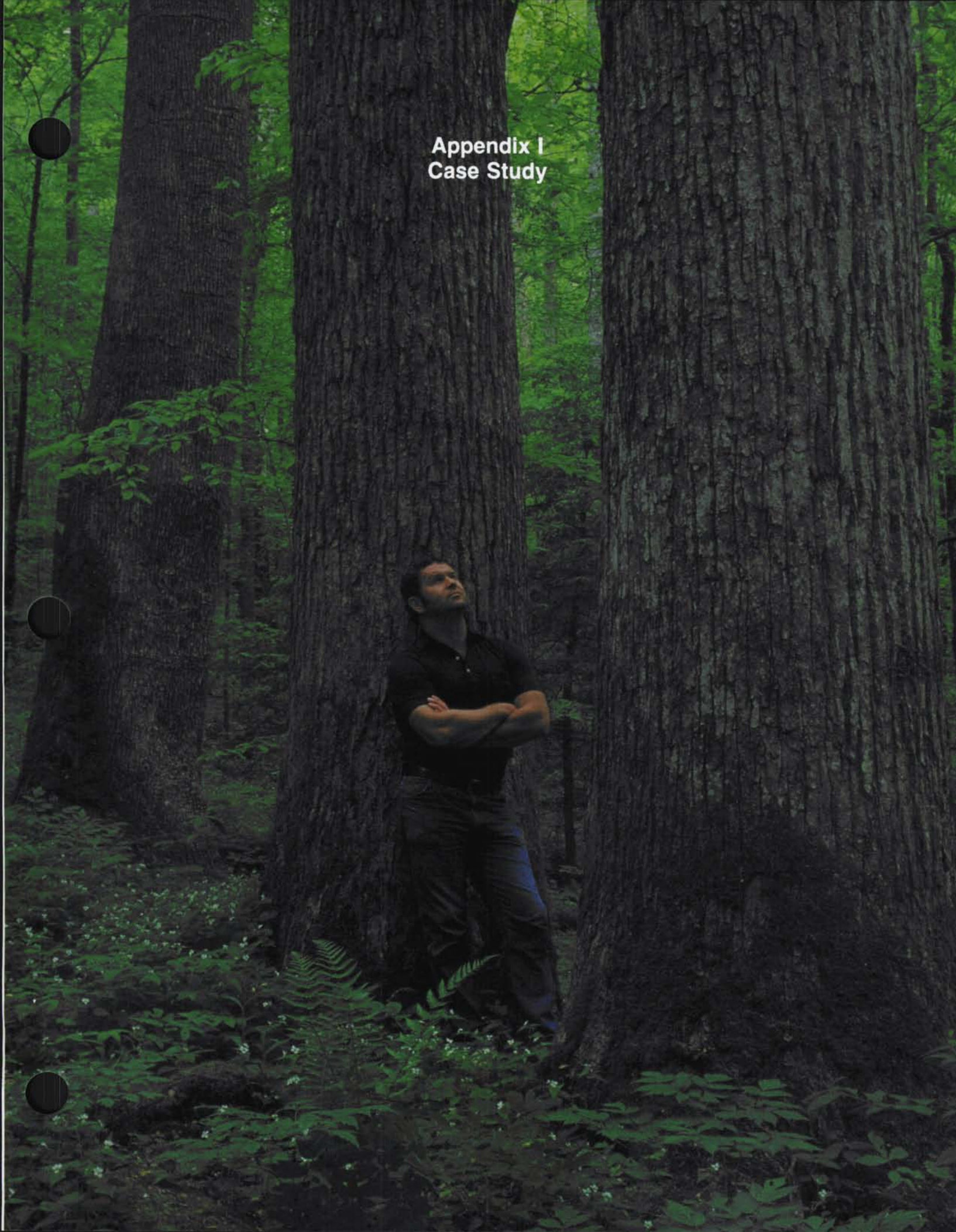


Appendix I
Case Study

Appendix I
Case Study

OVERVIEW

This case study describes the Scenery Management System (SMS) process being implemented by Kisatchie National Forest in the Forest Land and Resource Management Plan (FLRMP) revision. SMS is designed to be implemented as part of the Forest Plan revision process and is basically broken into two phases, the inventory phase and the implementation phase. The inventory phase requires a series of sequential steps to produce a map that displays the Initial Scenic Class Assignments. The implementation phase incorporates SMS into the Forest Planning process from alternative development to monitoring and evaluation. The process presented here goes through the development of FLRMP alternatives. The Kisatchie National Forest relied heavily on the use of GIS capabilities and existing data bases. GIS analysis and mapping is a tremendous time saver, produces a very high quality product, allows great freedom to make revisions and most importantly, insures the management of scenery is fully integrated with the management of other resources.

