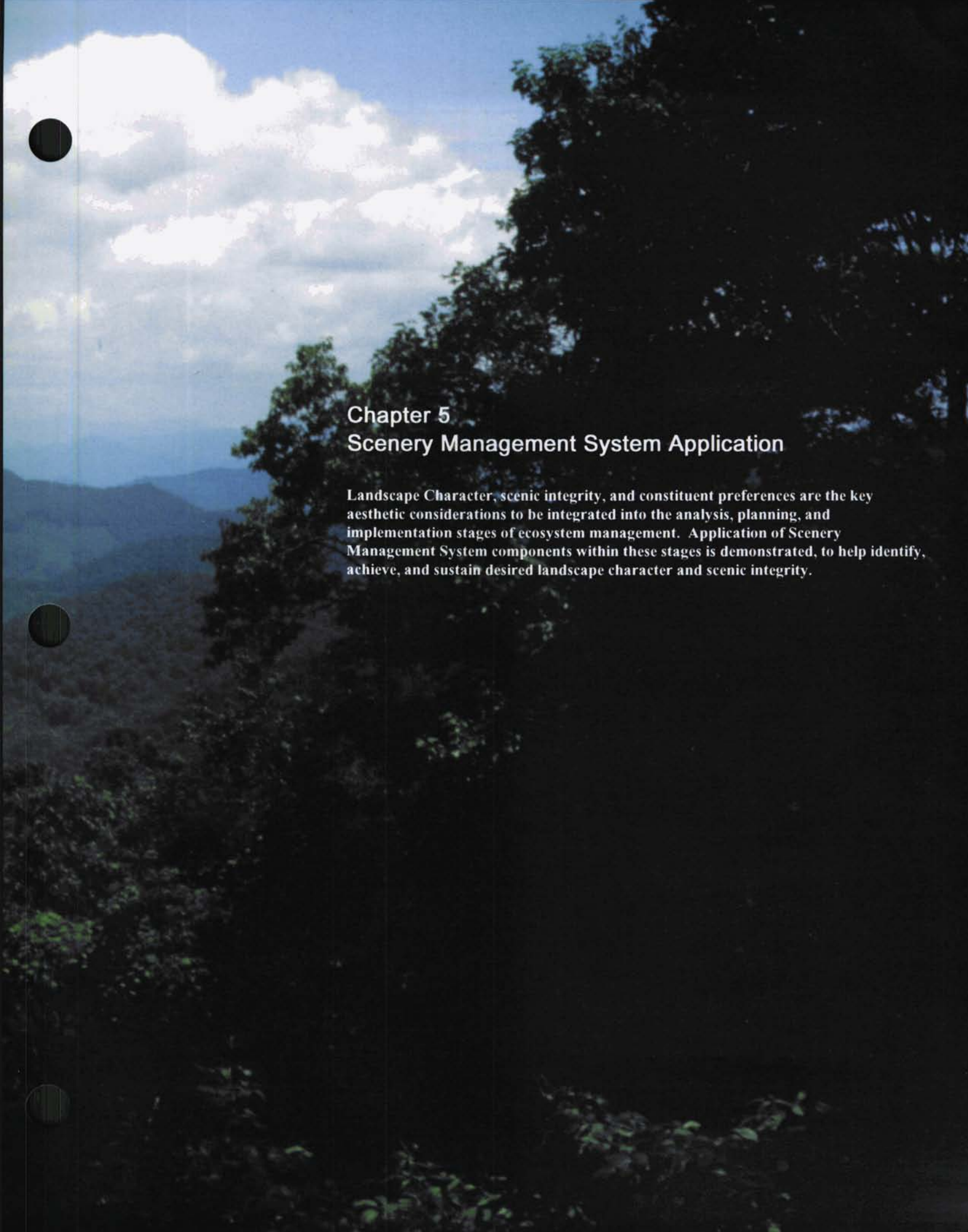

Chapter 5
Scenery Management System Application

Landscape Character, scenic integrity, and constituent preferences are the key aesthetic considerations to be integrated into the analysis, planning, and implementation stages of ecosystem management. Application of Scenery Management System components within these stages is demonstrated, to help identify, achieve, and sustain desired landscape character and scenic integrity.

