



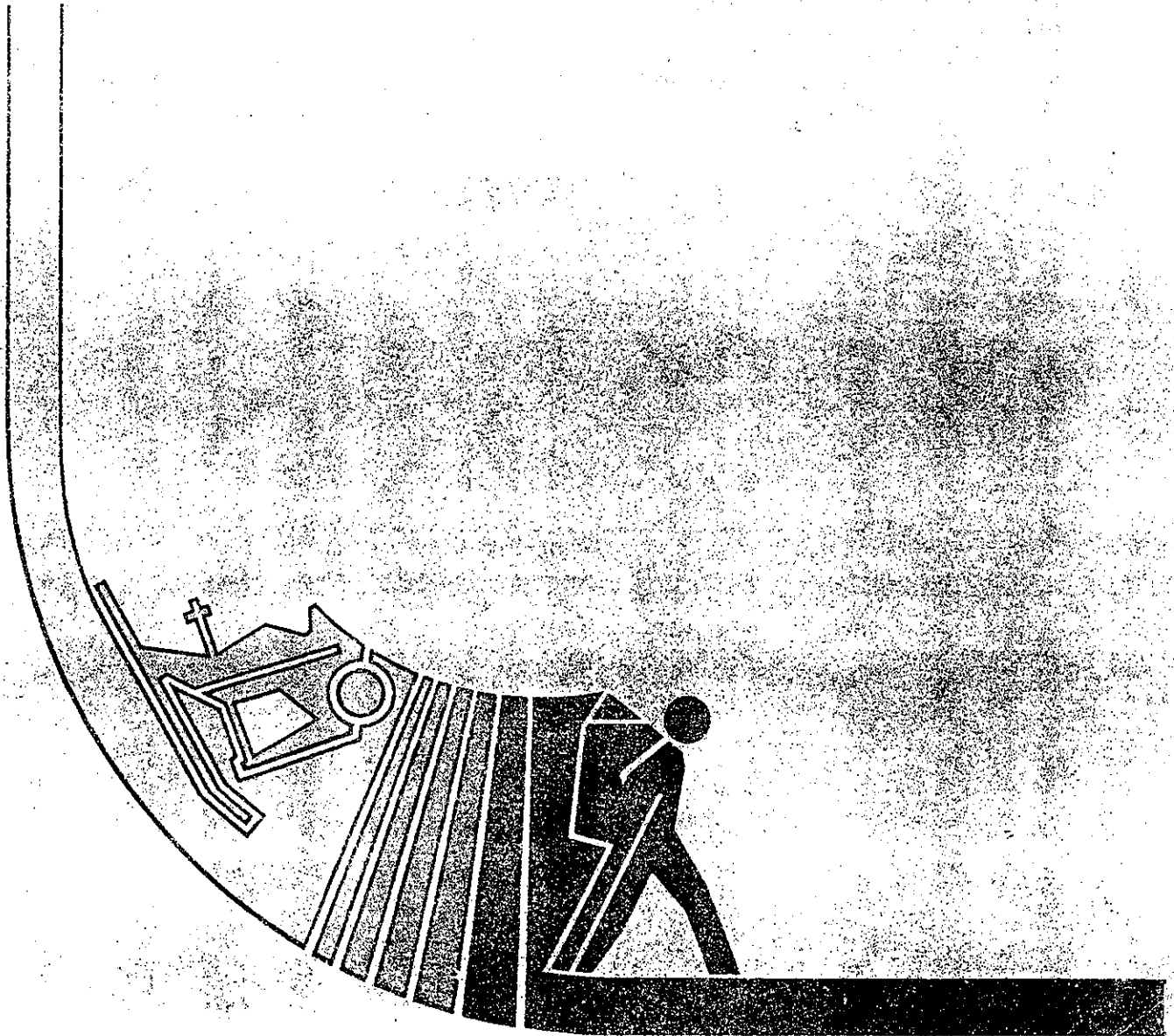
United States
Department of
Agriculture



Forest
Service



1986 ROS Book



1986 ROS BOOK

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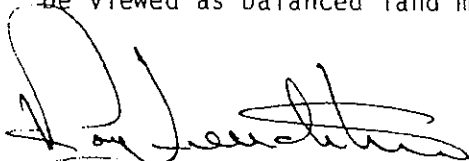
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INTRODUCTION

THE 1986 ROS BOOK has many purposes. Our goal is to gather a variety of Recreation Opportunity Spectrum material into one document, share ideas and concepts, provide LMP/ROS coordination, and update the current ROS situation. This is not a policy document, as ROS is still evolving and needs creative application.

