
Non-motorized Trail Density (miles/sq.mi)	Up to 2.5 mi/mi^2	Up to 2.5 mi/mi^2	Up to 2.5 mi/mi^2	Up to 2.5 mi/mi^2	Up to 2.5 mi/mi^2	Up to 2.5 mi/mi^2	Up to 2.5 mi/mi^2	Varied among different trail types

OHV Areas – Potential Trails Analysis

Trail Outputs Tables and Rationale

This section compares the Forest's existing trail mileages and densities with mileage projections for new trail construction by alternatives in a tabular format. It also describes the rationale for how each trail output was generated.

Table B - 31. Trail Outputs Rationale by Trail Activity.

Management Activity	Recreation Outputs Rationale
New ATV/OHM Trail Construction (Density Range - miles/sq.mi)	The 1988 Forest Plan provides two densities for motorized trails: 3.2 mi/mi^2 for M.A. 2.3 and 6.4 mi/mi^2 for M.A. 3.2. The current average density of motorized trails is approximately 1.0 mi/mi^2. Not knowing how the 88' Forest Plan densities were generated, the Forest decided to map out the maximum miles of trails that could be reasonably constructed (with some environmental constraints) within the newly proposed OHV management areas. The results of the GIS mapping were: 2.00 to 2.44 mi/mi^2 could be reasonably constructed within the current WNF land base allocated for motorized trail use. However, a 3.5 mi/mi^2 maximum was proposed to allow for additional trails to be added if maintenance level 1 and 2 roads were converted for trail use, some user-developed trails were designated as system trails, and/or for future land purchases within the OHV management areas. The new trail density range for Alternative E-modified is set at 2.4 to 3.5 mi/mi^2. This is a derivative of the new construction mileage range of 50 to 124 miles for Alternative E-modified.

Management Activity	Recreation Outputs Rationale
New ATV/OHM Trail Construction (mileage range)	Mileage ranges were calculated using the following formula: Acres allocated for ATV/OHM use divided by 640 acres per mi^2 times proposed trail densities minus existing trail miles = Miles of new trail construction The bottom end of the mileage range (i.e. 21 miles shown for Alt. C-F) were calculated using the 2.0mi/mi^2 density, while the upper range of the trail miles were varied to provide a range among the alternatives. For Alternative E-modified, the lower end of the mileage range was increased from 21 miles to 50 miles while the upper end of the range remained at 124 new miles. This modification of Alternative E was made in response to public comments to the draft Revised Forest Plan and DEIS. The motorized vehicle community felt that the 21 to 124 miles initially proposed was too low to meet current and projected motorized trail use and demand. They requested a new mileage construction range to be set at 75 to 150 miles. The Forest felt it could reasonably construct 50 new miles within the next decade (and possibly more if additional funding and resources were available). However, the Forest did not feel it could exceed the current mileage maximum of 124 miles without adversely affecting natural resources. Therefore, the new mileage construction range for Alternative E-modified is set at 50 to 124 miles.
New Hiking Trail Construction (mileage range)	Alternatives A & B mileage ranges were based on outputs found in the 1988 Forest Plan for hiking trails. Alternatives C - F mileage ranges (essentially doubled from Alt. A & B) were based on miles of new hiking trails that were added in the previous decade (approx. 20 miles) and what the Forest with the help of volunteers could reasonably complete in the next decade with appropriate funding and resources.
New Equestrian Trail Construction (mileage range)	Alternatives A & B mileage ranges were based on outputs found in the 1988 Forest Plan for horse trails. Alternatives C - F mileage ranges were based on what the Forest with the help of volunteers could reasonably complete in the next decade with appropriate funding and resources.
New Mtn. Bike Trail Construction (mileage range)	The 1988 Forest Plan does not provide any mileage or density projections for new mountain bike trail construction. No trail system has been constructed on the WNF exclusively for mountain bike use. The Forest wants to develop at least one mountain bike trail system by the end of the next decade. The projected mileage range given were based upon the miles trails users say they prefer for a mountain bike trail system and what the Forest with the help of volunteers could reasonably complete in the next decade with appropriate funding and resources.
Non-motorized Trail Density	The 1988 Forest Plan provides a density of up to 2.0 mi/mi^2 horse and hiking trails. The new trail density was increased to 2.5 mi/mi^2 to provide more opportunities for new trail construction in a particular area. This new density is within the land's maximum carrying capacity (conclusion drawn from mileage and density analysis completed for OHV trails, which are typically wider trails). Unlike the OHV trail system which is confined to within the OHV management areas, non-motorized trails are generally allowed to be constructed over most of the Forest (with exceptions). Therefore, the trail density is applied differently for non-motorized trails compared to OHV trails. The 2.5 mi/mi^2 density for non-motorized trails is applied on site specific basis rather than within a particular management (like how OHV trail densities are applied).

Table B - 32. OHV Trail Outputs by Alternatives.

	WNF OHV Trail Outputs by Alternatives						
Trail Activity	**Alt. A**	**Alt. B**	**Alt. C**	**Alt. D**	**Alt. E**	**Alt. E_{mod}**	**Alt. F**
Existing OHV acres (FS only)	45,010	45,010	43,900	43,900	43,900	43,900	43,900
Square miles (total acres/640 acres per sq.mi.)	70	70	69	69	69	69	69
Existing OHV trail miles	116	116	116	116	116	116	116
Existing OHV Trail density (existing trail miles/sq.miles)	1.65	1.65	1.69	1.69	1.69	1.69	1.69
Potential new OHV trail miles	184	184	124	154	124	124	91
Projected maximum OHV miles (existing + new)	300	300	240	270	240	240	207
Density based on total OHV miles	4.27	4.27	3.50	3.94	3.50	3.50	3.02
Source of total trail miles/density	Current Forest Plan Projection	Current Forest Plan Projection	WNF 2004 mapping and analysis - Max. reasonable capacity. 20% less than Alt. A	10% less than Alt. A (to provide a reasonable range among alternatives.	WNF 2004 mapping and analysis - Max. reasonable capacity. 20% less than Alt. A	WNF 2004 mapping and analysis - Max. reasonable capacity. 20% less than Alt. A	1994 Trails Master Plan projection adjusted proportionately with 2004 acres allocated for OHV use.

Criteria Used For Determining and Mapping OHV Trail Density

- 25% maximum side slope
- 100’ from a known archeological site
- 100’ from oil and gas facilities
- 100’ from perennial streams
- 50’ from intermittent streams
- ¼ mile buffer from known hibernaculum
- 25’ from maintenance level 3-4 roads
- 50’ from center line of paved road
- 100’ from Forest boundary
- 100’ from newly reclaimed (10 years or less) watershed or mined area
- 100’ from riparian areas, marshes, wetlands, & ponds

- 200’ exclusion zone from alignments A & C of proposed Nelsonville Bypass
- 500’ from existing designated trail corridor

Content Analysis of Responses to Release of the Draft EIS and Draft Forest Plan

The process used in analyzing the responses to release of the Draft EIS and the Proposed Revised Forest Plan is described in the document titled, “Response to Comments Appendix to the Final Environmental Impact Statement”.