Purpose

This Chapter demonstrates the integration of the Scenery Management System with ecological concepts and resource planning processes.

Discussion

Basic understanding of landscape ecology establishes the environmental context for aesthetics and scenery. Ecological systems contain three everchanging and interrelated dimensions: physical, biological and social. All three relate to the aesthetics of ecosystems.

Land and resource planning, along with the resulting administrative actions on the land, determine how ecosystems and their aesthetics are evaluated and managed. While these processes vary greatly, their form is controlled by public laws such as the National Environmental Policy Act (NEPA) or the National Forest Management Act (NFMA).

The application of the Scenery Management System to the forest planning process is identified below.

Forest Planning Process	Scenery Management System
Inventory	Ecological Unit Description - GIS Map Existing Land Uses Landscape Character Description
Inventory	Landscape Visibility (Distance Zones, Concern Levels) - GIS Map Existing Scenic Integrity (Conditions) - GIS Map Scenic Attractiveness - GIS Map Scenic Classes - GIS Map
Analysis and Planning	Alternative Development and Evaluation • Proposed Landscape Character Description • Proposed Scenic Integrity Levels Alternative Selection • Landscape Character Goals • Scenic Integrity Objectives - GIS Map
Implementation	Standards and Guidelines for S.I. Objectives Mitigation Implementation Techniques
Monitoring and Evaluation	Monitor accomplishment of Landscape Character goals and scenic integrity objectives

Ecosystems: The Environmental Context for Aesthetics

An ecosystem is a place where life and environment interact. They function and evolve through time, and include people, either directly or indirectly. Ecosystems can be described within a wide range of scales that potentially link global issues to site specific conditions, allowing considerations at multiple ecosystem scales as necessary.

Ecosystem management broadens understandings of environments by its holistic consideration of the physical, biological and social dimensions of ecosystems. The social dimension can be further subdivided for analysis purposes into cultural, community, economics, and politics. Interactions among the physical, biological, and social dimensions, with their many parts, patterns, and processes, result in their collective function as integrated systems. Within each dimension, key ecosystem elements can be measured, tracked, and managed by use of environmental indicators which help achieve desired conditions for the landscape.

The social dimension has many aspects, but one of importance for public lands is recreation. Ecosystems as recreational settings greatly affect the quality and effectiveness of the recreation experience. A key attribute of recreation settings is the quality of aesthetics. Direct contact with natural appearing settings and attractive cultural features that offer a sense diversity, order, and wholeness are highly valued for their ability to stimulate the senses and nurture the mind.

The following planning discussion will include ecosystem inventory and analysis, alternative development and evaluation, alternative selection, and monitoring the results. Landscape character goals and scenic integrity objectives should normally be within the limits of a sustainable ecosystem; but, not all sustainable conditions will achieve desired levels of aesthetics. It will be important to examine the full range of sustainable conditions, use the landscape design arts to mitigate negative effects, and shape and blend management activities with the natural patterns of the land. As people gain more knowledge and appreciation of how ecosystems function and their role in them, there may be greater acceptance of certain conditions such as down woody debris, etc..

Ecosystem Inventory and Analysis

The physical, biological, and social components of ecosystems are inventoried and analyzed. This information provides an understanding of the existing condition of the ecosystem and its inherent potential.

When ecosystems are analyzed, a common structure or process for organizing information about their parts, patterns and processes is useful. Since no single nationally recognized ecosystem analysis structure exists, use or adaptation of existing regional or local structures is recommended. A basic ecosystem analysis approach is presented in this section along with a discussion of the integration of scenery components. Application of the components may vary by scope, complexity, and sensitivity of the analysis undertaken.

Interdisciplinary Collaborative Learning

Identify and discuss issues with the public. Through dialogue with an interdisciplinary team, form questions or scenarios about the issues. Discuss ecosystem components, relationships, and processes. Preliminary information about the natural range of key ecosystem elements is also discussed.