Very little in THE 1986 ROS BOOK is new information, but neither is it well known Service-wide. Pertinent research is highlighted, the out-of-print "ROS Users Guide(82)" is included, the LMP section looks at how ROS has been used, and practical applications are illustrated. The editors strived to have a user-friendly Table of Contents so needed information could be found quickly. We suggest that the Table of Contents be circulated and the document put with your reference material. That should allow all (not just recreation staff) to be aware of the Book's availability and its contents.

A key ROS concept is that it provides a framework which allows administrators to manage for, and users to enjoy, a variety of recreation environments. This variety will more and more become the corner stone of the National Forest System. ROS is not a land classification system; it is a management objective, a way of describing and providing a variety of recreation opportunities, a critical initiative if we are to excel and be viewed as balanced land managers.



ROY W. PEUCHTER

Director, Recreation Management

II BACKGROUND

THE NATURE OF THE RECREATION RESOURCE

The following was taken from a draft recreation planning handbook that was never published. It is included as it gives a good feel of why ROS is so important to the nature of the recreation resource.
Authored by Chuck McConnell and Warren Bacon.

RECREATION
DEFINITION Many definitions of recreation exist, each emphasizing a slightly different aspect of this enjoyable pursuit. They include "the pleasurable and constructive use of spare time" and "refreshment in mind and body".

OPPORTUNITY
FOR
EXPERIENCE This sense of creativeness, refreshment, relaxation and pleasure, the experiences of an individual, are realized through participation in recreational activities, preferred surroundings or settings. Therefore, although the recreation resource manager manages settings, he or she does so in order to provide opportunities for recreational experiences. Those experiences are also influenced by many other factors, including the recreationist's own views and expectations.

RECREATION OPPORTUNITY SPECTRUM

THE ROS
FRAMEWORK The Recreation Opportunity Spectrum provides a framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for obtaining experiences have been arranged along a continuum or spectrum divided into six classes:

SIX CLASSES

Primitive
Semi-primitive non-motorized
Semi-primitive motorized
Roaded Natural
Rural
Urban

ROS is a macro not a micro system.

DESCRIPTIVE The names of the classes were selected because of their descriptiveness and utility in Land Management Planning and other applications. The system has application to all lands regardless of ownership or jurisdiction. However, not all classes of activity would necessarily exist on all land. In other words, it is not expected that the National Forests would provide the entire spectrum, although a few forests may occasionally do so.

Opportunities for experiences along the spectrum represent a range from a very high probability of solitude, self reliance, challenge, and risk to a very social experience where self reliance, challenge, and risk are relatively unimportant.

THE SETTINGS The settings necessary to produce these experience opportunities include physical, social, and managerial attributes and are characterized below. More detailed descriptions can be found in the ROS Users Guide.

SUBUNITS Each class is defined in terms of its combination of activities, setting, and experience opportunities. Where necessary, subclasses may be established to reflect local and Regional conditions as long as they fit within the six major classes for Regional and National summaries. An example of a subclass may be a further breakdown of the roaded natural class into subunits such as roaded natural and roaded modified. These two classes have different user clientele and physical settings. Another breakdown of a primitive class may be based upon aircraft or power boat access.

IMPORTANCE

HOW IMPORTANT How important is resource-based outdoor recreation? Where there are finite resources-financial and physical-how do you measure how much support recreation deserves relative to other needs in society? How do you evaluate the benefits which accrue from it?

A MAJOR ELEMENT Evidence from National surveys, Forest Service research, and other data point to leisure as a major element in an individual's personal sense of life satisfaction. A perception of physical and psychological wellbeing pervades the survey responses regarding recreation. Recreation activity can vary from passive contemplation to strenuous climbing of sheer rock faces. Recreation settings can range from crowded beaches to isolated mountain streams. Regardless of the type of recreation, across the board benefits were cited--as a tonic for physical and psychological weariness and a respite from the day-to-day of routine of activities. Psychological increments to the individual include the perception of personal development and self-reliance, communion with nature, a sense of renewal, and relaxation from pressures. Significantly, the priority consideration given to outdoor recreation is consistent with persons on all levels of income, education, and occupational status.

A PRIMARY LINK In terms of family and community, central elements in people's lives, recreation is a primary link in building and maintaining these necessary social interactions. Family relationships are enhanced when the opportunity for experiencing outdoor recreation settings together result in eased tensions, better communication, and possible long-term behavioral improvements leading to better family cohesion. The shared enjoyments of outdoor recreation cement social relationships between existing and new found friends in the community.

BENEFITS

Benefits to society from such school or community-initiated endeavors as participating in ecology projects, can result in increased future demand for the desired physical setting.

