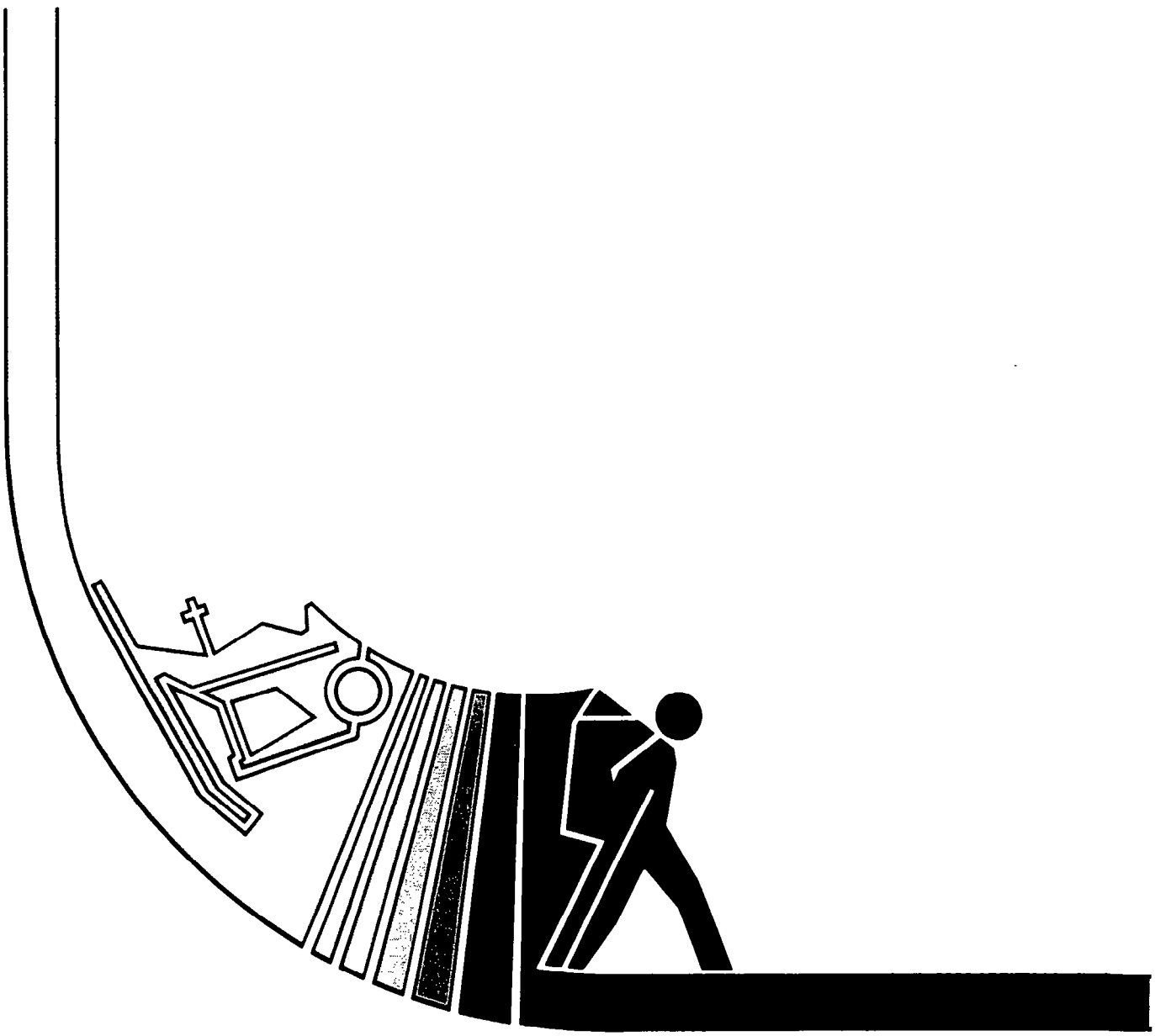
United States
Department of
Agriculture

**Forest
Service**

ROS

Users Guide



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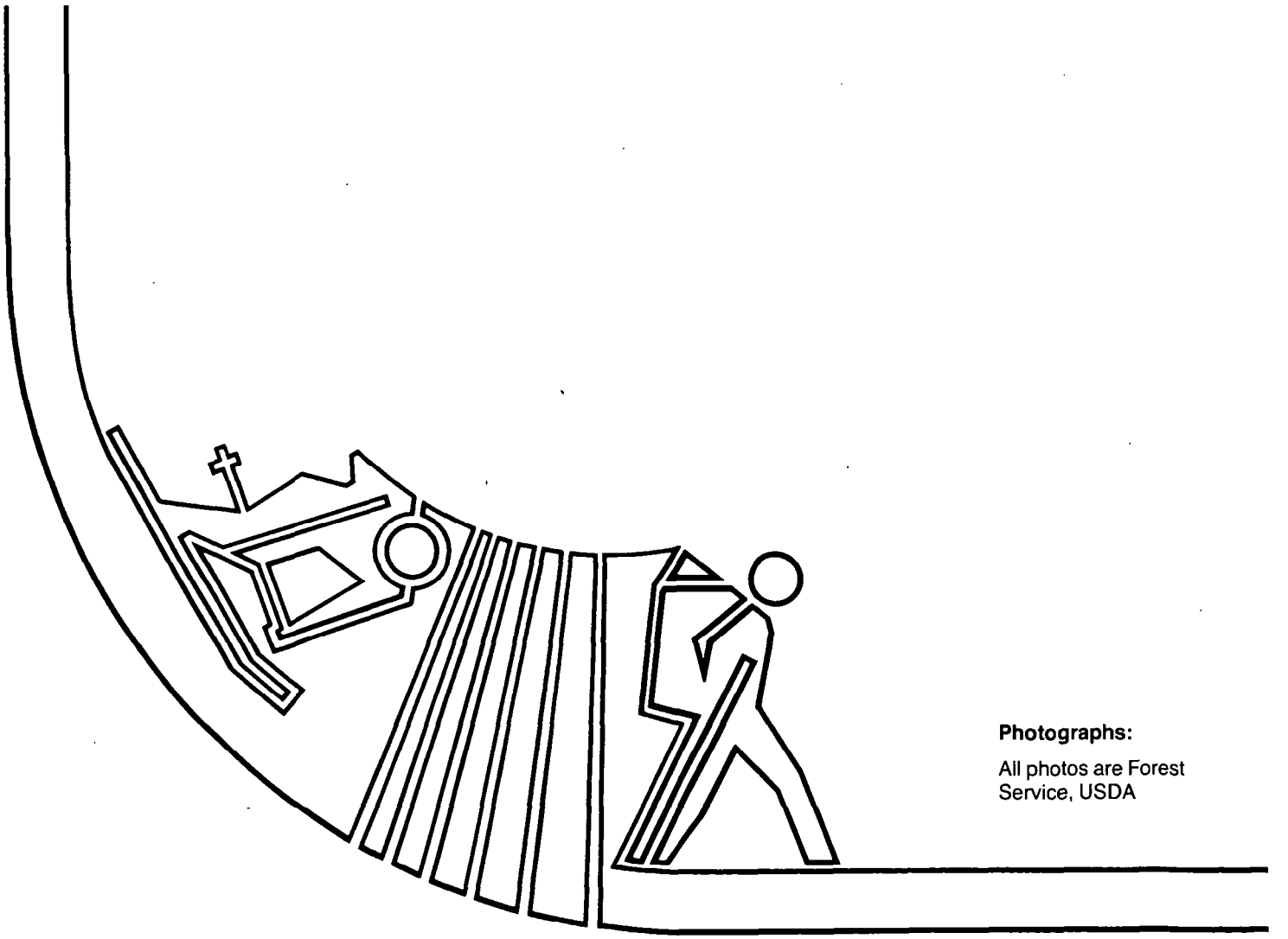

Photographs:

All photos are Forest Service, USDA

This handbook chapter serves as a guide for the recreation resource input to Land and Management Planning. It incorporates the Recreation Opportunity Spectrum as the basic framework for inventorying, planning and managing the recreation resource in accordance with the Forest and Rangeland Revewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA).

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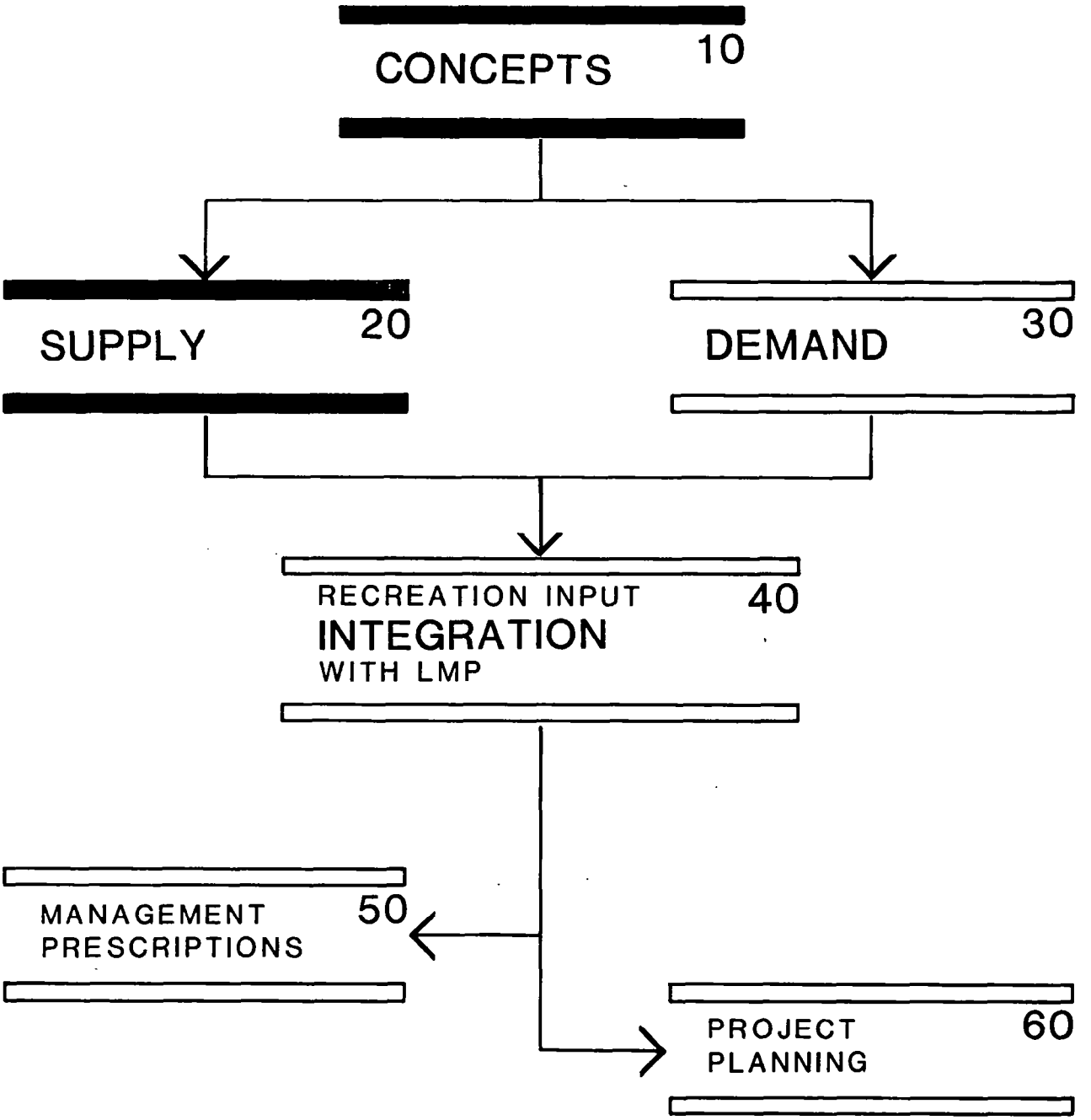
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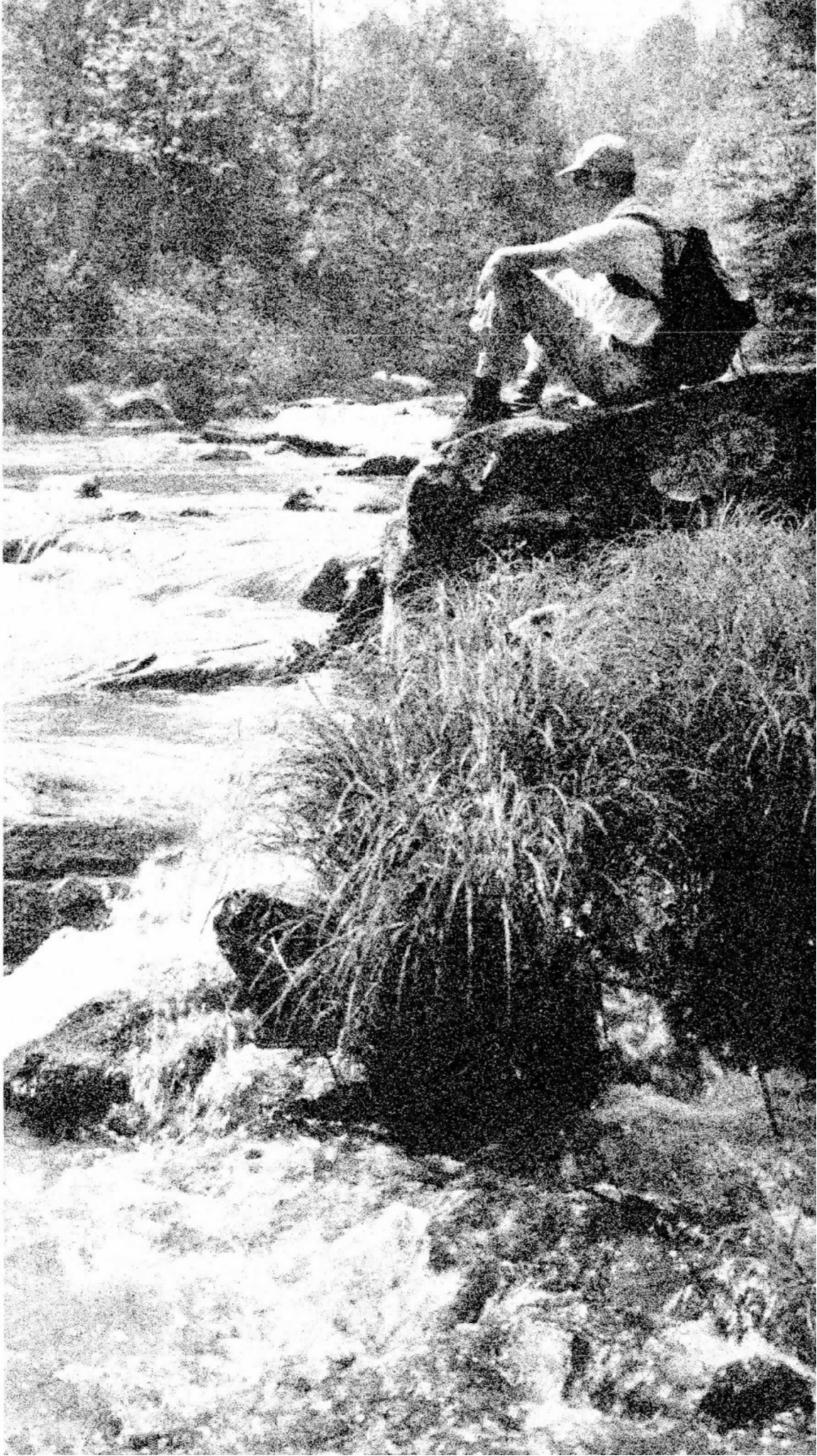