The Kisatchie National Forest incorporated eight primary components to integrate SMS into the FLRMP process:

INVENTORY:

Determine Landscape Character
Analyze Existing Scenic Integrity
Determine Inherent Scenic Attractiveness
Determine Landscape Visibility
Determine Initial Scenic Class Assignments

IMPLEMENTATION:

Consolidate Scenic Class Assignments
Assign Scenic Integrity Objectives to Management Areas
Produce Scenic Integrity Objective Maps

INVENTORY PHASE

DETERMINE LANDSCAPE CHARACTER
(Product - Narrative Description)

Landscape character descriptions were determined for the forest. Each landscape description focuses on key attributes found consistently throughout the area. Landscape descriptions give an overview of the landform patterns, water characteristics, vegetative patterns, and cultural elements.

Landscape character descriptions were developed within the ecological framework as described in Ecological Subregions of the United States: Section Descriptions July 1994 and based upon the map Ecoregions and Subregions of the United States (Bailey and others 1994). Bailey's publication (Bailey and others 1994), maps the Domain, Division, Province, and Section levels of the United States.

The Kisatchie National Forest is located within 3 provinces and 3 subsections as described by Bailey and others (1994): Southeastern Mixed Forest Province, Mid Coastal Plains, Western Section; Outer Coastal Plain Mixed Forest Province, Coastal Plains and Flatwoods, Western Gulf Section; and the Lower Mississippi Riverine Forest Province, Mississippi Alluvial Basin Section. Some regions are currently in the process of delineating subsections which will aid in Forest Plan analysis. Each forest is responsible for mapping the next lower levels in the hierarchy, Landtype Associations and

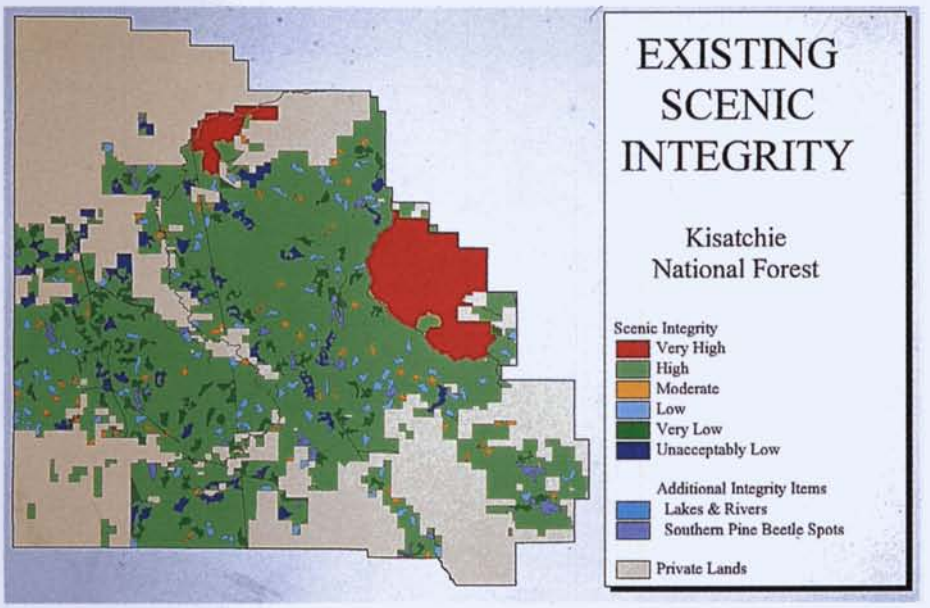
Landtypes. Landtype Associations are considered the appropriate level for forestwide planning and analysis. Landtype Associations were developed by the forest ID Team, which included one or more of the following: soil scientist, an ecologist, forester, hydrologist, botanist and landscape architect.

ANALYZE EXISTING SCENIC INTEGRITY
(Product - Existing Scenic Integrity Maps)

Existing scenic integrity (ESI) is defined as the current state of the landscape, considering previous human alterations. Although ESI is not actually needed to map the final scenic class assignments, it serves multiple purposes in forest planning and provides important benchmarks for decision making. There are several methods referenced in Chapter 2 of the SMS Handbook which could be used to determine ESI, however, the Kisatchie National Forest took another approach. Utilizing GIS, criteria were developed to map ESI based upon the standards and guides in the current Forest Plan.

This process inventories all areas on the forest that currently meet Very High, High, Moderate, Low, Very Low, and Unacceptably Low scenic integrity levels based upon the standards and guides in the current plan. Figure 1 shows the ESI as mapped using the current FLRMP standards and guidelines. The map shows that the majority of the forest meets the criteria for High Scenic Integrity, even though most of the forest is currently assigned a Low Scenic Integrity Objective.