ECONOMIC FACTORS

Economic benefits resulting from outdoor recreation include improved health and job productivity. Increased tax bases for community services and increased Regional income can be brought about by preservation of the resource for recreational activity. Outdoor recreation is a multi-billion dollar industry that provides jobs, and produces goods and services.

BENEFITS

ECONOMIC VALUATION

The old question arises here--how do you place a dollar value on a sunset? A number of methods have been developed for approximating a dollar valuation of the benefits of recreation. Most have been based on the concept of "willingness to pay". The question is to ascertain what users would pay were the opportunity supplied in a price-elastic market. Since there is no such market, the valuation should include not only what is actually paid but the "consumer's surplus" or worth of the opportunity above the cost.

QUALITY

OPPORTUNITIES

The basic assumption underlying the ROS is that quality in outdoor recreation is best assured through provision of a diverse set of opportunities. Providing a wide range of settings varying in level of development, access, and other factors, insures that the broadest segment of public will find quality recreational experiences, both now and in the future. Although the notion of quality is relative--a value judgment--the concept of quality can be stated for management decision purposes in this way: quality depends on what experiences the individual is looking for, how much of it is realized, and the degree of satisfaction.

DESIRES FOR SETTINGS

A crucial problem for resource managers, then, is to respond to recreationists' desires for various kinds of appropriate settings managed to produce as many of those experience opportunities as are within the National Forest role. A further challenge is to determine what different practitioners need for satisfying experiences, and if it can be delivered within existing constraints. If a recreation opportunity area is consistently providing satisfactory experiences, the area can be said to be producing quality recreation opportunities, and the users to be receiving full benefit from their experiences. If, on the other hand, there is evidence that inconsistencies exist between what an area offers, what users are led to expect and what managers are trying to provide, the area is producing less than full quality recreational opportunities.

INCONSISTENCY

THE NATURE OF IT

A setting inconsistency occurs when the physical, social, and/or managerial settings do not each separately contribute to the same type of ROS opportunity.

An example of an inconsistency was the paving and straightening of access roads along the southern edge of the Boundary Waters Canoe Area. Levels of use rose rapidly, and following the change in the access factor, pressures developed for increases in facilities and other measures to control use-developments generally inconsistent with a primitive-type opportunity. This inconsistency with the Wilderness Act was recognized by land managers and recreationists.

MINIMIZE EFFECTS

An objective of the opportunity spectrum concept is to minimize the effects of inconsistencies unless purposely managed for. This can be done by analyzing how they occur.

ROADS

An inconsistency might result from an earlier management action (e.g., roadbuilding for timber harvest), for which the effects on recreational use were never identified or anticipated. Had these effects been recognized, the road might not have been built, the type of construction or the road's location might have been changed, or perhaps the road would have been closed after the timber was removed.

UN- AVOIDABLE

Or, the impacts on recreation of an earlier action might have been identified and considered but judged to be unavoidable. Such a situation might develop where the anticipated benefits seem to outweigh the costs (i.e., the benefit of a timber harvest exceeding the costs incurred by changing the nature of the recreational opportunity).

PLANNED SHIFT

The inconsistency could be the result of a purposeful course of action. For example, there may be plans to convert a generally primitive opportunity to a semi-primitive motorized opportunity where motorized access is desirable. This conversion could be based on an assessment that the relative availability of primitive opportunities in the Region is high, whereas the supply of semi-primitive motorized opportunities is low. It may be that an apparent inconsistency is required to achieve certain objectives; it may be desirable, for example, to provide a primitive setting with some form of motorized access to allow easy entry for the handicapped or to provide cabins in primitive areas for protection against the elements.

CONSEQUENCE What are the implications of the inconsistency? Consistency as we describe it above is an ideal concept. In reality, one or more factors may be inconsistent with the others. It is not the inconsistency per se that should be of concern; rather, the consequences of the inconsistencies that may cause a problem, particularly, when they are not anticipated or recognized.

CHANGES
IN USE Serious problems can develop from inadvertent changes. As the nature of a setting is altered, inconsistencies may occur, resulting in subsequent changes in use. The "new" campground attracts a different type of user, camping in a different style and seeking different kinds of experiences. As the new type of user becomes increasingly established, original users move to other locations more to their liking; that is, where the combination of all opportunity factors (including access, use density, and facilities) still resembles the kind of opportunity formerly enjoyed. This process of "invasion and succession" can drastically change the nature of the available opportunities, the clientele served, and their recreational experiences. Particularly where the process is unnoticed, opportunities can be lost and clientele disfranchised. Implications for managers might involve questions, such as: Will the inconsistency accelerate change in other factors that will, in turn, lead to further undesired changes in the kind of opportunity provided? For example, will the highly developed access lead to higher levels of resource impact because of increased use at the site and will this necessitate development of more facilities or further regulation of use? And, if these outcomes appear likely, are they within national goals and direction?