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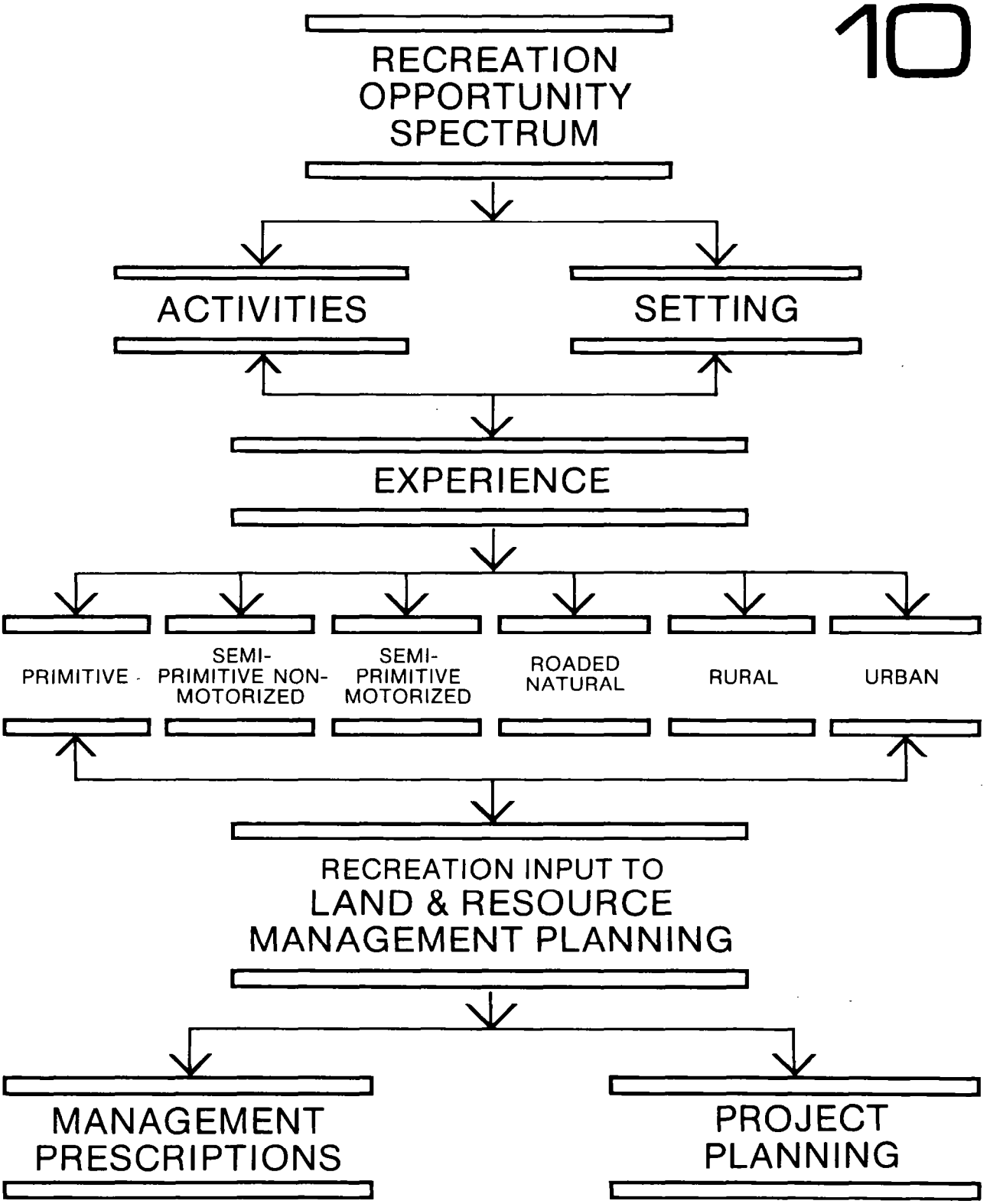
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11—RECREATION

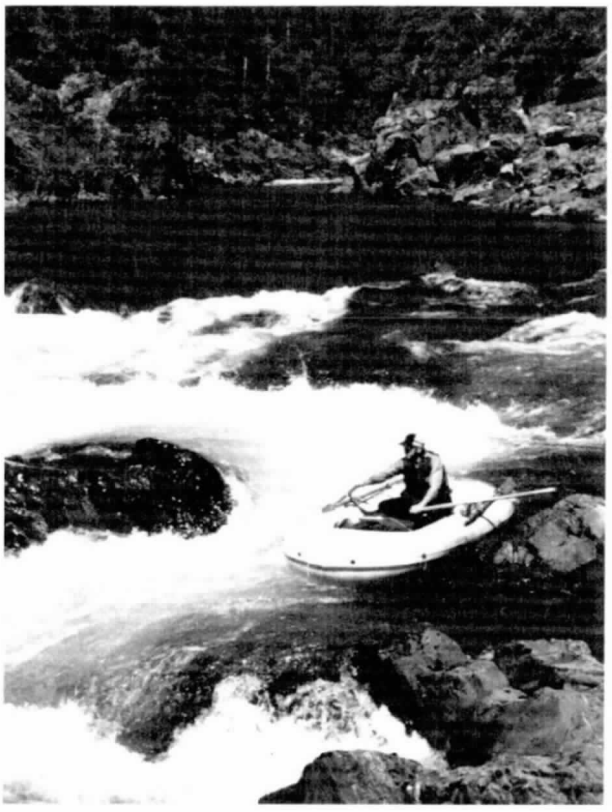
Many definitions of recreation exist, each emphasizing some slightly different aspect of this complex phenomenon called "recreation." In the *Recreational Use of Wild Lands,* Frank Brockman defines recreation as "the pleasurable and constructive use of spare time." Howard Danford, in *Creative Leadership in Recreation,* defines recreation as "any socially desirable leisure activity in which an individual participates voluntarily and from which he derives immediate and continuing satisfaction." *Webster* defines recreation as "refreshment in mind and body."

The sense of creativeness, refreshment and pleasure which the recreationist has while recreating or having a good time can be viewed as the recreationist "realizing satisfactory experiences." The recreationist attains these satisfactory experiences by participating in preferred recreation activities in preferred surroundings or settings. Therefore although the recreation resource manager manages settings, he or she does so to provide opportunities for recreation experiences and the benefits those experiences produce for individuals and society. Those experiences are influenced by many factors, the settings, the activities, other resources present, activities by managers, and by the values, expectations and other characteristics of the recreationists. These factors interrelate to define outdoor recreationists' needs and the way these needs are met by management action.

"Managing for recreation requires different kinds of data and management concepts than does most other activities. While recreation must have a physical base of land or water, the product—recreation experience—is a personal or social phenomenon. Although the management is resource based, the actual recreational activities are a result of people, their perceptions, wants, and behavior." (From: Final Report of the Committee of Scientists for Implementation of Section 6 of the National Forest Management Act of 1976, February 22, 1979, as published in the Federal Register, Part V, May 4, 1979, p. 26628.)

12—RECREATION OPPORTUNITY

The word opportunity is defined as a "combination of circumstances favorable for a purpose." The purpose or goal of the recreationist, as discussed above, is to realize satisfying experiences. This is done by participating in preferred activities in preferred environmental settings. Thus, recreation opportunity is "the availability of a real choice for a user to participate in a preferred activity within a preferred setting, in order to realize those satisfying experiences which are desired."



13—RECREATION OPPORTUNITY SPECTRUM

While the goal of the recreationist is to obtain satisfying experiences, the goal of the recreation resource manager becomes one of providing the opportunities for obtaining these experiences. By managing the natural resource settings, and the activities which occur within it, the manager is providing the opportunities for recreation experiences to take place. Therefore, for both the manager and the recreationist, recreation opportunities can be expressed in terms of three principal components: the activities, the setting, and the experience.

For management and conceptual convenience possible mixes or combinations of activities, settings, and probable experience opportunities have been arranged along a spectrum, or continuum. This continuum is called the Recreation Opportunity Spectrum (ROS) and is divided into six classes (Figure 1). The six classes, or portions along the continuum, and the accompanying class names have been selected and conventionalized because of their descriptiveness and utility in Land and Resource Management Planning and other management applications.

Each class is defined in terms of its combination of activity, setting, and experience opportunities (Table 1). Subclasses may be established to reflect local or regional conditions as long as aggregations can be made back to the six major classes for regional or national summaries. An example of a subclass may be a further breakdown of Roaded Natural into subclasses based on paved, oiled, or dirt surfaced roads, which in turns reflects amount of use, or a further breakdown of Primitive based upon aircraft or boat use.

The Recreation Opportunity Spectrum provides a framework for defining the types of outdoor recreation opportunities the public might desire, and identifies that portion of the spectrum a given National Forest might be able to provide.