A complete scenery inventory, as described in previous chapters of this Handbook, would make the following information available for discussion with the interdisciplinary team:

Constituent Input

- Scenery related attitudes, beliefs, meaning, associations, and values for landscapes expressed in terms of expectations and preferences

Landscape Character

- existing landscape character that people relate to as a significant element in "sense of place", including positive cultural features

- landscape character evolution, trends and possibilities

Scenic Attractiveness
- A - Distinctive, B - Common, C - Indistinctive

Existing Scenic Integrity
- Very High, High, Moderate, Low, and Very Low

Place Attachment
- location, meaning, and importance of specific areas largely derived from constituent input

Concern Levels
- 1 - High, 2 - Moderate, 3 - Low, representing degree of scenery importance for specific viewing locations such as communities, recreation areas, roads, and trails

Distance Zones
- Immediate Foreground, Foreground, Middleground, and Background for locations assigned Concern Levels

Scenic Classes
- Represents relative landscape value by combining Distance Zone, Concern Level, and Scenic Attractiveness. The Scenic Class is supplemented with Existing Scenic Integrity information, and documented in map form with scenic class icon descriptors.

An analysis of ecosystem components, structures, processes, and functions provides a working understanding of the ecosystem necessary to test its ability to retain, achieve, and sustain desired conditions. Ecosystem analysis generally includes the following exercises:

- Identification of relationships and interactions among ecosystem elements, including their influences relative to location in the ecosystem

- Description of trends and ranges of variability for ecosystem elements

- Determination of sustainability for key ecosystem elements and their combinations

Landscape Aesthetics factors of key importance to ecosystem analyses are:

- Landscape Character evolution, its dynamics, potential options and variations, both biophysical and social (landscape meanings, values, preferences, thresholds, and benefits)

- Landscape Value (concern level, scenic attractiveness, distance zone, scenic class, plus existing scenic integrity)

- Potential for improving Scenic Integrity and Scenic Attractiveness

Alternative Development and Evaluation

This stage of planning establishes alternatives that contribute to the resolution of key issues. Development of alternative ways to achieve desired conditions generally occurs in the following manner:

- Relationships of key ecosystem components and processes identified in the ecosystem analysis phase are further tested for their compatibility within a particular scenario or alternative.

- Combinations of these ecosystem components and processes that achieve some desirable conditions are then expanded to comprehensively describe complete, functional ecosystems that can achieve and sustain more desired conditions organized around a specific theme or scenario. Such "preliminary alternatives" or opportunities include management area descriptions. The desired Landscape Character and Scenic Integrity are included within the management area desired condition and standards and guidelines. Scenic classes and constituent information about landscape values are used here to determine the extent, quality, and location of desired scenery conditions. Generally a Very High or High Scenic Integrity level is assigned to Wilderness and other congressionally designated areas. Other management areas will be assigned a scenic integrity level that is consistent with the desired condition.

- Adjustments to alternatives are made to achieve desired values and benefits, while sustaining ecosystems. This develops into a formal "Alternative" way to achieve desired conditions.

Desired Landscape Character

Selection of a desired landscape character for an alternative must take into consideration ecosystem dynamics and trends. Due to the wide variety of ecosystems and possible alternative themes, there are many possibilities for changing landscape character.. These possibilities should be directed towards a more complete, attractive, and sustainable expression of landscape character.

Changes from existing landscape character should normally be within historic ranges, for which ecosystem sustainability has been demonstrated. The following examples describe possibilities for desired landscape character and long range scenic integrity objectives.

- "Naturally Evolving" landscape character expressing the natural evolution of biophysical features and processes, with very limited human intervention

- "Natural Appearing" landscape character that expresses predominantly natural evolution, but also human intervention including cultural features and processes

- "Cultural" landscape character expressing built structures and landscape features that display the dominant attitudes and beliefs of specific human cultures

- "Pastoral" landscape character expressing dominant human created pastures, "meadows", and associated structures, reflecting valued historic land uses and lifestyles

- "Agricultural" landscape character expressing dominant human agricultural land uses producing food crops and domestic products

- "Historic" landscape character expressing valued historic features that represent events and period of human activity in the landscape

- "Urban" landscape character expressing concentrations of human activity, primarily in the form of commercial, cultural, education, residential, transportation structures, and supporting infrastructure

For most National Forest System lands, decision makers will usually select some form of Natural, or Natural Appearing landscape character, because the majority of these lands have purposely been conserved in such conditions as a function of the National Forest character and mission. The cultural themes may be most useful to conserve expressions of valued human associations with landscapes of mixed ownership. Generally these areas are within a context of surrounding lands that express natural or predominantly natural appearing landscape character. The attractiveness of these landscapes may be highly dependent on each other particularly when the contrast between them is great.