A SYSTEM It is important to remember that we are looking at recreation as a system, with an interdependence among the various elements of that system. Thus, a change or modification in one element may affect (either slowly or very quickly) the other parts of the system. Remoteness from humans and their impacts, for example, is a major consideration in primitive settings. But the level of remoteness can be affected by changes in several management factors--access, social interaction, and nonrecreational resource uses. Changes in any one factor may lead to an inconsistency resulting in a negative impact on other factors.

NO ACTION

When inconsistencies occur, managers have three responses available. First, a "no action" response can be adopted. For example, planned changes in the access to an area by one government agency may affect adjacent recreation lands managed by another agency.

CLOSURES

A second response would call for closures of certain types of roads, elimination of facilities, or institution of the onsite modifications.

ALTERING FACTORS

Finally, managers can respond to an inconsistency by altering the remaining factors to bring them into line with the original inconsistent one. This could occur where changing conditions develop an opportunity not presently provided. Response to a situation where well-developed access is inconsistent with a primitive-type opportunity might involve altering the remaining factors to make the area roaded natural. Such a change would have to be justified in the area management plan. Obviously, it is better to think through such relationships before taking the other resource action rather than letting it dictate the recreation response.

THE NATURE OF CONFLICT

DEGRADES

As previously stated, the intended output from providing outdoor recreation opportunities is satisfactory experiences. Conflict generally degrades an experience. Conflict may be either real or perceived.

ELEMENTS

If it is perceived or imagined, it can often be as disturbing to the user as if it really is happening. Several elements increase the likelihood of conflict occurring. They include:

1. The intensity of a recreational pursuit--is it a part of a person's central life interest or only a once in a while pastime?
2. The attachment to a specific setting--a favorite place visited many times or a first time visit?
3. The environmental focus--is the setting an important part of the experience or is it just an incidental backdrop?
4. Tolerance to the lifestyles of others.

The following chart outlines some possible causes of conflict, grouped under physical, social, and management attributes. Generally, the more specialized a recreation user is, the more likely he or she will conflict with others.

<u>Physical</u>	<u>Social</u>	<u>Management</u>
Unexpected or severe modification of natural setting.	Inappropriate number of people (groups) - relative congestion.	Inappropriate condition of facilities (sites, trails, roads)
Inappropriate facilities. Perceived degradation of expected (preferred) setting over time.	Inappropriate behavior of groups. Inappropriate behavior or activities.	Inappropriate regulation of activities, space, or congestion.
	Competition for space (relates to the 3 above)	Perceived poor stewardship of the land.
	Inadequate or wrong information.	Non-predictable future for an area.
		Nonconfidence in management actions.
		Nonresponsiveness to needs.

SPECIALIZATION

A number of generalizations can be made about the role of specialization in recreation behavior:

NEWCOMERS WANT RESULTS	Newcomers to an activity are intent on getting results in their recreational pastime, any results. The beginning photographer wants his snapshots of the children to turn out. The novice hiker wants to get from point A to point B, in relative comfort, without blisters on his feet.
VALIDATE COMPETENCE	When the participant becomes competent, the recreationist seeks to validate that competence with the number of successes achieved, or else he operates in settings providing greater challenge. Hikers and backpackers strive to be fully prepared; birdwatchers accumulate long lists of birds sighted; skiers want to perfect style in a consistent manner; canoeists enjoy adventures without pain or pitfall; and photographers attempt to duplicate the results of professionals.
SPECIAL- IZATION	It is after the accomplished stage of development is reached that the recreationist seems most vulnerable to adjunct types of specialization. The flyfisherman may develop a fixation on fly-tying and entomology. In fact, preoccupation with sporting equipment may become an end in itself.

ACTIVITY
FOR ITS
OWN SAKE

Finally, at the extreme end of the specialization continuum are those recreationists who place the most emphasis on doing the activity for its own sake, those who are heard most frequently to refer to the "quality" of the experience and those who make the most specific demands for particular resource settings. Included in the category are the "artist photographers" who view the camera as a means to creative expression. Here too are found the hunter who minimizes the importance of the kill, the hiker who seeks the challenge of unguided journeys, and the "no-trace" camper who enjoys the preparation, execution, and communion with nature.