Figure 1

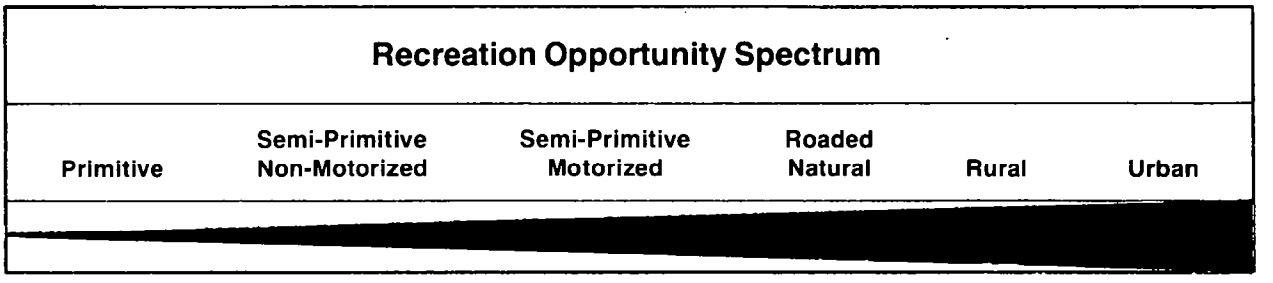


Table 1

ROS
Activity Characterization*

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Land Based (includes Aircraft): Viewing Scenery Hiking and Walking Horseback Riding Camping (all) Hunting (all) Nature Study (all) Mountain Climbing General Information	**Land Based (includes Aircraft):** Viewing Scenery Automobile (off-road use) Motorcycles and Scooters Specialized landcraft Aircraft (motorized) Hiking and Walking Horseback Riding Camping (all) Hunting (all) Nature Study (all) Mountain climbing General Information	**Land Based (includes Aircraft):** Viewing Scenery Viewing Activities Viewing Works of Human-Kind Automobile (includes off-road use) Motorcycles and Scooters Specialized landcraft Train and bus touring Aircraft (motorized) Aerial trams and lifts Aircraft (non-motorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Camping (all) Picnicking Resort and Commercial services Resort Lodging Recreation Cabin use Hunting (all) Nature Studies (all) Mountain climbing *Gathering Forest Products* Interpretive Services (all)	**Land Based:** Viewing Scenery Viewing Activities Viewing Works of Humankind Automobile (includes off-road use) Motorcycles and Scooters Specialized land-craft Train and bus touring Aircraft (motorized) Aerial trams and lifts Aircraft (non-motorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Camping (all) Picnicking Resort and *Commercial* services Resort Lodging **Land Based (includes Aircraft)** Recreation Cabin use Hunting (all) Nature Studies (all) Mountain climbing Gathering Forest Products Interpretive Services (all) *Team Sports* Individual Sports Games and Play	
Water Based: Canoeing Sailing Other non-motorized watercraft Swimming Fishing (all)	**Water Based:** Boating (powered) Canoeing Sailing Other watercraft Swimming Diving (skin or scuba) Fishing (all)	**Water Based:** Tour Boat and Ferry Boat Powered Canoeing Sailing Other watercraft Swimming and waterplay *Diving (skin and scuba)* Waterskiing and water-sports Fishing (all)	**Water Based:** *Tour Boat and Ferry* Boat Powered Canoeing Sailing Other watercraft Swimming and waterplay Diving (skin and scuba) Waterskiing and water sports Fishing		
Snow and Ice Based: Snowplay X-Country Skiing/Snowshoeing	**Snow and Ice Based:** Ice and Snowcraft Skiing, downhill Snowplay X-Country Skiing/snow-shoeing	**Snow and Ice Based:** *Ice and Snowcraft* Ice Skating Sledding and Tobagganing Downhill skiing Snowplay X-Country skiing/snow shoeing	**Snow and Ice Based:** Ice and Snowcraft Ice skating Sledding and Tobagganing Downhill skiing Snowplay X-Country skiing/snow shoeing		

*These activity characteristics (from R I M FSH 2309.11) are illustrative only. Specific additions or exception of activities within a ROS class may occur depending upon local forest situations.

Table 1 (continued)

ROS Setting Characterization*					
Primitive	**Semi-Primitive Non-Motorized**	**Semi-Primitive Motorized**	**Roaded Natural**	**Rural**	**Urban**
Area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.	Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is not permitted.	Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted.	Area is characterized by predominantly natural-appearing environments with moderate evidences of the sights and sounds of man. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.	Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans, on-site, are predominant. Large numbers of users can be expected, both on-site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

*This table is for descriptive purposes only.
Use the five specific ROS class delineation criteria given in Table 2 to identify the actual areas to which these descriptions apply.

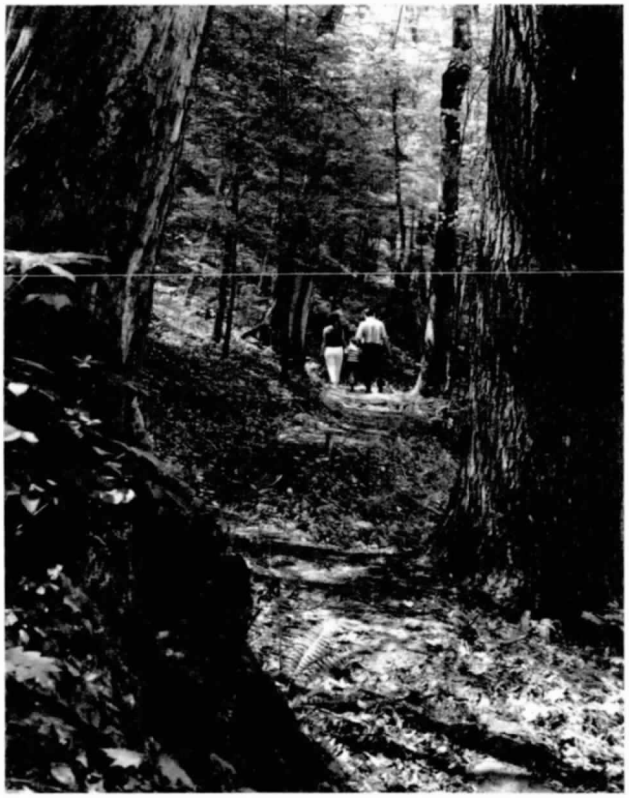


Table 1 (Continued)

ROS Experience Characterization*					
Primitive	**Semi-Primitive Non-Motorized**	**Semi-Primitive Motorized**	**Roaded Natural**	**Rural**	**Urban**
Extremely high probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers a high degree of challenge and risk.	High, but not extremely high, probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk.	Moderate probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquillity, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. Opportunity to have a high degree of interaction with the natural environment. Opportunity to use motorized equipment while in the area.	About equal probability to experience affiliation with other user groups and for isolation from sights and sound of humans. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive type of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wildland challenges, risk-taking, and testing of outdoor skills are generally unimportant except for specific activities like downhill skiing, for which challenge and risk-taking are important elements.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. Experiencing natural environments, having challenges and risks afforded by the natural environment, and the use of outdoor skills are relatively unimportant. Opportunities for competitive and spectator sports and for passive uses of highly human-influenced parks and open spaces are common.

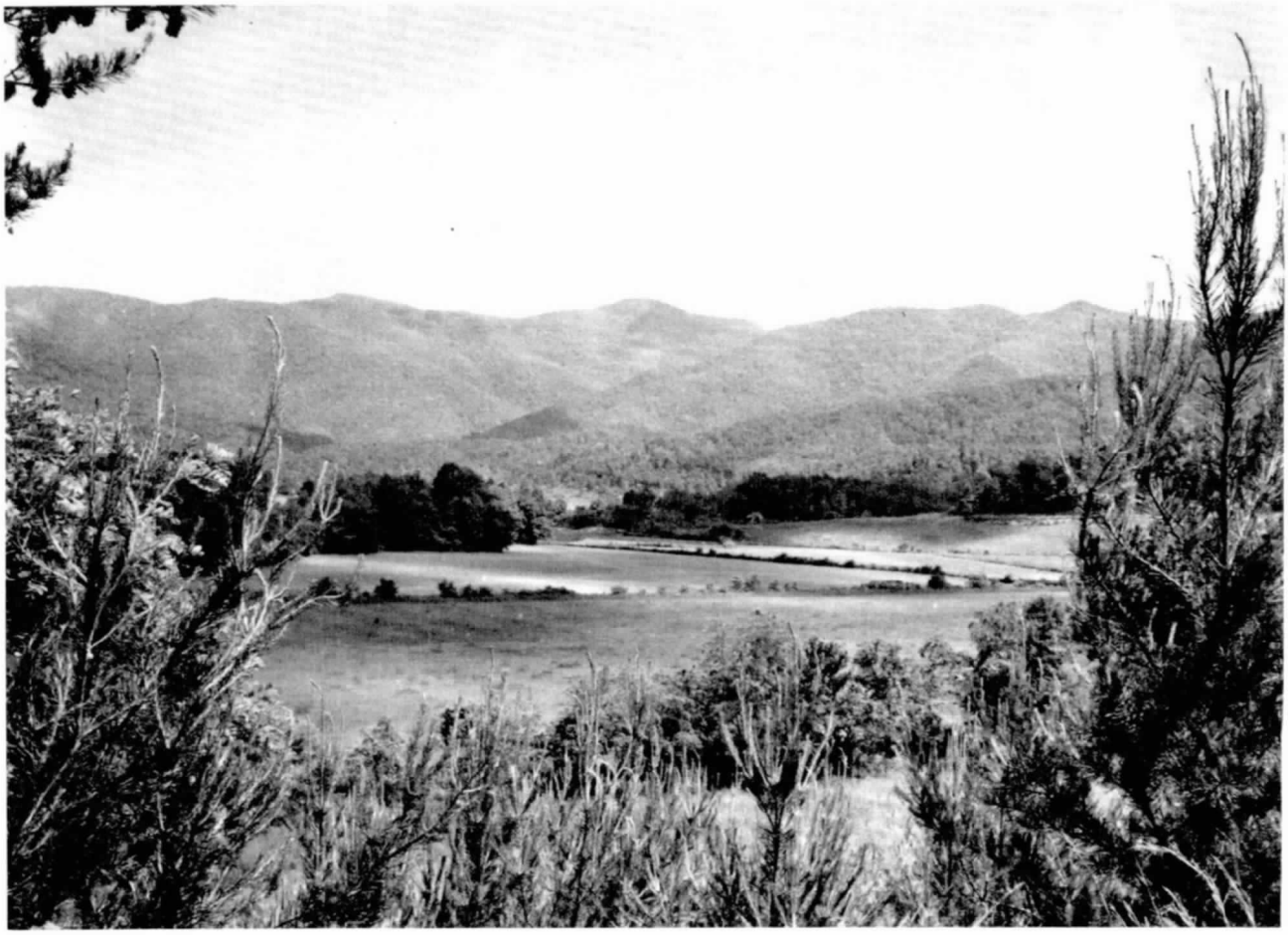
*These experiences are highly probable outcomes of participating in recreation activities in specific recreation settings.

14—RECREATION INPUT TO LAND AND RESOURCE MANAGEMENT PLANNING

Planning for recreation opportunities using the Recreation Opportunity Spectrum is conducted as part of Land and Resource Management Planning. The recreation input includes factors such as supply and demand, issues and identification of alternative responses to those issues which the planner must assess in order to develop management area prescriptions designed to assure the appropriate recreation experience through setting and activity management on the Forest.

Use of the Recreation Opportunity Spectrum and setting prescriptions as recreation input to Land and Resource Management Planning provides a framework for:

1. Establishing outdoor recreation management goals and objectives for specific management areas.
2. Trade-off analyses of available recreation opportunities as characteristic settings would be changed by other proposed resource management actions.
3. Monitoring outputs in terms of established standards for experience and opportunities settings.
4. Providing specific management objectives and standards for project plans.



Land and Resource Management Planning assures that National Forest System lands provide a variety of appropriate opportunities for outdoor recreation (FSM 2303.2). Each Forest need not provide an entire array of opportunities, but collectively the National Forest System will provide this variety. The appropriate roles of each Forest in providing opportunities should be established as part of the Land and Resource Management Planning process, and be identified in the Forest, Regional and National Plans.

15—MANAGEMENT PRESCRIPTIONS

In the Land and Resource Planning process the goals and objectives selected for a specific area (management area) are achieved through the implementation of management prescriptions. Prescriptions are closely integrated sets of specific management practices scheduled over the entire planning period or portions of the planning period. Most acres within a planning area have the inherent capability, to some degree, to provide recreation opportunities and experiences. Therefore management prescriptions for each management area should include consideration for recreation use.

The introductory portion of a management prescription states in a concise way the goals and objectives of the prescription; what resource outputs are being emphasized; and the expected future "condition of the Forest" which will result from application of the prescribed management actions. Alternative sets of management prescriptions are developed to reflect and evaluate emphasis of different resource output management directions.

Each prescription should contain minimum guidelines and standards to be met as well as directions concerning the type of activities, settings, and experience opportunities to be managed for during the planning time periods.

16—PROJECT PLANNING

The Recreation Opportunity Spectrum classes should be at a scale suitable for recreation management and land allocation purposes essential to the Land and Resource Management Planning process. For site-specific project plans the Recreation Opportunity Spectrum class directions for the management area within which the site is located should provide overall guidance to manage the site compatible with the kinds of recreation opportunities being provided by the larger area of which the site is a part.