Figure 1. Existing Scenic Integrity Levels



Once the preferred forest plan alternative is developed, a new ESI map can be produced based upon new standards and guidelines. This map will be used to determine the location and extent of rehabilitation required to achieve the assigned Scenic Integrity Objective.

DETERMINE INHERENT SCENIC ATTRACTIVENESS
(Product - Inherent Scenic Attractiveness Maps)

Inherent Scenic Attractiveness (ISA) measures the scenic importance of a landscape based upon human perceptions of the intrinsic beauty of landform, rock form, vegetation patterns, water characteristics, and cultural land use. Forest landscape character descriptions serve as the frame of reference for determining ISA. Landscapes with distinctly different characteristics should be evaluated differently, because each landscape has an inherent ability to produce varying levels of intrinsic beauty. Features such as landform, rock formations, water forms, vegetative patterns, and special areas are compared singularly or in combination with those features found in the landscape character. Through this comparison, an area's overall degree of inherent scenic attractiveness can be determined.

There are 3 ISA classifications: **Class A** - Distinctive; **Class B** - Typical or Common; and **Class C** - Indistinctive. However, based upon an individual forest's needs and conditions, these classes could be broken into one or more levels. These ISA classifications will be used along with distance zones and concern levels to produce Scenic Class Assignments, the final product in the inventory phase of SMS.

Using the landscape character descriptions for the 3 provinces described by Bailey and others (1994) as occurring on the Kisatchie National Forest, criteria were developed for landform (slope), presence of rock formations, vegetation, water form, and special areas. Using existing GIS layers, 30 meter square units of land were awarded points for varying characteristics of landform, rock form, vegetative patterns, water bodies, and special areas. Intermediate maps were produced for landform and rock form, vegetative patterns, and water bodies and special areas (Figures 2-4).