SPECIFIC
PREFERENCES

Persons with specific preferences and requirements are completely disenfranchised if opportunities for their desires are not met, whereas "generally" motivated users have more numerous alternatives. This notion is politically viable as well, for the specialized users are often the most organized and vocal, since they consider themselves as having the most at stake in terms of personal commitment and involvement in their activity.

ALLOCATING AND PLANNING RECREATIONAL RESOURCES

TYPES OF
OPPORTUN-
ITIES

The ROS is a helpful concept for determining the types of recreation opportunities that should be provided. After a basic decision has been made about the opportunity desirable in an area, the ROS provides guidance about appropriate planning approaches--standards by which each factor should be managed.

THREE
CONCEPTS

Three concepts related to the ROS are useful in making such a decision: (1) the relative availability of different opportunities, (2) their reproducibility, and (3) their spatial distribution.

RELATIVE
AVAILABIL-
ITY

The concept addresses the issue of supply as well as the appropriate role of the recreation manager. Adequacy of supply is a function of, among other things, the spatial distribution of opportunities, and it may be appropriate to estimate relative availability within a Regional framework that extends beyond agency boundaries. When one type of opportunity is in abundant supply, it may be necessary for an agency with that supply to actively encourage other suppliers to provide other kinds or opportunities. For example,

in an area such as southeast Alaska, primitive and unroaded opportunities are abundant and the USDA Forest Service manages most of the land. The agency might find it necessary to actively encourage other agencies to provide modern and semimodern opportunities in the interests of offering diversity.

REPRODUCI- BILITY AND REVERSI- BILITY

Reproducibility and reversibility are also fundamental considerations. They address the question of the extent to which an opportunity can be technologically reproduced, as well as the ability of management to reverse the outcome of decisions. Opportunities at the modern (developed) end of the spectrum are generally more reproducible (capable of creation through use of technology, infusion of capital, etc.) than those at the primitive end. There is a test of reasonableness here, because it is at least possible to reproduce any opportunity, given sufficient time and money. The spectrum is characterized by asymmetry in the reversibility of management actions because changes from primitive to modern are more difficult, than changes in the other direction. The obvious implication here is that decisions transforming an area from a primitive condition to something more developed needs to be carefully weighed because of the relative inability to reverse that decision.

SPATIAL DISTRIBU- TION

In planning and managing large areas for recreational purposes, managers must consider the spatial distribution of opportunities. Sharply dissimilar opportunities generally should be kept apart so that conflicts are minimized

EXAMPLE

For example, opportunities featuring high standard road systems and highly developed campgrounds should not be constructed adjacent to primitive opportunities. Keeping dissimilar opportunities apart also reduces the likelihood that impacts from one opportunity will "spill over" onto an adjacent opportunity (e.g., noise from an area catering to outdoor recreational vehicle users reaching an adjacent area managed for primitive opportunities). Some recent planning efforts have attempted to incorporate this concept. The recently dedicated Alpine Lake Wilderness in Washington's Cascade Range will be bordered by a management area featuring primarily semiprimitive recreational opportunities. This differs from a "buffer" concept in that the semi-primitive area is managed to provide a specific recreation opportunity and is a professional, management response because it considers the coordination/conflict potentials of activities on adjacent land.

CONSTRAINED Unfortunately, planners and managers often do not have the necessary flexibility to organize opportunities according to this ideal spatial arrangement. They are constrained by previous management decisions, other resource uses, established recreation use, or a variety of other factors that complicate the job. But even within these limitations, mapping recreational opportunities--existing and proposed--can help identify potential conflicts.

Demand.

THE NATURE
OF DEMAND

There are three identifiable dimensions of demand. These are: demands for activity opportunities, such as to picnic, hike or ski tour; demands for setting opportunities such as to hike in an environment with specified characteristics (e.g., few people, many facilities and services, scenic vistas, etc.) and demands for specific types of experience opportunities, such as solitude, group interaction, mental relaxation, exhilaration, physical rest, or physical challenge.

RESPONSE
TO SUPPLY

Demands for recreation opportunities are inexorably tied to what is available. Demand can often be increased by merely increasing supply directly (e.g., new downhill ski areas). In other areas, demand (as related to supply) can be increased by the management practices in other resource areas. For example, new roads constructed for a timber sale produce incidental RVD's. Other demands can be related to factors that are totally uncontrolled and generally are a result of population increases.

PRICE

The demand for product recreation opportunities is often in direct relation to the prices which the consumer must pay for the recreation experience (campground fees) and/or the cost of getting to the area. (Used as part of the travel cost method for establishing values.)