20.1 The Supply Component

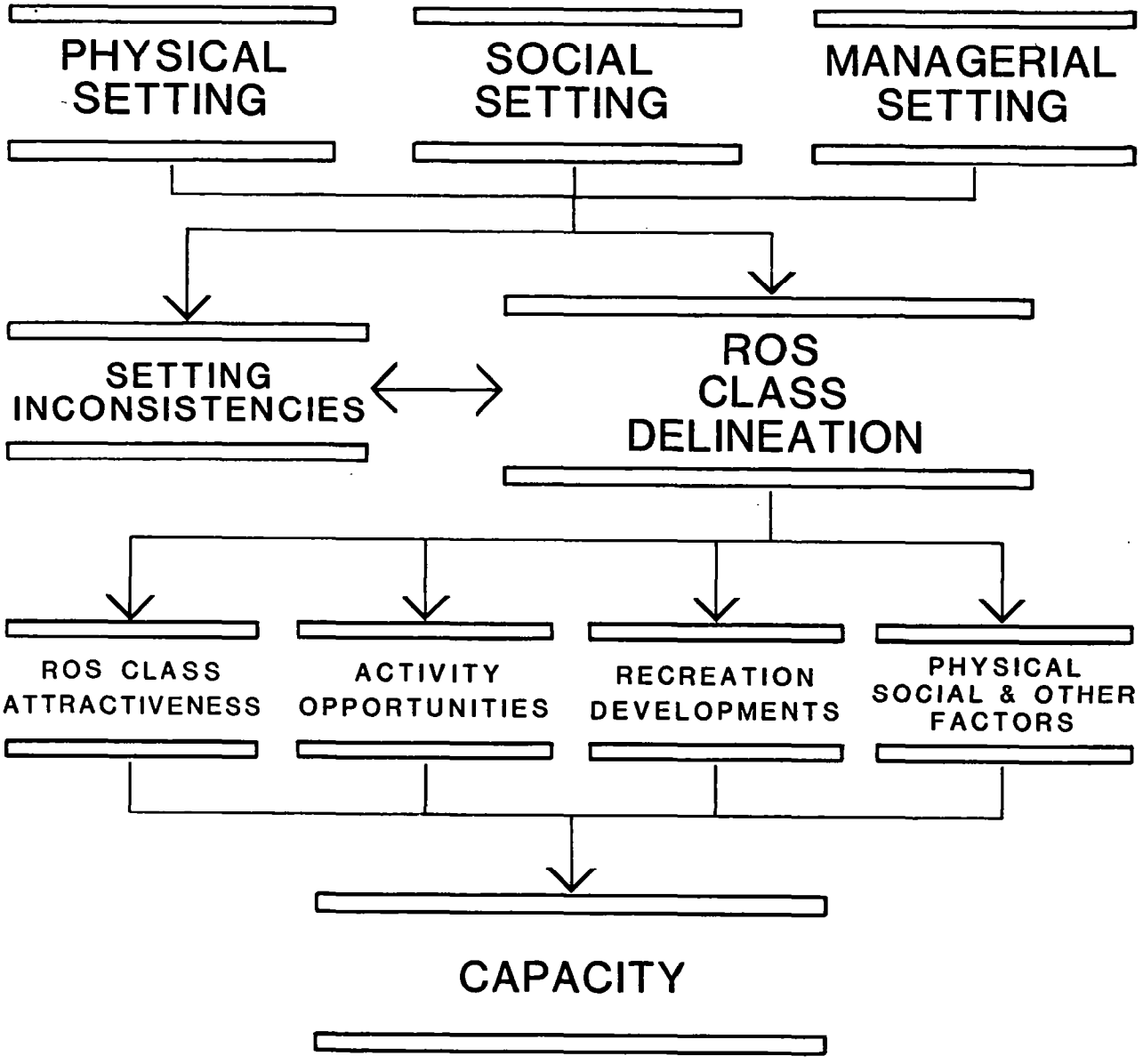
21 ROS CLASS DELINEATION
21.1 Wilderness—Special areas—Private Land
21.2 Physical Setting
21.21 Remoteness
21.22 Size of Area
21.23 Evidence of Humans
21.24 Physical Setting Map
21.3 Social Setting
21.31 Social Setting Overlay
21.32 Social Setting Mapping
21.4 Managerial Setting
21.41 Managerial Setting Mapping
21.5 Setting Inconsistencies
21.6 Seasonal Mapping

22 ROS CLASS ATTRACTIVENESS
22.1 Attractiveness Overlay
22.11 Variety Rating
22.12 Outstanding Features
22.13 Special Areas

23 ACTIVITY OPPORTUNITIES
23.1 Activity Identification
23.2 Activity Criteria

24 RECREATION DEVELOPMENTS
24.1 Existing Developments
24.2 Potential Developments
25 CAPACITY
25.1 Principal Factors Affecting Capacity
25.2 "Practical Maximum" Versus "Theoretical Maximum" Capacity
25.3 Capacity Determination
25.31 PAOT Approach
25.32 PAOT to RVD Conversion
25.33 RVD Approach
25.4 Use of Capacity Figures

20


PHYSICAL SETTING
SOCIAL SETTING
MANAGERIAL SETTING
SETTING INCONSISTENCIES
ROS CLASS DELINEATION
ROS CLASS ATTRACTIVENESS
ACTIVITY OPPORTUNITIES
RECREATION DEVELOPMENTS
PHYSICAL SOCIAL & OTHER FACTORS
CAPACITY

20.1—THE SUPPLY COMPONENT—The supply component of recreation input to Land and Resource Management Planning requires an inventory of recreation supply opportunities by Recreation Opportunity Spectrum class that are currently available as a result of existing conditions. It also requires for each alternative management prescription that a separate projection of potential supply by Recreation Opportunity Spectrum Class be developed. This information provides the basis for evaluation and determination of the management direction response to projected recreation demands.

21—ROS CLASS DELINEATION

The land and water areas of the Forest are inventoried and mapped by Recreation Opportunity Spectrum class to identify which areas are currently providing what kinds of recreation opportunities. This is done by analyzing the physical, social, and managerial setting components for each area. The characteristics of each of these three components of the setting affect the kind of experience the recreationist most probably realizes from using the area.

Table 2 shows mapping criteria which apply to each component of the setting. When conducting a Recreation Opportunity Spectrum inventory proceed through the criteria in the same sequence as that outlined in the Table. Definitions of the settings and step-by-step directions begin at Section 21.2.

Mapping the Recreation Opportunity Spectrum classes should be done on a map scale which allows an overall view of the planning area. A 1 inch = 1 mile scale is usually sufficient to provide this overview. If necessary the map information may be transferred to larger scale maps later in the data processing stage to conform with integrated data collection criteria.

Once the classes are mapped on the basis of the setting components, the activity opportunities within the classes are identified (Section 23-24), and the current capacity of the planning area to provide the opportunities is estimated (Section 25). Attractiveness by area and Recreation Opportunity Spectrum class may also be inventoried (Section 22) if relevant to the analysis of issues and concerns or other management planning needs.

Some alternative management prescriptions may require changes from the currently inventoried Recreation Opportunity Class delineation in order to meet the specified goals and objectives of the prescription. The classification changes in response to each alternative management prescription need to be specified and used to project the adjusted capacity or future supply by Recreation Opportunity Spectrum class.

Overlays should be used to document the projected changes needed in delineation or classification of the Recreation Opportunity Spectrum inventory in response to each alternative management prescription.

Table 2

Criteria Used For ROS Class Delineation

Setting Component	Mapping Criteria	Found In	Section
Physical	Remoteness	Table 3	21.21
	Size	Table 4	21.22
	Evidence of Humans	Table 5	
Social	User Density	Table 6	21.23
Managerial	Managerial Regimentation & Noticeability	Table 7	21.32 21.41

21.1—WILDERNESS-SPECIAL AREAS—PRIVATE LANDS—The Recreation Opportunity Spectrum inventory identifies the kinds or classes of recreation opportunities of an area as a function of its physical, social and managerial setting characteristics. The inventory helps identify what is actually happening on the land, and applies uniformily across, Wilderness, special areas, political or administrative boundaries and land ownership. Although some designated Wildernesses are composed largely of the Primitive type of recreation opportunity, many designated Wildernesses also include Semi-Primitive or Roaded-Natural opportunities. Therefore the Primitive Recreation Opportunity Spectrum class is not synonomous with designated Wilderness.

The Forest is inventoried using the Recreation Opportunity Spectrum criteria independently of any area designation. Inventory private lands within the Forest boundary and landownership adjacent to the boundary to the extent necessary to determine the affect of such land on the kinds of recreation opportunities available on the National Forest land. Application of the Recreation Opportunity Spectrum inventory outside the Forest boundaries may also be helpful in assessing the kind and amount of recreation opportunities available within the total planning area.

21.2—PHYSICAL SETTING—The physical setting is defined by the absence or presence of human sights and sounds, size, and the amount of environmental modification caused by human activity. The physical setting is documented on an overlay by combining these three criteria as described below.

21.21—REMOTENESS—Remoteness from the sights and sounds of humans is used as an indicator of the opportunity to experience greater or lesser amounts of social interaction, and primitive to urban influences, as one moves across the spectrum.

To identify remoteness:

1—On the base map or overlay delineate all roads, railroads, and trails. Distinquish between two levels of roads, "primitive roads," and "better than primitive roads." Trails with motorized use are included in the "primitive road" category.

a. Road Classification—For roads which are difficult to classify into the "primitive road," or "better than primitive road" categories apply the definitions, which are that "better than primitive roads" are constructed or maintained vehicle ways for the use of highway type vehicles having more than two wheels. "Primitive roads" are not constructed or maintained, and are used by vehicles not primarily intended for highway use.

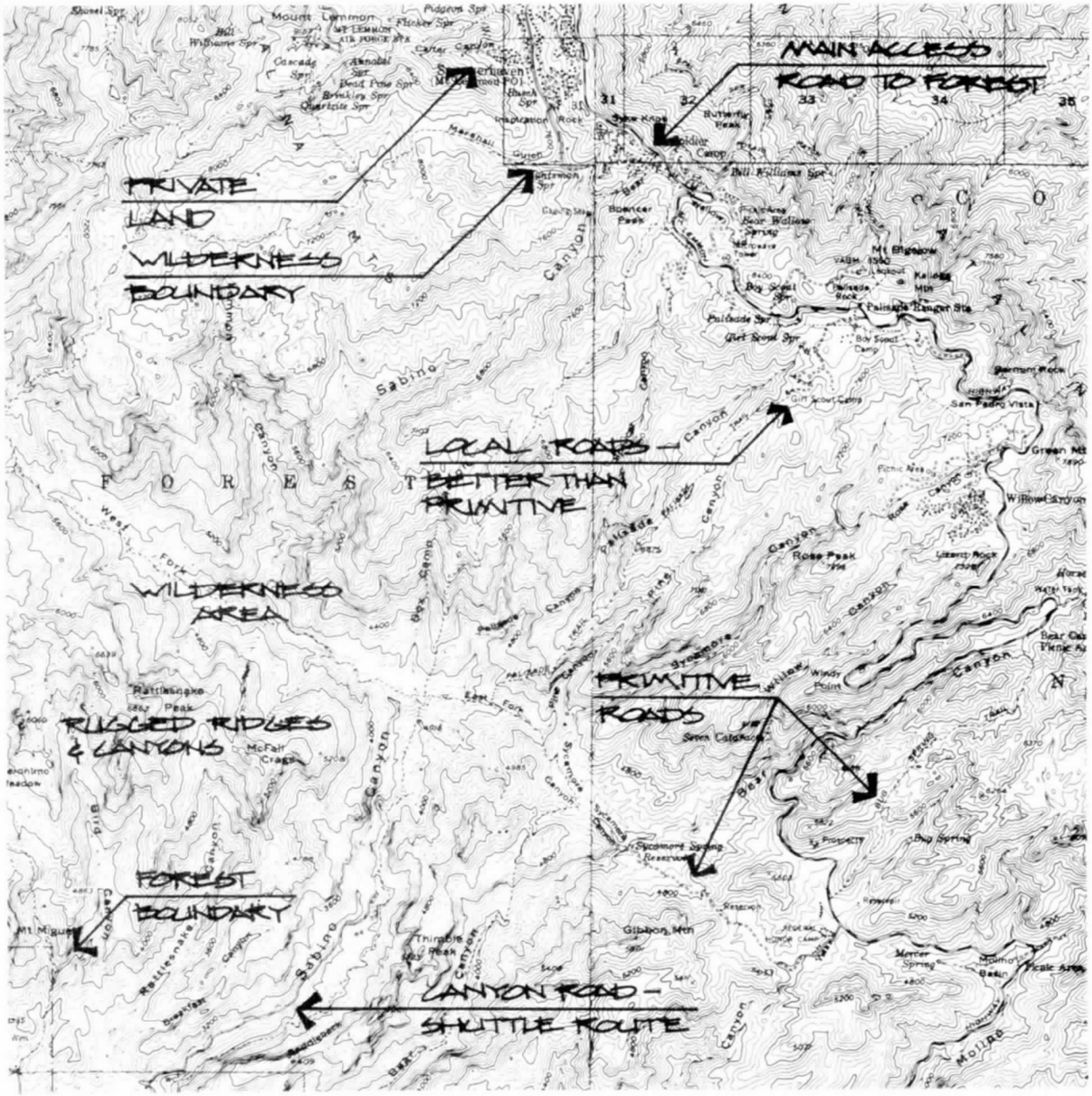
b. Sources of Road and Trail Information—Various sources can be used to obtain the transportation system information. Road classification and inventory Form 7700-9R is one such source. Three of the four road standards on the Form: graded and drained, aggregate surface, and pavement, apply to the "better than primitive road" category. The fourth standard is "primitive road" and includes "way, rut, track, not graded and drained."