Figure 2. Landform and Rock Form Map

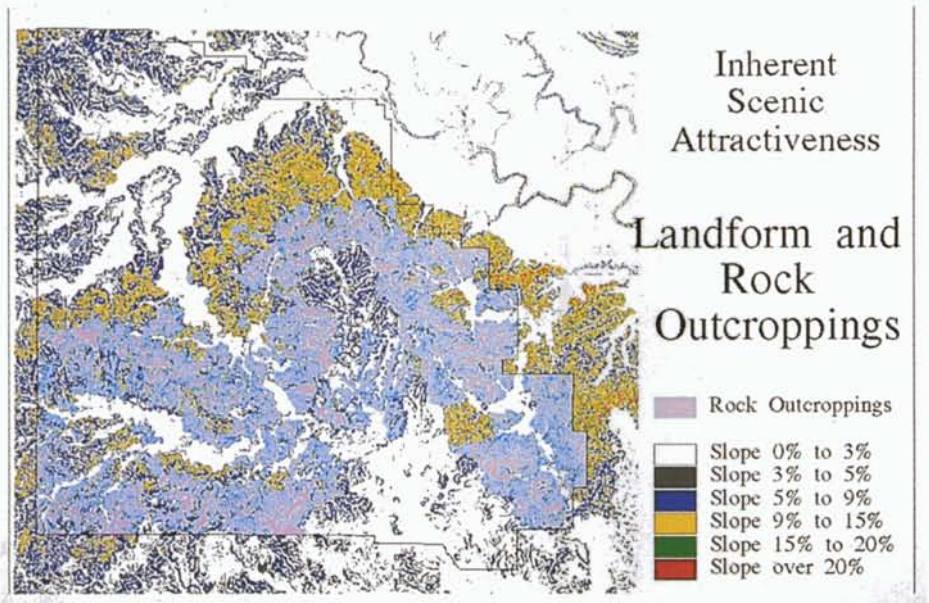


Figure 3. Vegetative Pattern Map

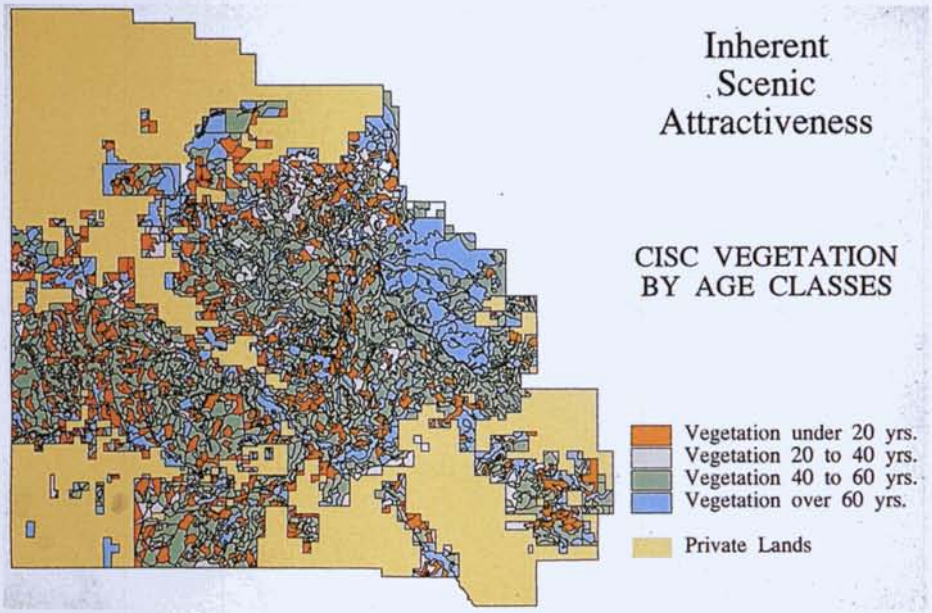
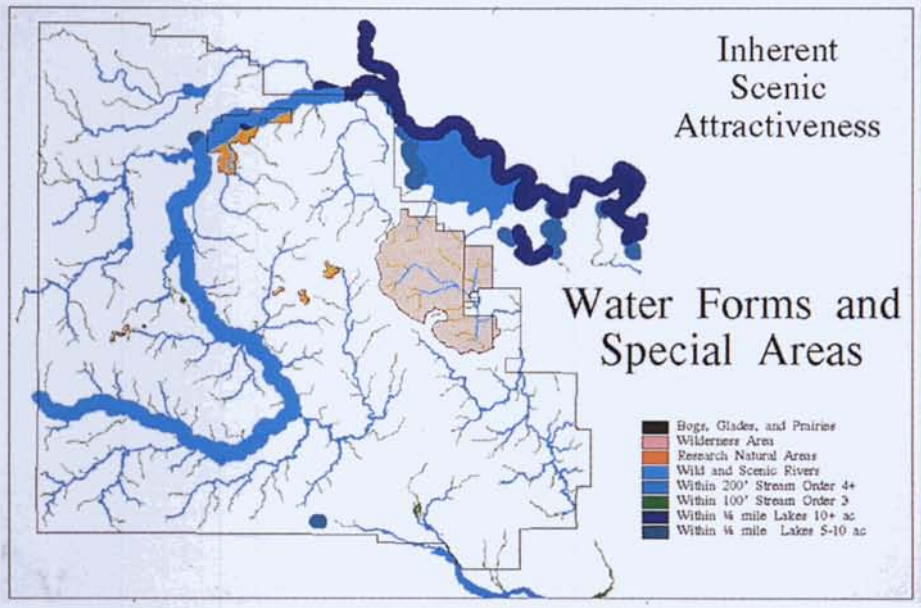
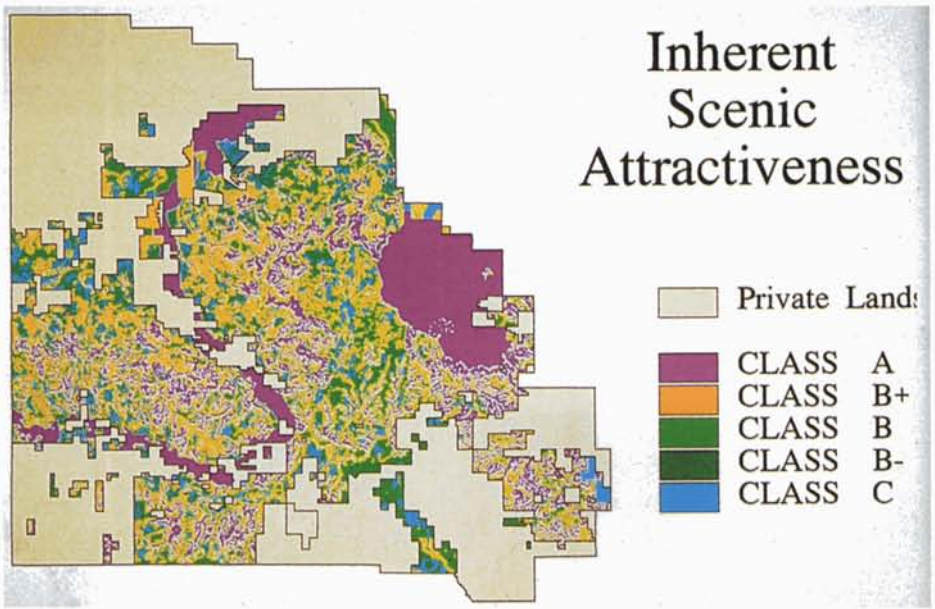


Figure 4. Water Bodies Special Areas



Points awarded to each 30 meter square land unit for each characteristic were totaled and assigned to A, B, or C Classes. However, during field verification it was determined that the inherent scenic attractiveness within the B class varied significantly. We felt that those areas at the higher end of the B class deserved more recognition for ISA than those areas that just barely had enough points to rate in the B class. Therefore the Kisatchie NF divided the B class into 3 subclasses, B+, B, and B-. The subdivision of class B allowed greater refinement and flexibility in Scenic Class assignments. From this new point distribution, the ISA map was produced (Figure 5).