Variations within Landscape Character

Within each general landscape character, there are infinite possibilities for specific landscape character variations, such as changes in vegetative species mixtures or their patterns, that can also create significant departures from existing landscape character. Landscape character variations are often expressed in terms of creating, or maintaining by design, specific plant-successional stages, large tree character, diversity of age classes, or natural-appearing open spaces.

Variations must be consciously designed and must be an integral part of any desired future condition of an ecosystem The economic and technological feasibility of the transition from existing landscape character to a desired landscape character must also be considered. Interdisciplinary teams must determine whether sufficient budgets and technology exist to achieve and maintain a desired landscape character.

Variations for a **natural-appearing landscape character** could include the three combinations shown below. Ideally, a highway corridor would contain several different variations of each landscape character present.

Emphasis on maintaining character of large trees with distinctive bark texture, having adequate replacement trees of different ages to maintain this character over time.

Emphasis on smaller tree character with replacement trees of adequate stocking levels to maintain rapid growth. The saplings and poles in this photo need to be thinned to meet the objective.

Emphasis on increasing diversity of vegetation species with openings emphasizing natural meadows.

- When resource managers move plant communities from one successional stage to another, variations may also include a change in species mixture as shown in the two photographs below. In *National Forest Landscape Management, Volume 2, Chapter 5—Timber,* landscape architects, siviculturists, and other professionals illustrate how an existing plant community of lodgepole pine and larch can be moved to climax subalpine fir, Engleman spruce, Douglas-fir, larch, and lodgepole pine. The landscape character variation on the right has considerably more scenic quality than the one on the left.

- In the first scene below, left, the trees could be thinned to move the stand toward a park-like setting of large trees throughout the highway corridor. However, the new stand of thinned trees would lack desirable horizontal diversity and would lack replacement trees as described under concepts for ponderosa pine in *Chapter 5—Timber.* The two scenes, left and middle, on the bottom of the previous page illustrate two of these variations from the Timber Chapter. The scene below, right, on this page illustrates still another variation. The number of large trees has been reduced in density to 12-to-15 trees per acre, allowing younger trees to regenerate and grow. Still another variation would have the number of large trees reduced to 4-to-5 trees per acre, allowing saplings to grow to black bark poles. These same concepts could be applied over time to the pole stand on the left.

Alternative Evaluation

Alternative evaluation includes a description of predicted changes to key ecosystem elements. These predictions and outcomes are developed in relation to key issues and desired conditions, and is then communicated to decision makers and constituents.

Evaluation of an alternative generally includes the following information:

- Direct, indirect, and cumulative effects.
- Magnitude, duration, and significance of effects.
- Mitigation measures for reducing unavoidable effects
- Irreversible or irretrievable commitment of resources

Scenery effects are focussed upon changes determined by the following indicators:

Landscape Character changes:

- Determine if existing Landscape Character will be sustained or changed.
- Determine if changes to Landscape Character exceed the limits of its historic range, as well as what influences that may have upon its sustainability.
- Determine if opportunities for enhancement of existing Landscape Character and Scenic Attractiveness were achieved, and to what degree they were achieved.

Scenic Integrity effects:

- Determine if areas of Very High and High Existing scenic integrity would be significantly or irreversibly altered.
- Determine if areas of high Scenic Class are altered.
- Determine if opportunities for restoration of Scenic Integrity were achieved, and to what degree they were achieved.
- Determine changes relative to cumulative effects thresholds for scenery.

Scenic Benefits:

- Conservation of Scenic Heritage
- Quality of Life
- Identity and Self Image of Communities and Individuals
- Recreation and Tourism settings

Alternative Selection

This stage of planning focuses upon the development and formalization of an alternative "selected" as the desired condition for management of the ecosystem.