For trails Form 2300-9T (or older Form 7700-9T) is an information source. Distinguish between motorized and nonmotorized trails by symbol. For many Forests this information is in the ORV plan.

c. Road Patterns—In most cases all roads and trails are mapped. In areas with dense road patterns, (e.g. greater than 4 miles per section), it may not be necessary to identify each road for Recreation Opportunity Spectrum class delineation. The entire area will be road-influenced and become the same Recreation Opportunity Spectrum class. In these cases only the roads along the periphery of the densely roaded area are needed to define the Recreation Opportunity Spectrum class boundaries.

d. Traffic Volume—Although volume of traffic may vary widely on the "better than primitive roads," depending upon the specific road involved, volume need not be recorded on the base map or overlay. The physical presence and sight of a road, even with no traffic on it, still impacts the visitor experience and is accounted for through the Recreation Opportunity Spectrum criteria. If traffic volume results in sounds from a road at distances greater than the line of sight, then sound may become the determinant criteria in delineating the appropriate Recreation Opportunity Spectrum class.

2—Where air and motorized water travel routes provide the only access consider them in a manner similar to roads. These specialized types of access may also provide a basis to determine the need for Recreation Opportunity Spectrum subclasses.



the landbase

3—Using the distance guidelines of Table 3 develop a remoteness overlay. Table 3 is only a guide. Lines between Recreation Opportunity Spectrum classes should reflect topographic and vegetative differences which adequately screen out the sights and sounds of humans to the same extent, i.e., the same portion of the spectrum, as the generalized distance guidelines. Relatively flat terrain with low tree cover, or large bodies of water, may require greater distances to achieve screening for remoteness, while deep canyons or heavily wooded terrain might provide equivalent screening with less distance. The fundamental determinant is the type of experience opportunities which either currently exist or might exist given the alternative management prescription assumptions.

a.Step One—In developing the remoteness overlay it is often easiest to begin by drawing the lines separating the Roaded Natural class from the Semi-Primitive Motorized class. This in effect divides the spectrum, with areas on one side of the line either Primitive or Semi-Primitive, and areas on the other side Roaded Natural, Rural, or Urban. The Roaded Natural, Rural, and Urban classes are distinguished from one another using the Evidence of Humans criteria in Table 5 page 22. No further separation therefore occurs in the relation to the remoteness criteria.

b. Step Two—Next delineate the Semi-Primitive Motorized class by a line approximately one-half mile—depending upon vegetation and terrain—from primitive roads and trails with motorized use. The Semi-Primitive Nonmotorized and Primitive portion of the spectrum now remain.

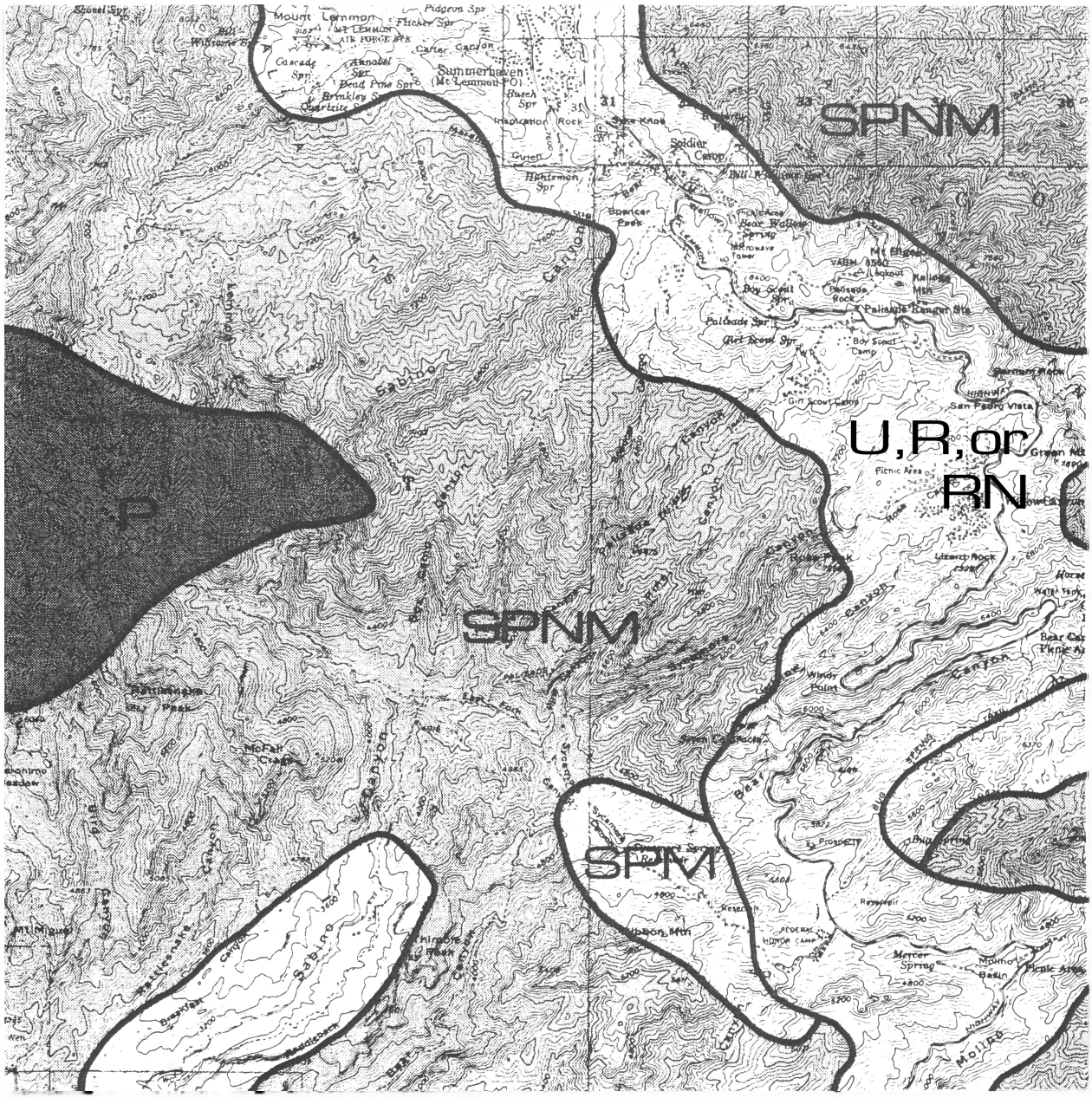
c. Step Three—Finally, delineate the Primitive class by a line approximately three miles from all roads, railroads, or trails with motorized use. All areas between the Primitive class line and Semi-Primitive Motorized line, are classified as Semi-Primitive Nonmotorized.

Table 3

Remoteness Criteria*

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
An area designated at least 3 miles from all roads, railroads or trails with motorized use	An area designated at least ½-mile but not further than 3 miles from all roads, railroads or trails with motorized use; can include the existence of primitive roads and trails if usually closed to motorized use.	An area designated within ½-mile of primitive roads or trails used by motor vehicles; but not closer than ½-mile from better than primitive roads.	An area designated within ½-mile from better than primitive roads, and railroads.	No distance criteria.	No distance criteria.

*The criteria can be modified to conform to natural barriers and screening, or other relevant features of local topographic relief and vegetative cover. This fits the criteria to the actual Forest landscape.



remoteness

21.22—SIZE OF AREA—Size of area is used as an indicator of the opportunity to experience self-sufficiency as related to the sense of vastness of a relatively undeveloped area. In some settings application of the remoteness criteria (Table 3) assures the existence of these experience opportunities; in other settings the remoteness criteria alone do not. Therefore, apply the size criteria. Table 4, the map or overlay developed using the remoteness criteria to insure that the appropriate experience opportunities are available.

Table 4

Size Criteria					
Primitive	**Semi-Primitive Non-Motorized**	**Semi-Primitive Motorized**	**Roaded Natural**	**Rural**	**Urban**
5,000 acres*	2,500 acres**	2,500 acres	No size criteria.	No size criteria.	No size criteria.

*May be smaller if contiguous to Semi-Primitive Nonmotorized Class.
**May be smaller if contiguous to Primitive Class.

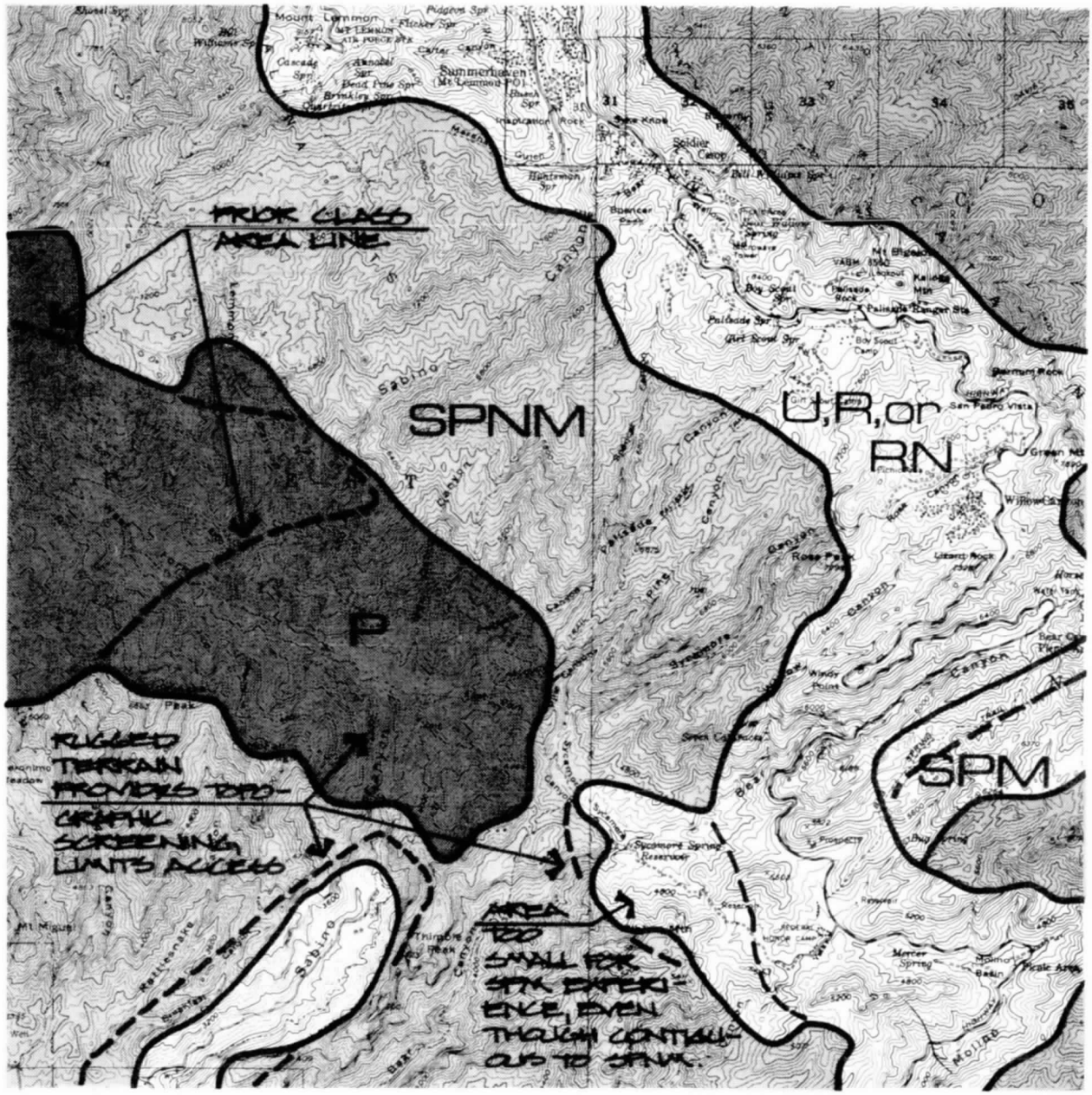
1—Area Adjustments—Situations where an area identified on the remoteness overlay is slightly smaller than the size criteria for a Primitive or Semi-Primitive class—or the area is a unique entity for some other reason—may require individual consideration. If the area is sufficiently added to, or buffered by, the next contiguous class it may still provide the kinds of opportunities which would more certainly occur if the area were larger. The decision as to whether this condition applies—or as to whether the area is for some other reason unique relative to the surrounding area and provides a given class of opportunity in spite of its size (e.g., an island)—requires local knowledge of the area and its features on the part of the planner.

21.23—EVIDENCE OF HUMANS—Evidence of Humans is used as an indicator of the opportunity to recreate in environmental settings having varying degrees of human influence or modification.

Apply the Evidence of Humans criteria given in Table 5 to determine whether the impact of human modification on the landscape is appropriate for each class designation on the inventory overlay. If the Evidence of Humans is more dominant than indicated for the designated Recreation Opportunity Spectrum class, adjust the class boundaries on the overlay so the designations accurately reflect the situation. If the class boundaries change markedly reevaluate the size of the classes (Table 4) to make sure size remains adequate.

The Evidence of Humans criteria for each Recreation Opportunity Spectrum class is primarily based on the visual impact and affect of modifications on the recreation experience, as distinguished from only the physical existence of modifications. The criteria take into account the variation in visual absorption capacity of different landscapes.