Figure 5. Kisatchie National Forest ISA Map



DETERMINE LANDSCAPE VISIBILITY
(Product - Seen Area and Distance Zone Map)

Landscape visibility is a combination of the seen area in relation to the context and types of viewers that view it. The interconnected elements of landscape visibility include; context of viewers, duration of view, degree of discernible detail, seasonal variation, and number of viewers. In order to determine landscape visibility, it must first be determined which areas are seen from travelways or use areas, known as seen area mapping. The next step is to determine the importance people place on these travelways and use areas, which is known as concern level assignments.

Seen Area Mapping

The first step in seen area mapping is to determine which travelways and use areas will be inventoried for landscape visibility. The Kisatchie NF chose to inventory all roads which are traffic service level (TSL) C or better, canoeable and boatable streams, and recreational lakes.

There are basically two methods for mapping the seen area, either by manual means or by using GIS. GIS can be used efficiently and effectively to analyse both distance zones and viewsheds.

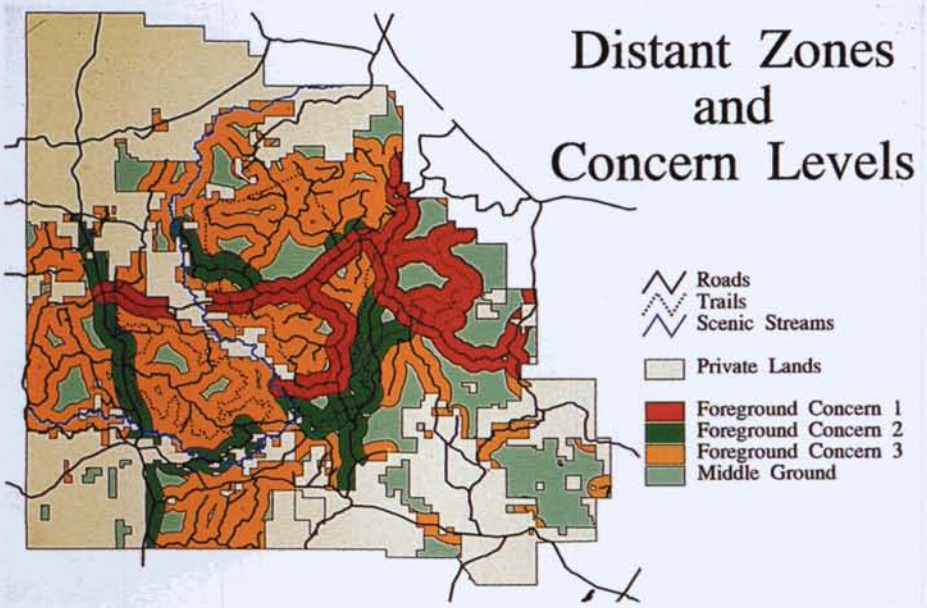
Because the Kisatchie NF is relatively flat, distance zones were used to determine the seen area. Using GIS, all TSL C or better roads, canoeable and boatable streams, and recreational lakes were mapped for foreground, middle ground, and background. Foreground was determined to be 2000 feet (approximately 3/8 mile), middle ground was determined to be from 2001 to 21120 feet (from 3/8 mile to 4 miles), and anything greater than 4 miles was considered background. After GIS ran the distance zone analysis, it was determined that the Kisatchie NF does not have any background. This was expected due to the Kisatchie's high road density.

Concern Level Assignments

The next step is to determine the importance people place on these travelways. Concern levels are a measure of the degree of public importance and can be divided into three categories: levels 1, 2, and 3. The Kisatchie NF assigned concern levels to all travelways and use areas, based upon comments received during the FLRMP scoping process, open houses, and district visits. Constituent analysis was integrated into the scoping process.

Once the concern levels were digitized into our GIS system, they were combined with the distance zone buffers, foreground and middle ground, which produced the landscape visibility map (Figure 6).