ATTRACTIVE-
NESS

Effects on Demand--The degree that visual quality is maintained in a particular opportunity setting should be consistent with the activities involved. The degree of acceptable landscape alternation can vary widely from settings designed for alpine skiing and those maintained for back packing. Visual inconsistencies can substantially alter demand in a given area.

SUBSTITUT-
ABILITY

Many outdoor recreation activities are capable of being substituted for other activities or locations and many are not. Knowing the difference is critical in the development of alternatives that satisfy the recreational preference of user groups. For example, the roaded natural setting rarely

satisfies demand for primitive or semi-primitive settings. On the other hand, hikers are generally happy to try new trails or routes as long as the experience is to their liking. To insure that substitutability is considered in the development of alternatives, insure that recreation settings and activities are not lumped into broad categories. Focus on those settings and experiences that are being eliminated in specific alternatives and discuss their substitutability.

DIVERSITY
OF
OPPORTUNITY

Demonstrated demand for a particular activity can and usually does create demand for additional activity opportunities. The demand for a new campground can often create demand for other activities such as hiking, fishing, or trail biking. The demand for any one activity should always be considered in light of associated activities and provisions identified for providing settings appropriate to a diversity of activities.

TRENDS

Use trends are an important part of any demand analysis. Correlation of a past population group with past recreation use and projections of how this relationship may change in the future often provides the major basis for demand projection.

Resource Inventory

CURRENT
SITUATION

The land and water area of National Forest lands are inventoried and mapped by Recreation Opportunity Spectrum class to identify which areas are currently providing what kinds of opportunities. This is done by analyzing the physical, social, and managerial components of each area. 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 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. The managerial setting reflects the amount and kind of restrictions placed on people's actions by the appropriate administering agency or private landowner.

The inventory has application to land administered by Federal, State, and local agencies as well as on private lands.

Actual inventory procedures are outlined in the ROS User's Guide and FSM 2300.

CHARACTER- ISTICS

The characteristics of components (physical, social, and managerial) of the setting affect the kind of experience the recreationist most probably realizes from using a particular area. Also, the inventory can identify the quality and quantity of recreation opportunities; inconsistencies, the current mix of opportunities, and relative abundance and supply.

OUTPUTS

RVD's

Recreation outputs are displayed in the form of recreation visitor days (RVD's)--12 visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons. Output code listings are displayed in the Management Information Handbook. Following are those listed for recreation:

Code	Title	Code	Title
W01	Primitive Recreation Use (Std.)	W02	Primitive Recreation Use (Less than Std.)
W03	Semi-Primitive Non-Motor.(Std.)	W04	Semi-Primitive Non-Motor. (Less than Std.)
W05	Semi-Primitive Motorized (Std.)	W06	Semi-Primitive Motorized (Less than Std.)
W07	Roaded Natural Use (Std.)	W08	Roaded Natural (Less than Std.)
W09	Rural Recreation Use (Std.)	W10	Rural Recreation Use (Less than Std.)
W11	Urban Recreation Use (Std.)	W12	Urban Recreation Use (Less than Std.)

ACTIVITIES

In the Recreation Information Management System (RIM) these RVD's of use are further broken down by recreation activities. Keep in mind that recreation outputs are really outdoor experiences enjoyed and are linked to user preferences and setting quality.

LINKING LAWS, REGS., AND POLICY TO ALTERNATIVE REQUIREMENTS

SOCIAL GOALS

Recreation does not have legal requirements that set minimum and maximum limits of management. Recreation is linked rather to satisfying national social goals through recreational settings which provide quality recreation opportunities.

To the degree consistent with needs and demands for all major resources (one of which is recreation), a variety of Forest and rangeland related outdoor recreation opportunities shall be provided for in each alternative. Thus the key to setting alternative management requirements is to know the recreation market area and the social needs which are to be addressed through recreational opportunities for users.

INTERRELATIONSHIP BETWEEN RESOURCES

RESOURCE INTERFACE

The purpose of this section is to describe the interface between Recreation and other resources. The interface refers to identifying the areas of compatibility and conflict in developing integrated management prescriptions. It also refers to identifying the procedural steps in using the different resource inventories so that opportunities are not foreclosed before analysis and any conflicts are identified.

INTEGRATION

The various resources including those closely related to recreation, should be kept entirely separate in the planning steps of issues, concerns, opportunities, inventory, decision criteria and analysis of the management situation. Only in the development of a range of alternatives do they begin to come together in the form of integrated management prescriptions.

INTERRELATIONSHIPS

VISUAL

Defining the interface between recreation and visual resource is important because there are many overlaps in inventory, analysis, and management application--most of which are complementary. Secondly, many of the laws pertaining to one resource have direct implications to the other.