1—Evidence of Humans Criteria and the Visual Management System—While in some ways it seems possible to equate Visual Quality Objectives, or a range of objectives, with each Recreation Opportunity Spectrum class the function of the Evidence of Humans Criteria in the Recreation Opportunity Spectrum is not the same as Visual



area & landform adjustments

Quality Objectives in the Visual Management System and equating the two is not recommended. For example, middle and background Visual Management System areas are often where Primitive and Semi-Primitive Recreation Opportunity Spectrum classes occur. A retention or partial retention Visual Quality Objective given to such an area for management direction could have a vastly different meaning than the delineated Recreation Opportunity Spectrum class.

Thus identify the Recreation Opportunity Spectrum classes through the setting descriptions in the Evidence of Humans Criteria. Table 5, and not through use of Visual Quality Objectives. To assist in this, the Evidence of Humans Criteria are purposely worded differently than the definitions of Visual Quality Objectives.

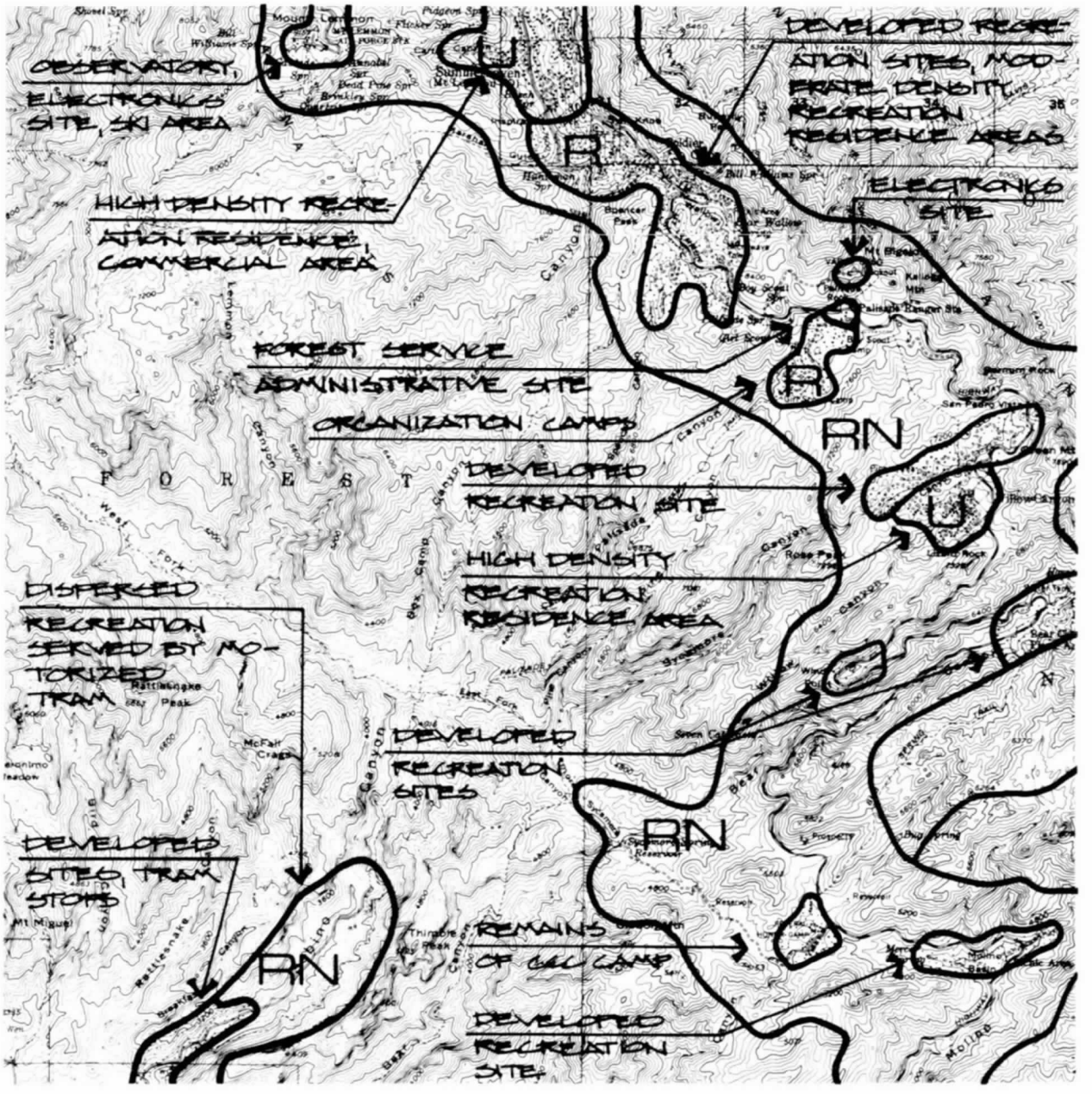
Forests which have completed an Existing Visual Condition inventory as part of their Visual Management System can use this information to assist in using the Evidence of Humans Criteria. However, interpretation of Existing Visual Condition data (short of determining Visual Condition Type) on location and size of existing human activities can be a helpful aid in determining the Recreation Opportunity Spectrum class.

Table 5

Evidence of Humans Criteria

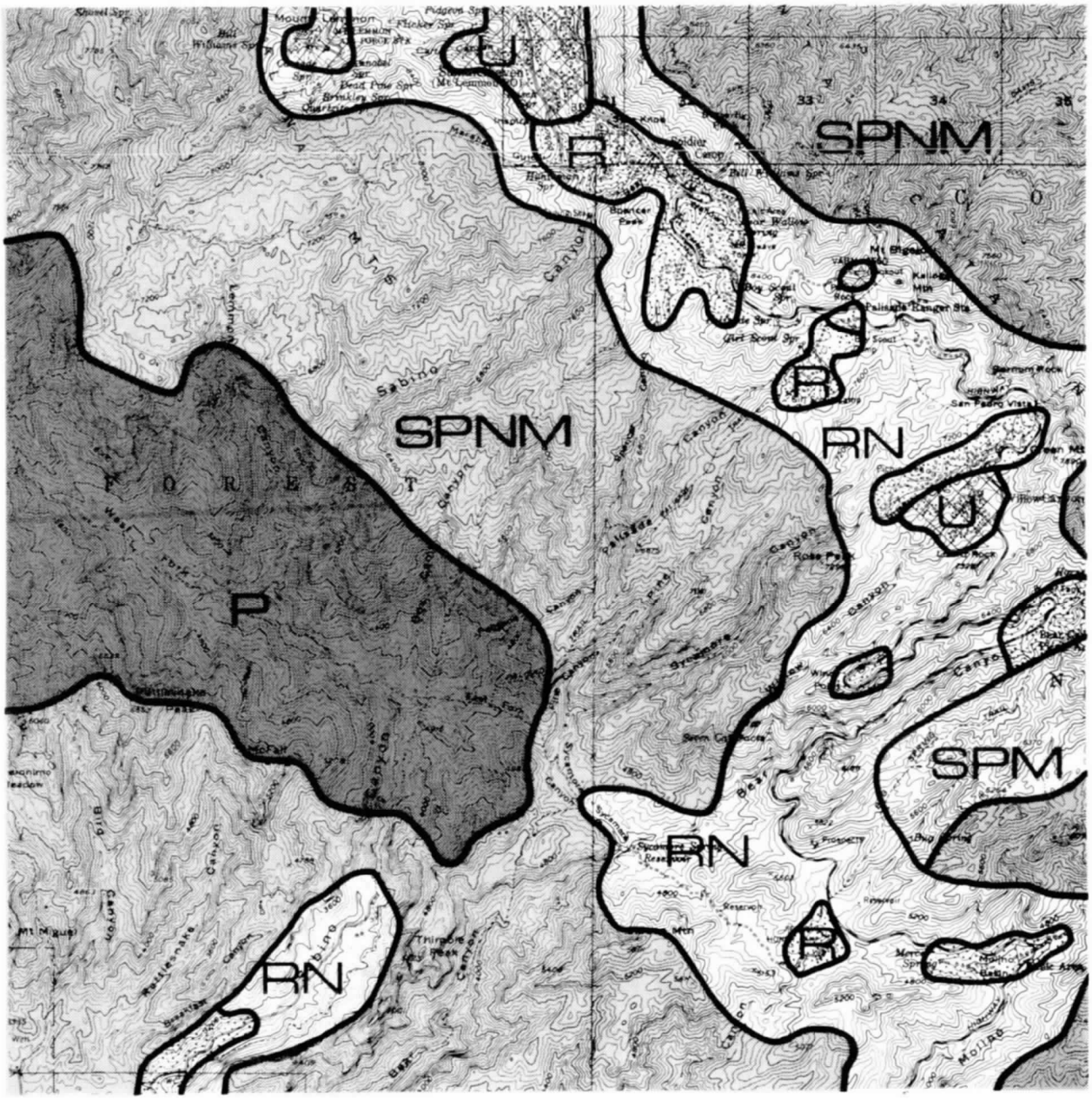
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Setting is essentially an unmodified natural environment. Evidence of humans would be unnoticed by an observer wandering through the area.	Natural* setting may have subtle modifications that would be noticed but not draw the attention of an observer wandering through the area.	Natural* setting may have moderately dominant alterations but would not draw the attention of motorized observers on trails and primitive roads within the area.	Natural* setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However from sensitive** travel routes and use areas these alterations would remain unnoticed or visually subordinate	Natural* setting is culturally modified to the point that it is dominant to the sensitive** travel route observer. May include pastoral, agricultural, intensively managed wildland resource landscapes, or utility corridors Pedestrian or other slow moving observers are constantly within view of culturally changed landscape.	Setting is strongly structure dominated Natural or natural-appearing elements may play an important role but be visually subordinate. Pedestrian and other slow moving observers are constantly within view of artificial enclosure of spaces.
Evidence of trails is acceptable, but *should not exceed* standard to carry expected use.	Little or no evidence of primitive roads and the *motorized use of trails* and primitive roads.	Strong evidence of primitive roads and the *motorized use of trails* and primitive roads.	There is strong evidence of designed *roads and/or highways.*	There is strong evidence of designed *roads and/or highways*	There is strong evidence of designed *roads and/or highways* and streets.
Structures are extremely rare	Structures are rare and isolated.	Structures are rare and isolated	Structures are generally scattered, remaining visually subordinate or unnoticed to the sensitive** *travel route* observer. Structures may include power lines, micro-wave installations and so on.	Structures are readily apparent and may range from scattered to small dominant clusters *including power lines,* microwave installations, local ski areas, minor resorts and recreation sites.	Structures and structure complexes are dominant, and may include major resorts and marinas, *national and regional* ski areas, towns, industrial sites, condominiums or second home developments

*In many southern and eastern forests what appears to be natural landscapes may in actuality have been strongly influenced by humans The term natural-appearing may be more appropriate in these cases.
**Sensitivity level 1 and 2 travel routes from Visual Management System USDA Handbook 461



evidence of humans

21.24—PHYSICAL SETTING MAP—The result of completing the remoteness, size, and evidence of humans steps (Sections 21.2 –21.23) is the physical setting map (or overlay).



21.3—SOCIAL SETTING—The social setting reflects the amount and type of contact between individuals or groups. It indicates opportunities for solitude, for interactions with a few selected individuals, or for large group interactions.

21.31—SOCIAL SETTING OVERLAY—In many cases it is easiest to document the social setting (and managerial setting, Section 21.4) component on a separate overlay from the physical setting. However, Forests without complex social or managerial settings may prefer to record their information on the same physical setting overlay rather than prepare a second overlay. Whichever method is used, label the social and managerial information clearly for future identification.

21.32—SOCIAL SETTING MAPPING—Apply the "user density" criteria in Table 6. These criteria are used as a measure of user interaction.