Figure 6. Kisatchie National Forest Landscape Visibility Map



DETERMINE INITIAL SCENIC CLASS ASSIGNMENTS
(Product - Initial Scenic Class Maps)

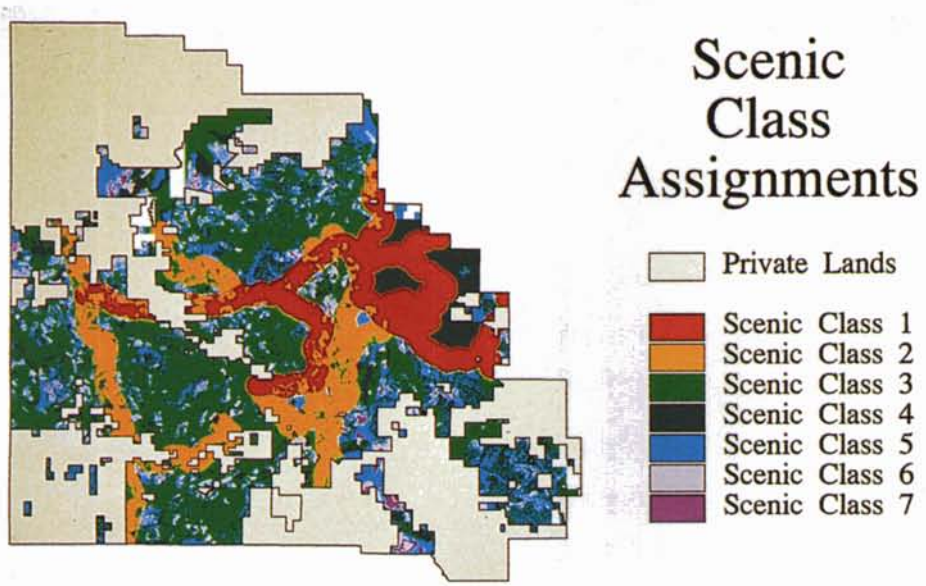
The Initial Scenic Class assignments are the final product in the inventory phase. Scenic classes are determined by combining the inherent scenic attractiveness classes with the distance zones and concern levels of landscape visibility. Scenic classes define the relative value of scenery on all lands and will help determine how scenic resources will be allocated during the FLRMP plan alternative development process. The Kisatchie NF modified the scenic class matrix as outline in the SMS handbook to better fit conditions on the forest (Table 1).

Table 1. Kisatchie National Forest Scenic Class Assignment Matrix

		Landscape Visibility					
		FG1	MG1	FG2	MG2	FG3	MG3
	A	1	3	2	4	3	4
I	B+	1	4	2	4	3	5
S	B	1	4	2	5	4	5
A	B-	2	4	3	6	5	6
	C	2	5	4	7	6	7

Utilizing GIS, both the ISA and landscape visibility maps were merged based upon the above matrix to produce the initial scenic class assignment map (Figure 7).

Figure 7. Kisatchie National Forest Scenic Class Assignment Map



IMPLEMENTATION PHASE

The Kisatchie NF developed Desired Future Conditions (DFCs) based upon the issues and concerns identified during the public scoping process. The next step was to build a set of forest management alternatives that responded in various ways to the issues and concerns. The Kisatchie NF did this by allocating the entire forest area the full range of DFCs varying in proportion and location for each alternative theme. Groups of similar DFCs became Management Areas (MAs). Each FLRMP alternative is built from the same palette of MAs. The Management Areas vary in size and location from alternative to alternative.

CONSOLIDATE SCENIC CLASS ASSIGNMENTS

(Product - Final Scenic Class Maps)

The thin black lines in Figure 11 represent stand boundaries. Many of the stands have two or more Scenic Classes assigned. This resulted, primarily because of the detailed biophysical GIS Inherent Scenic Attractiveness analysis. This was not acceptable because it would result in many stands with multiple Scenic Integrity Objectives, which would greatly complicate implementation and compliance. A process was developed to convert stands with more than one Scenic Class assigned, except those cut by distance zone and desired future condition boundaries, to just one Scenic Class per stand. The process is weighted to give greater value to management areas and consequently FLRMP alternatives that emphasize scenery and other non-commodity values. In other words, the higher the management emphasis for scenery of a management area, the greater the likelihood the whole stand will be converted to a higher (numerically lower) Scenic Class. Final Scenic Class Assignment maps were produced for each FLRMP alternative. Figure 11 shows a sample Scenic Class Map before consolidation and Figure 12 the same area after consolidation. This step is considered a component of the implementation phase because it is management area dependent, consequently Final Scenic Class Maps will vary from FLRMP alternative to alternative.