INHERENT QUALITY

Visual Resource Management is based upon the inherent scenic quality of the land, the degree of existing alteration of that resource, and the amount of use of that scenic resource generated by travel routes and use areas.

ROS

Recreation Resource Management, using the Recreation Opportunity Spectrum, is based upon the experience opportunities provided by the physical, social, and managerial settings of the land and the recreation activities which occur in those settings.

COMPLEMEN-
TARY

The two systems, ROS and VMS, are different--complementary and entirely compatible if used properly. The ROS system measures the existing and potential opportunities from Primitive to Urban based on the physical, social, and managerial settings. The Primitive and Semi-Primitive setting descriptions are particularly definitive. The Roaded Natural through Urban setting descriptions are quite broad, allowing most any evidence by humans within the setting description. Missing is a good measure of the inherent or cultural scenic quality (attractiveness) of the settings, differing levels of concern for that attractiveness in many ROS classes, and a method for measuring the degree of alteration of the setting for inventory and management. The Visual Management System--or adaptations of it--provides the latter through variety class and existing visual condition inventories, use of visual quality objectives and carefully prepared characteristic landscape statements for Rural and Urban settings.

But except for variety class and existing visual condition inventories, the Visual Management System does not analyze the dispersed opportunities of the Primitive and Semi Primitive settings. Visual Quality Objectives can be used as proxies to manage these settings but only after ROS analysis has been completed.

BENEFITS

Visual Resource Management is reflected in ROS settings and contributes to recreation benefits which are accounted for by the measure of RVD's. It also covers public needs for scenic quality which incur costs to maintain or create but which are not reflected or measured as RVD benefits. The latter instance includes the National Forest scenic backdrops of cities, communities, or other occupancy sites on private lands, scenic backdrops along travel routes outside of National Forest boundaries, visual benefits accrued to nonrecreation travelers on National Forest travel routes, and visual benefits accrued to nonrecreation residents of National Forest lands.

VRM and CRM

Visual Resource Management is based upon the inherent scenic quality of the resource, the degree of alteration of that resource, and the amount of use of that scenic quality that is generated by travel routes and use areas. It is quite independent of the needs to maintain natural appearing landscapes due to cultural, religious needs of Native Americans or other groups of the public. Visual Resource Management can be a useful tool to maintain or create such physical setting. In order for this to happen, the extent and acceptable degree of human alternative of the landscape must be prescribed by CRM in the planning process.

TRAILS

Examples of such situations may be seen most from trails used almost exclusively for religious or other cultural purposes and prominent features in the landscape, such as mountain peaks, springs, or groves of trees almost exclusively used for such purposes.

CULTURAL LANDSCAPES

Visual Resource Management can also contribute to maintaining or creating cultural landscapes identified as being significant to cultural heritage by CRM. The results will ordinarily be compatible with VRM, but in some cases CRM needs will override VRM and violate the minimum desired visual condition identified by the VMS. The direct costs to maintain or recreate such cultural landscapes and the opportunity costs to other resources should be assigned to CRM.

IS and RECREATION

The Interpretive Services program is an essential ingredient in the user achieving a successful set of psychological experiences. Interpretation or lack of it is important in such experiences as a sense of learning and self-discovery, exploring to satisfy curiosity needs, sense of achievement, feeling of solitude, sense of security, teaching and leading others, applying and developing creative abilities, learning more about nature, gaining a greater appreciation of the Nation's cultural heritage, and improving an understanding of resource management and conservation practices. Interpretive elements which are critical are the amount and type of information provided, and the location and design of facilities, including materials, architectural style, and complexity or sophistication of displays (i.e., simple sign vs. three dimensional moving exhibit).

WILDLIFE

Wildlife management is done to maintain or improve habitats for a wide range of both game and nongame species. Desired changes in amount of forage areas, thermal and hiding cover, and areas for reproduction are usually done through Timber Management Activities. Where such activities occur they are key to accomplishing wildlife, recreation, and timber objectives. Compatibility for wildlife in the matrix might be shown as part of timber.

P	SPNM	SPM	RM	RN	Rural	Urban
No timber harvest or habitat manipulation as the norm.	May range from no timber or habitat manipulation to harvest habitat manipulation units that meet retention to travelway and cross-country users.	Reg. units and habitat manipulation meet partial retention from travelways or cross-country.	Reg. units and habitat manipulations are strongly dominant from within area.	Reg. units and habitat manipulations designed to maintain a natural appearing Forest.		

USER ACCESS ROS classes vary in the amount of recreation users allowed in both motorized and nonmotorized types. Wildlife (species populations) benefit in general from decreased human disturbance resulting from low road densities and/or restrictions on motorized use.