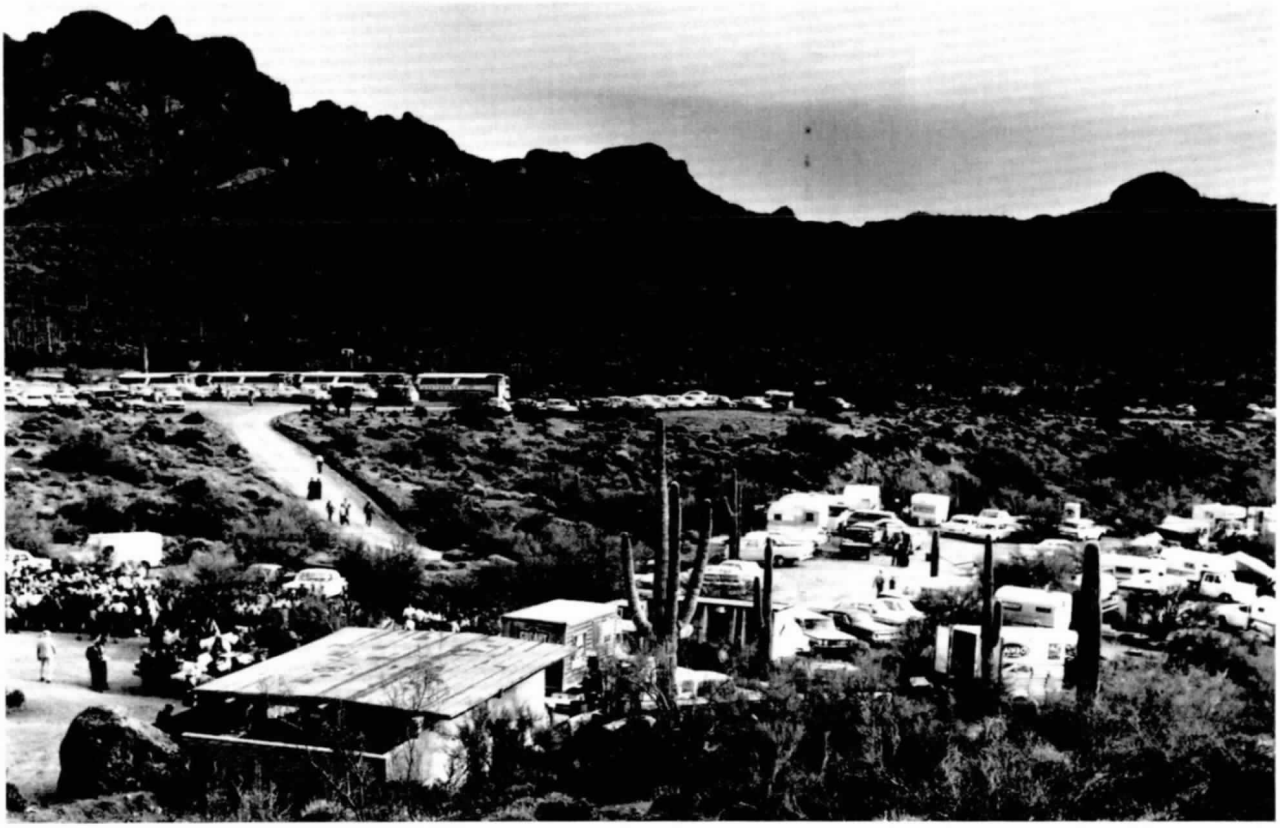
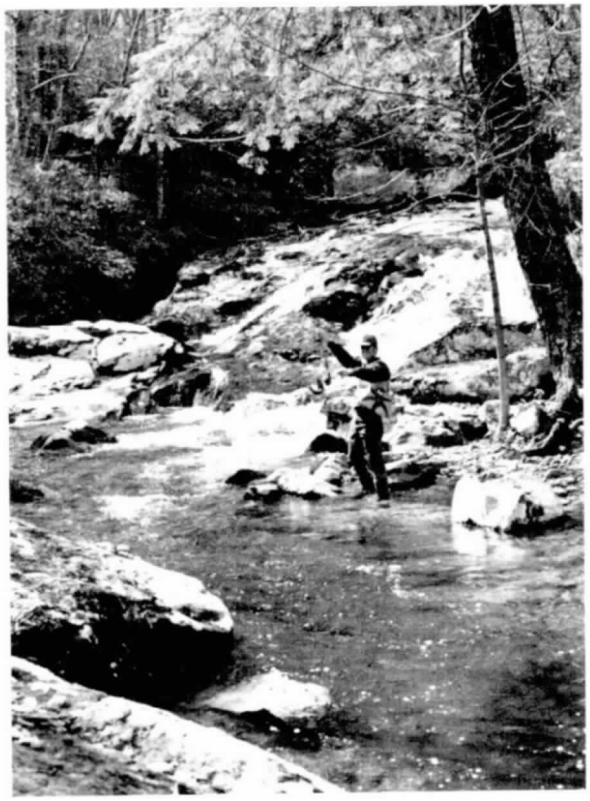


Table 6

Social Setting Criteria*					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Usually less than 6 parties per day encountered on trails and less than 3 parties visible at campsite.	Usually 6 –15 parties per day encountered on trails and 6 or less visible at campsites.	Low to moderate contact frequency. * *	Frequency of contact is: * * Moderate to High on roads; Low to Moderate on trails and away from roads.	Frequency of contact is: * * Moderate to High in developed sites, on roads and trails, and water surfaces. Moderate away from developed sites.	Large numbers of users onsite and in nearby areas.

*These criteria apply during the typical recreation use season. Peak days may exceed these limits.
* *Specific numbers must be developed to meet regional or local conditions.

In areas of concentrated use the social setting criteria may not result in the same Recreation Opportunity Spectrum class as the physical setting criteria for the area. When this occurs a "setting inconsistency" is taking place. Setting inconsistencies are discussed in Section 21.5.



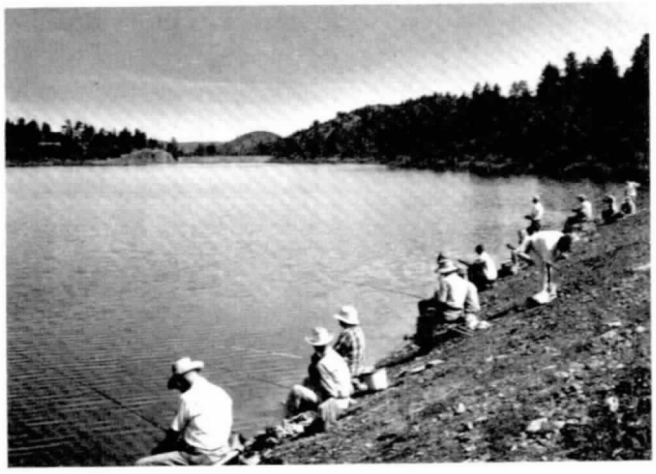


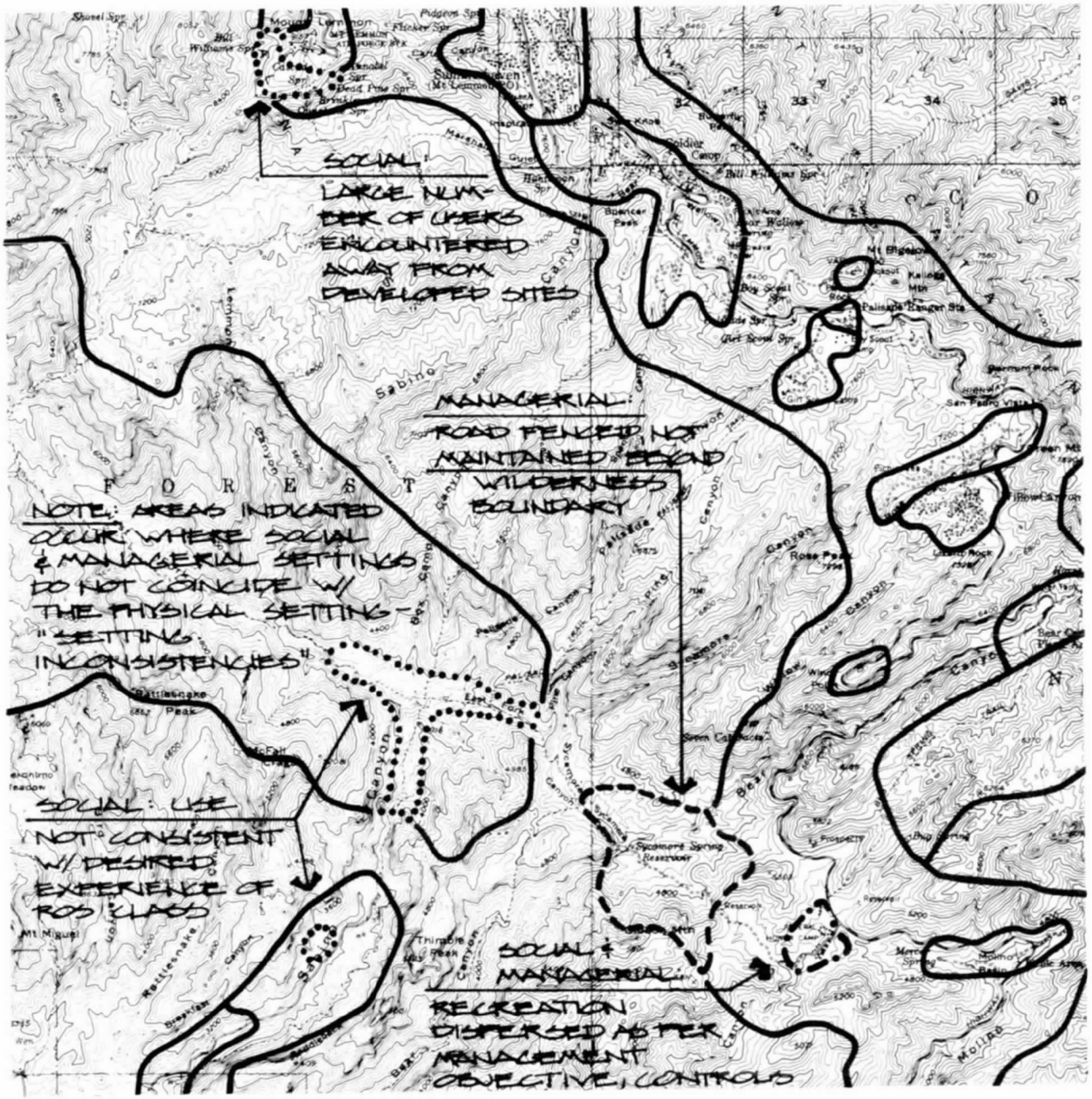
Table 7

Managerial Setting Criteria					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
On-site regimentation is low with controls* primarily off-site.	On-site regimentation and controls* present but subtle.	On-site regimentation and controls* present but subtle.	On-site regimentation and controls* are noticeable, but harmonize with the natural environment.	Regimentation and controls* obvious and numerous, largely in harmony with the man-made environment.	Regimentation and controls* obvious and numerous.

*Controls can be physical (such as barriers) or regulatory (such as permits).

21.4—MANAGERIAL SETTING—The managerial setting reflects the amount and kind of restrictions placed on people's actions by the administering agency or private landowner which affect recreation opportunities.

21.41—MANAGERIAL SETTING MAPPING—Apply the managerial regimentation and noticeability criteria in Table 7. Place the information on the social setting overlay, or on the physical setting overlay if a separate social setting is not used. Label the information for future identification.



social & managerial setting

The physical, social, and managerial setting overlay maps together document the recreation opportunities of the planning area, and the conditions under management control which affect the recreation experience. This information is used in developing the Analysis of the Management Situation.

21.5—SETTING INCONSISTENCIES—When the physical, social, and/or managerial settings are not the same on the same piece of ground a "setting inconsistency" is occurring. A heavily-used hiking trail in a Primitive class physical setting may register a Semi-Primitive or Roaded Natural class social setting, for example, due to the amount of use.

To resolve setting inconsistencies for the current situation alternative, map the Recreation Opportunity Spectrum class which best reflects current management direction. If this consideration still leaves a dilemma in identifying the existing class, use the following approach.

1. Tend toward the physical setting. The physical setting often represents the more permanent (or less easily changed) component of the Recreation Opportunity Spectrum class. The social and managerial components can often be altered in shorter time frames.

2. If emphasizing the physical setting yields unrealistic results average the differences between the physical, social and managerial setting components.

3. If averaging is necessary, consider that it is usually easier to shift in a Primitive to Urban direction along the spectrum than to move from Urban toward Primitive. Once physical developments or other human modifications are in place it is generally infeasible to remove or destroy them. Hence to preserve more options for the future, extra weight might be given in averaging setting components more toward the Primitive end of the spectrum.

Whether a setting inconsistency is acceptable or not for other, alternatives reflecting future management options is determined by each specific management prescription being considered. Setting inconsistencies are a basis for developing management prescription alternatives which change the existing physical, social, or managerial setting components to make them consistent for an area, or to purposefully manage an area with a setting inconsistency to attain some specific management objective. If trails are placed in an area to concentrate use, for example, then a trail social setting more toward the urban end of the spectrum than the physical setting may be desirable. On the other hand if trial use is so high that it distracts from the experience the recreationist is seeking, then the setting inconsistency is undesirable.

21.6—SEASONAL MAPPING—Forests which have issues, concerns, and opportunities relating to both summer and winter recreation opportunities may find it necessary to complete a Recreation Opportunity Spectrum map for each season. Activity, setting, and experience opportunities may change significantly between the seasons as a result of changes in travel restrictions, accessibility, and apparentness of the Evidence of Humans Criteria.

22—ROS CLASS ATTRACTIVENESS

Attractiveness information for each Recreation Opportunity Spectrum class:

1. Provides a general evaluation of the landscape in the class in relationship to its recreation opportunities.

2. Further describes each class by identifying those areas with specific attractions for the recreationist.

existing recreation opportunities

Whether to make an attractiveness overlay for each class is dependent upon the issues, concerns, and opportunities which the Forest plan is addressing. If the information gathered in the attractiveness step is relevant, an attractiveness overlay should be made. If the attractiveness information is not issue, concern or opportunity-related the overlay is optional (though attractiveness information is often valuable in helping to make "best buy" decisions during the resource allocation phases of the planning process).