Figure 8. Detail of Initial Scenic Class Map

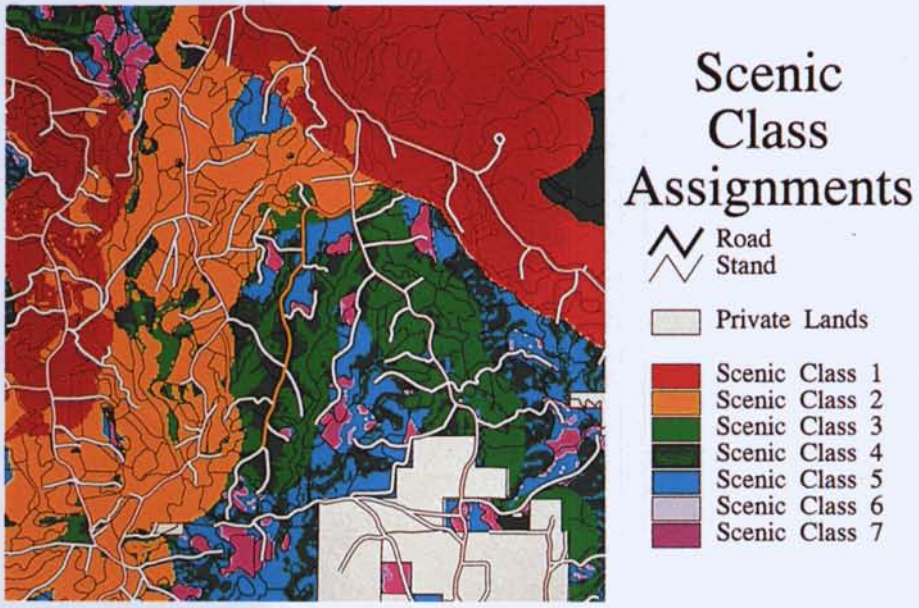
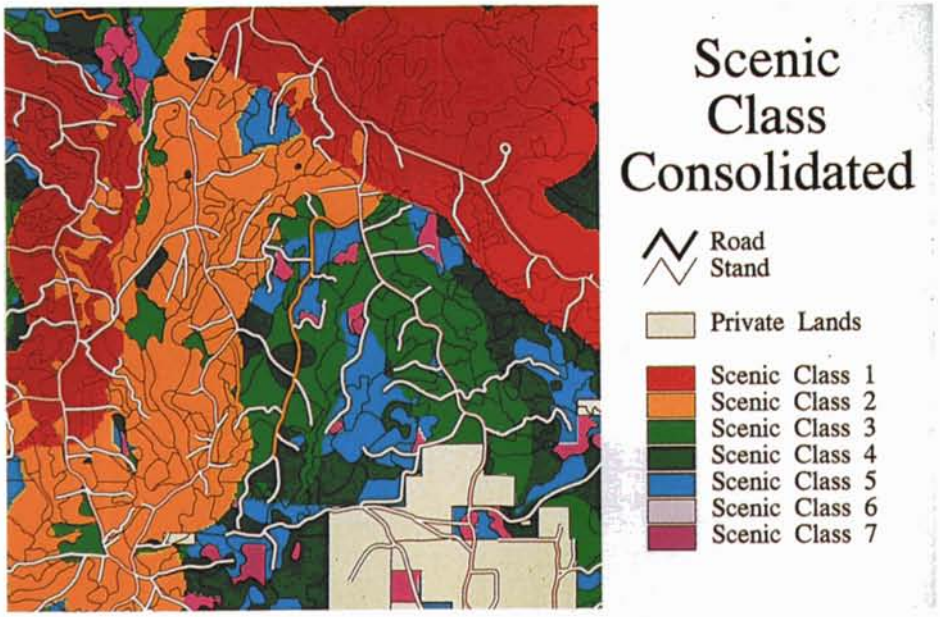


Figure 9. Detail of Consolidated Scenic Class Map



ASSIGN SCENIC INTEGRITY OBJECTIVES TO MANAGEMENT AREAS (Product - Matrix)

The ID team determined how the Scenic Classes would be allocated to each Management Area to yield Scenic Integrity Objective assignments, as Table 2 illustrates. Management Area boundaries are based on the DFC boundaries, and vary by FLRMP Alternative. We felt this was the most logical way of assigning Scenic Integrity Objectives because the relative management concern for scenery is linked closely to assigned DFCs or Management Areas. Other approaches such as simply varying Scenic Class allocation scenarios by FLRMP Alternative would not reflect scenery values or concerns as accurately.

Table 2. Scenic Integrity Objective Assignment Matrix

	MANAGEMENT AREA (MA)								
SCENIC CLASS	1	2	3	4	5	6	7	8	9
1	H	H	H	H	H	L	H	VH	H
2	M	H	H	H	M	L	H	VH	H
3	L	H	L	M	M	L	H	VH	H
4	L	M	L	M	L	L	H	VH	H
5	L	M	L	L	L	L	H	VH	H
6	L	L	L	L	L	L	H	VH	H
7	VL	L	L	L	L	L	H	VH	H

MA 1= Commodity MA 2= Amenity MA 3= Restoration
MA 4= Hardwood MA 5= Wildlife MA 6= Military Use
MA 7= Saline W&SR MA 8= Wilderness MA 9= Rec Sites

VH = Very High SIO H = High SIO M = Moderate SIO L = Low SIO VL = Very Low SI

PRODUCE SCENIC INTEGRITY OBJECTIVE MAPS
(Product - Scenic Integrity Objective Maps for each FLRMP alternative)

Based on the management area assignments Scenic Integrity Objective maps were developed for each FLRMP alternative. Figures 10-12 represent sample Scenic Integrity Objective assignment maps for three of the six FLRMP alternatives on one district. These maps are being used in the analysis of the FLRMP alternatives that will ultimately result in the selection of a preferred alternative. The SIO alternative maps will be included in the draft FLRMP and subject to public review and comment. We consider this a key element of constituent analysis and could result in revisions of the previous steps. We do not consider these products to be final at this stage of the process.