The "desired condition" of a national forest is described in a forest plan and an accompanying environmental impact statement. More specific project plans apply similar planning and documentation processes. Desired condition statements for both types of plans are the result of preceding planning stages. Landscape character information, scenic classes, and constituent preferences all help determine desired condition for scenic quality. For scenery management, desired condition has two components: landscape character goals and scenic integrity objectives.

Landscape Character goals and Scenic Integrity objectives are described for each forest plan management area. Scenic integrity objectives are defined by minimally acceptable levels and the direct intent to achieve the highest scenic integrity possible.

Achievement of Landscape Character Goals

Maintaining an Existing Landscape Character

When existing landscape character is the same as a landscape character goal, interdisciplinary teams should develop management strategies to perpetuate the desired attributes of the existing character. Every landscape changes over time. Even those that evolve through natural processes change in landscape character. Specific locations of scenic attributes may also change over time.

The overall landscape character goal is maintained through time by proper management of scenic attributes. For example, a scenic view from a specific location on a highway to a stand of colorful aspen tress may disappear over time as pine trees grow and block the view. The landscape character goal may indicate the need to create similar scenic viewing opportunities elsewhere along that same read, within the same landscape unit, when vegetation grows and the current vista disappears.

Transition from Existing to Desired Landscape Character

When there are considerable differences between existing and desired landscape character, it may be necessary to design a transition strategy. The design should include a reasonable time line for reaching the goal. It should exclude excessive increments of change. Scenic integrity objectives define the degrees of deviation in form, line, color, scale and texture that may occur at any given time, thus defining a transition strategy.

Monitoring

Monitoring and evaluation efforts provide information to:

- detect magnitude and duration of changes in conditions including scenic integrity and landscape character.
- formulate and test hypotheses as to cause of the changes.
- help better understand these causes and predict impacts.

Monitoring Types

There are three types of monitoring: implementation, effectiveness, and validation.

Implementation monitoring determines whether the standards and guidelines were followed. Some agencies call it "compliance" monitoring . . . or said another way "Did we do what we said we would do?"

Effectiveness monitoring determines if the application of the management plan achieved or is headed in the right direction to achieve the desired future condition (DFC) . . . in other words did the management practice or activity do what was intended. Did the standards and guides function as intended or were they not effective?

Validation monitoring determines if new information exists which alters the validity of the assumptions upon which the plan was based. Such considerations might include changes in resource conditions, changes in constituent values and expectations or changes in legal requirements.

Monitoring Landscape Character

The objective of Landscape Character **Implementation and Effectiveness monitoring** is to determine if the landscape character goal is being met or is moving toward the desired character over time. For example, the goal may be to maintain open, park-like stands of large ponderosa pine with yellow-plated bark with 20% in seedling/saplings, 40% in a black bark stage, and 20% in small saw timber.

Objective: To determine if the landscape character is moving in the direction of the landscape character goal.

Method: Identify through field review the percentage of vegetation (or other elements in the landscape character) that is moving towards the landscape character goal.

Unit of Measure: Percent of acres.

Landscape Character **Validation** is addressed through a continual constituent analysis process determining such things as the landscape character preferred by people.

Monitoring Scenic Integrity

Implementation monitoring is usually done through spot checking the scenic integrity level of activities one year after completion to see if they are in compliance with the Forest Plan.

Objective: To determine if the scenic integrity levels for projects adopted in the Forest Plan by Management Area are being achieved.

Method: Identify through field review a stratified sample of projects in high, moderate, and low integrity levels. Sampling intensity should increase with the level of scenic integrity objective.

Unit of Measure Identify total projects within each viewshed or geographic area, including how many and what percent were monitored. Of those monitored, how many and what percent met the scenic integrity standard for the area.

Effectiveness can be checked by summarizing the existing scenic integrity levels for each viewshed or geographic area.

Objective: Are the cumulative effects of all resource activities within a viewshed meeting the integrity level standards.

Method: Determine the percentages of each integrity level being met within each viewshed. Determine if the percentages are consistent with the Forest Plan.

Unit of Measure: Total acres in each viewshed that are consistent with Forest Plan standards.

Validation is addressed through a continual constituent analysis process, determining such things as the lowest level of scenic quality acceptable to people.