22.1—ATTRACTIVENESS OVERLAY—If the decision is made to construct an attractiveness overlay proceed through the following steps:

22.11—VARIETY RATING—Use the Variety Class rating, as defined in *National Forest Landscape Management Volume 2, Chapter 1,* to determine the attractivenes rating for each of the Recreation Opportunity Spectrum classes delineated on the physical setting overlay map. The premise is that landscapes with the most variety or diversity (landforms, vegetation patterns, water forms, and rock formations) also have the greatest attractiveness for recreation use and enjoyment.

22.12—OUTSTANDING FEATURES—Identify all those outstanding or unique features in the landscape, such as waterfalls, sand beaches, and the like, which are important in the development of the alternatives for the Forest Plan.

22.13—SPECIAL AREAS—Identify any specially recognized or designated areas that provide opportunities for special or unique activities or experiences, such as scenic or historical areas.

23—ACTIVITY OPPORTUNITIES

Recreation activities in given settings provide opportunities for the recreationist to attain desired experiences. The activity opportunities which make these experiences possible should be identified. This information may be recorded on a separate overlay.

23.1—ACTIVITY IDENTIFICATION—Use the appropriate RIM definitions and codes, FSH 2309.11, to identify existing activity opportunities, and those potential activity opportunities for which data should be collected as a result of issues, concerns, and opportunities evaluated in the Forest plan. Also identify any unusual recreation activities not listed in the RIM codes if these activities are pertinent to the issues, concerns, and opportunities.

Activity opportunities which are common to given Recreation Opportunity Spectrum classes may be listed as being generally available in those classes. Activity opportunities which are unique, or which may be in short supply, should be specially noted as to kind, amount and location.

1—Existing Activities—identify and inventory existing activities for each Recreation Opportunity Spectrum class delineated on the physical setting overlay under current management direction.

2—Potential activities—refer to activity opportunity needs identified through analysis of the management situation issues and concerns that are inconsistent, inappropriate, or inadequately provided for within the current situation inventory of recreation opportunities.

Alternative management prescriptions should be designed to assure that recreation goal and objective directions respond to a range of recreation activity opportunity needs including projected activity demands. The alternative management prescriptions provide the directional basis for changes in the current Recreation Opportunity Inventory that will in turn consistently, appropriately and adequately provide for the identified potential activities.

These may be identified on the overlay for each alternative management prescription.

23.2—ACTIVITY CRITERIA—All activities considered must meet the following criteria:

1. The resource must be capable of sustaining the impact of the use.

2. The activity is suitable as defined by Forest Service policy and established role FSM 2303.

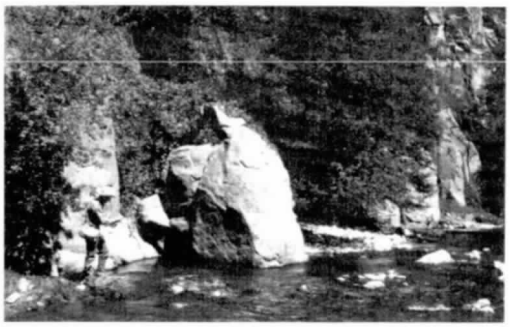
24—RECREATION DEVELOPMENTS

24.1—EXISTING DEVELOPMENTS—Indicate by kind and PAOT capacity on the activity, or another overlay, where Forest Service, other public agency, and private recreation developments exist within and adjacent to the planning area. Consider developments outside the Forest boundary when they may affect plan alternatives.

24.2—POTENTIAL DEVELOPMENTS—Map on the appropriate alternative management prescription overlay the potential development sites needed to meet the recreation goals and objective directions of the management prescription. Use information previously gathered if currently useful for site identification (NFRS, composite plans, code-a-site inventories, environmental assessments, etc.). Indicate an estimate PAOT.

25—CAPACITY

Recreation capacity is a measure, by Recreation Opportunity Spectrum class, of the maximum number of people who can obtain given kinds of recreation experiences at an established standard on a Forest within the constraints of resource capability. Capacity indicates the maximum recreation opportunity supply.



25.1—PRINCIPAL FACTORS AFFECTING CAPACITY—The principal factors affecting capacity for a Recreation Opportunity Spectrum class include:

1. **Land Type**
   a. Topography
   b. Erodibility
   c. Drainage
   d. Productivity
   e. Geologic Hazard
   f. Resistance to Compaction

2. **Vegetation**
   a. Height
   b. Density
   c. Resiliancy to Use
   d. Reproducibility

3. **Social**
   a. Number of Contacts With Others
   b. Types of Encounters (Behavior)
   c. Types of Activities
   d. Design Capacity

4. **Other**
   a. Access
   b. Length of Season
   c. Pattern of Use
   d. Occupancy Length
   e. Attractiveness of Site for Specific Activities

Capacity is a function of how a particular combination of these physical and social factors on a Forest interact to absorb or screen the sights and sounds of human activity and absorb physical use. Lower capacities generally exist where landscapes are open (little vegetative screening and flat topography) or where the soil or vegetation is fragile. Higher capacities generally exist where landscapes have more screening and are resistent to physical use.

By Recreation Opportunity Spectrum class, the more primitive the class along the spectrum, the greater, usually, the acreage requirements to provide the kinds of opportunities associated with the class.

25.2—"PRACTICAL MAXIMUM" VERSUS "MAXIMUM THEORETICAL" CAPACITY—Two ways exist to view or interpret the capacity concept. The first is that capacity—a measure of maximum potential supply—is best expressed by a figure based upon each acre of the Forest being at its upper physical and/or social capacity limit by Recreation Opportunity Spectrum class. This "maximum PAOT" times the number of days in the recreation season or year, becomes the "Maximum theoretical capacity."

The second view is that while this "maximum theoretical capacity" may provide a theoretical upper limit, it seldom represents a realistic or "practical maximum" because of usable versus unusuable acres, weekend versus weekday use, occupancy rate, and the like. In this view "practical maximum capacity" is the effective upper limit because it accounts for factors which are always present and significantly affect recreation participation patterns.

The "maximum theoretical capacity" interpretation of capacity, that of a given Forest or Recreation Opportunity Spectrum class full of maximum number of people throughout a maximum season weekend, weekday, rain or shine notwithstanding-is useful to provide absolute upper limits beyond which recreation opportunities or use cannot exist. These values are not directly applicable for Land and Resource Management Planning analysis, however, since they usually represent tradeoffs between theoretical upper limits which seldom, if ever, occur on the ground.

The "practical maximum" interpretation of capacity does provide values which can be used in most Land and Resource Management Planning analyses, and is the approach portrayed in Sections 25.31 –33.

25.3—CAPACITY DETERMINATION—Forests or Regions can use one of two approaches to determine the "practical maximum capacity" of the Forest. One is to derive PAOT capacity for the developed sites and remaining area within and consistent with each Recreation Opportunity Spectrum class. Then, convert this figure to RVD's in order to compare supply with RVD units of demand and current and alternative management prescription direction.

The second approach is to derive capacity directly in RVD's by considering the specific activity mixes occurring on the Forest. This requires applying capacity standards for each activity by ROS class, such as hikers per mile of trail per hour, and summing the individual activity capacities to obtain one total maximum capacity for the area.

Whichever approach is used, indicate acres by Recreation Opportunity Spectrum class, so that per acre capacity coefficients can be calculated.

This must be done for the current inventoried situation and for each alternative management prescription when the direction provides for changes from current delineation or classification of ROS classes.

25.31—PAOT APPROACH—Sum by Recreation Opportunity Spectrum class the PAOT capacity of all developed sites, and the maximum PAOT capacity of the remaining area, within each class.

Table 8 gives capacity coefficient ranges which have been developed from numerous Forest settings, but which are not adjusted for "practical maximum capacity" as discussed in Section 25.2.

Table 8

Capacity Coefficient Ranges*
(in PAOT/Acre)

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
High: .025	.083	.083	2.500	7.500	N/A
Low: .002	.008	.008	.083	.830	N/A

*Specific ranges must be developed to meet Regional or Forest Conditions.

To make the "practical maximum" adjustment, lower the values in Table 8 on the basis of desirable versus undesirable acres, occupancy rates, or other characteristics which apply to particular Forest settings. A combination of attractiveness (measured by Variety Class) and percent slope as criteria to define desirable acres, has been highly successful in some areas. In addition, the concept of "limiting factors," access or transportation system capacity, for example, has been successfully used for deriving viable capacity values.

Since the significance of which factors, or combination of factors (Section 25.1), varies as a function of actual Forest terrain and landscape, the Forest planner must fine-tune or determine the reasonableness of the capacity estimates on a local basis. The planner is encouraged to check with surrounding Forests, other public agencies and/or the Regional Office to take advantage of specific procedures or considerations that may have been developed to address this point.

Once the maximum potential supply of opportunities by Recreation Opportunity Spectrum class is estimated in PAOT, the PAOT's should be converted into Recreation Visitor Days (RVD's).

25.32—PAOT TO RVD CONVERSION—PAOT's are converted into RVD's, or vice versa, in accordance with the following formulas:

$$1.\ \mathbf{PAOT} = \frac{\mathbf{RVD}}{\mathbf{MS} \times \mathbf{PU} \times \frac{\mathbf{LOS}}{\mathbf{12}}}$$

$$\mathbf{RVD} = \frac{\mathbf{PAOT} \times \mathbf{MS} \times \mathbf{PU} \times \mathbf{LOS}}{\mathbf{12}}$$

Where:

MS = Managed Season of Use, in days;

PU = Pattern-of-Use, or the relationship between the average weekend use and average weekday use of sites and/or areas;

LOS = Average length of time the area or site is occupied in hours. (If not known base upon local knowledge or experience.)

12 = The Constant for 12 hrs = RVD.

Two calculations are needed, one for PAOT (RVD's) or overnight use, and the second for PAOT (RVD's) of day use. Added together, the two calculations give the total for an area or site.

2. Rationale For Deriving Pattern-of-Use— People seldom use recreation sites or areas as completely on weekdays as on weekends. If they did the ratio of weekday to weekend use would be 1:1. Local patterns-of-use result from socio-economic considerations such as the five-day work week, five-day school week, vacation patterns, kinds of access (e.g., interstate systems), proximity to major metropolitan areas, and other such factors.

Table 9 can be used as a guide for reducing theoretical capacities of sites and areas to allow for patterns-of-use, and thus derive a "practical capacity."

Table 9

Pattern-of-Use Adjustment Factors

Pattern	Factor
Weekday:Weekend	
1:1	1.00
1:1½	.80
1:2	.65
1:3	.50
1:4	.45
1:5	.43
1:6	.40
1:7	.38
1:8	.37
1:9	.36
1:10	.35

In many places the pattern-of-use applicable to local Forest recreation opportunities may be known. If not a review of research studies or other information may be necessary. In the absence of such information the pattern-of-use will have to be estimated based upon the local experience.

25.33—RVD APPROACH—In the RVD approach the relationship between RVD's of capacity per Recreation Opportunity Spectrum class and the physical characteristics of the class settings must first be established. Table 10, for example, shows values established by the Southwestern Region.

The Table 10 regional values are then adjusted for applicable local conditions, as shown in the following example:

Example:

1. The Recreation Opportunity Spectrum class of an area is Roaded Natural, and the cover type pinyon juniper. The Table 10 coefficient is 10.5.

2. Capability area information indicates that only 50 percent of the area is suitable for the major recreation activities because of slope and vegetation. The adjustment factor is 0.5.

3. The area can be used yearlong, but because the attractions on the area are only small and big game hunting the use season is actually 60 days. The adjustment factor is 60 days/100 days (of total use season) = 60/100 = 0.6.

4. Observation of the occupancy pattern during the use season indicates that on the average weekends have four times as many people as weekdays. The adjustment factor in Table 9 is 0.45.

The adjusted coefficient is $10.5 \times 0.5 \times 0.6 \times 0.45 = 1.42$ for this Roaded Natural area.

Regardless of the approach used it must be done individually for the current inventoried situation and for each alternative management prescription direction that would require changes to the current delineation or classification of ROS class.

Table 10

Southwestern Region Use Densities By ROS Class and Eco-Region (RVD's/Acre/100-Day Season)

Eco-Region	Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Tundra	.45	1.05	2.4	6.0	Coefficients for Rural and Urban are based upon design capacity.	
Coniferous Forest	1.05	2.40	6.0	15.0		
Coniferous Woodland	.75	1.72	4.2	10.5		
Evergreen Woodland	.75	1.72	4.2	10.5		
Deciduous Forest	.75	1.72	4.2	10.5		
Grassland	.45	1.05	2.4	6.0		
Desert Shrub	.45	1.05	2.4	6.0		
Lava Flow & Gypsum	.45	1.05	2.4	6.0		
Riparian	1.05	2.40	6.0	15.0		
Range	.45 –1.05	1.05 –2.40	2.4 –6.0	6.0 –15.0		

25.4—USE OF CAPACITY FIGURES—The per acre capacity coefficients by Recreation Opportunity Spectrum class, derived by either the PAOT or RVD method for each alternative management prescription are used in the Land and Resource Management Planning analysis to register what kinds and amounts of recreation opportunities are being allocated or traded off.