Figure 10. Scenic Integrity Objective Map - Wildlife Alternative

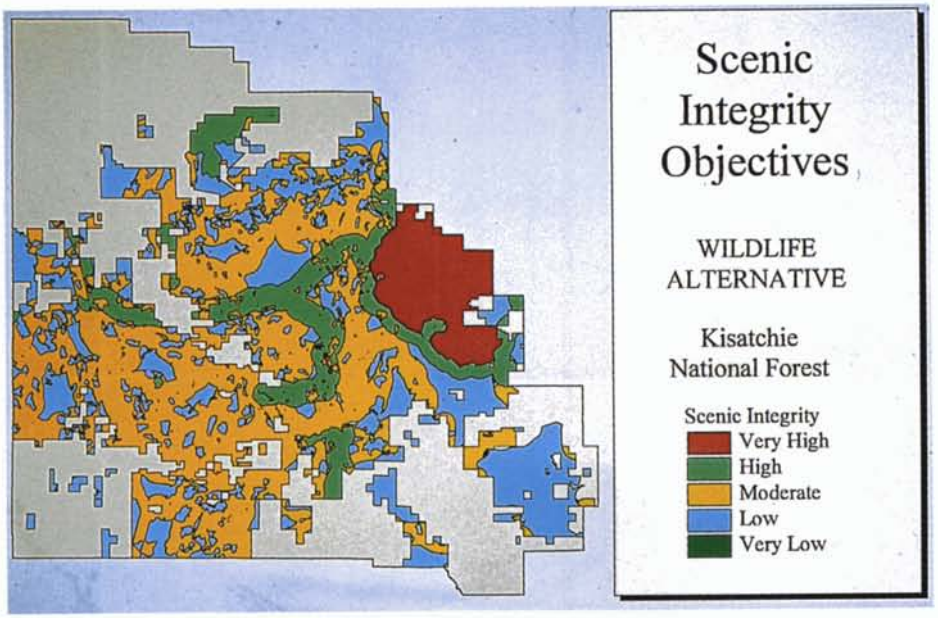


Figure 11. Scenic Integrity Objective Map - Amenity Alternative

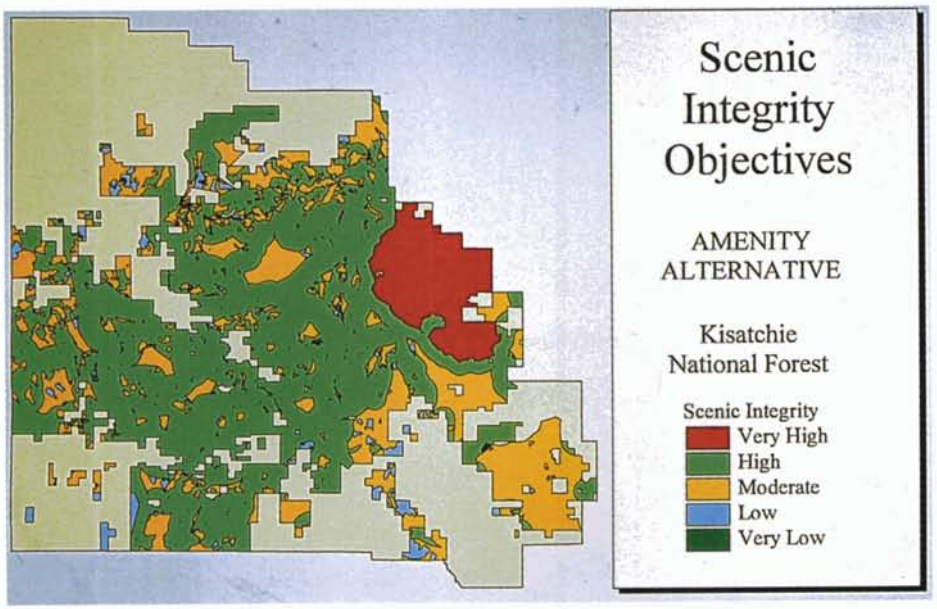


Figure 12. Scenic Integrity Objective Map - Commodity Alternative