SECURITY From this standpoint, wildlife populations have greater habitat security and are, therefore, better off in Primitive, SemiPrimitive, and Nonmotorized, Semi-Primitive Motorized classes. In these classes, however, manipulation of vegetation for habitat improvement is limited. Roaded natural allows more habitat manipulation, but also allows potential increases in numbers and density of people. The roaded modified class used in some western Regions allows the maximum amount of manipulation and significant reduction in numbers of people. Timber harvest activity may be intense at times, causing unwanted motorized disturbance.

However, there are options for creating wildlife emphasis areas with habitat manipulations and high density of roads which may be periodically closed to the public. These areas should be given a wildlife emphasis title. Recreation experiences created are closer to a Roaded Modified except roads are closed. It may be established as an ROS subclass.

OVERLAP AREAS There are habitats or certain attributes of habitats which have compatible benefits for both wildlife and recreation. Areas maintained with a significant proportion of old growth characteristics often also produce Semi-Primitive or Primitive recreation experiences. The desired vertical diversity of vegetation often desired for certain wildlife

species is also a desired character in many road and trail foreground landscapes. Increased edge of created openings (vertical and horizontal diversity) is also a highly desirable visual objective. Where these result in mutual overlapping, allocation areas in Forest planning, benefits, and costs should be distributed accordingly.

RECREATION

Much of the success in managing vegetation to achieve desired visual character and meet visual quality objectives in Roaded Natural and Rural areas is tied to control of viewing positions primarily on roads, highways, and use areas. When the recreation user is traveling on trails or cross-country in Primitive or Semi-Primitive areas, near view becomes very evident. Recreation experience opportunities not as available in Roaded Natural and Rural should become a primary goal. Some of these may include:

1. Obtaining privacy, solitude, and tranquility in an outdoor setting.
2. Experiencing natural ecosystems in environments which are largely unmodified by human activity.
3. Gaining a new mental perspective in a tranquil outdoor setting.
4. Self-testing and risk-taking for self-development and sense of accomplishment.
5. Learning more about nature, especially natural processes, human dependence on them, and how to live in greater harmony with nature. To the extent practical, these opportunities should be goals in all ROS settings on the National Forest System.

SUBTLE

Any vegetative management must be quite subtle and for the purposes of creating and maintaining an attractive recreation setting that will offer these types of experience opportunities. Details such as the attributes of an old growth Forest (rotting logs with conks, large trees with distinctive bark, etc.,) become even more important in Primitive and Semi-Primitive than in Roaded Natural and Rural. Providing human scale or created openings generally means they must be quite small with natural appearing forest floor, edge, shape, and disbursement.

More detailed guidelines can be found in the Timber Agricultural Handbook 559: National Forest Landscape Management, Vol. 2 Chapter 5.

ROS RATIONALE

From "A Technique for Recreation Planning and Management
in Tomorrow's Forests" by Brown and Stankey

TOMORROW'S FORESTS

In characterizing the nature of tomorrow's forests, several features appear likely. Increasing population coupled with growing aspirations have already produced greater demands on forests for the various goods and services they produce, and these demands will certainly continue to grow. There is also a steady growth in the level of demand placed on forest lands for non-forest uses. Spreading urbanization, agriculture, and other uses have displaced forestry as the principal land use in many areas. Tomorrow's forests almost certainly will be characterized by an increased level of management presence. Forests of free access and unregulated resource setting will be increasingly difficult to locate. Finally, with the growth in forest and non-forest dependent demands, the level of conflict among forest users will assuredly grow. The preservation versus development issue found in the forests of many countries today will be increasingly common.

MORE COMPLEX

Planning and managing recreation in forests where such demands and conflicts exist is an inherently difficult task. It is made even more complex by the rapid and often unpredictable nature of change.

This includes changes in technology, recreation tastes and preferences, and social, political, and economic conditions. The typically low accuracy and reliability of recreation use projection is indicative of the difficulty of anticipating these changes, and make the task of planning into the future extremely difficult.

A FRAMEWORK

Despite the complexity of the issue, it seems clear that recreation will remain one of the principal services provided by forests. And in coping with the uncertainty of future conditions, it seems important that recreation managers have at their disposal a framework that recognizes recreation as one element of an integrated forest system. This is especially necessary given that non-recreation related decisions in forest settings are often the major influence on the nature of the recreation opportunities supplied. Changes in the nature of the vegetation mosaic brought about by timber harvesting, and changes in the amount, distribution, and nature of access created for timber management and fire control purposes are examples of such influences.

A FRAMEWORK FOR INTEGRATION

Recent legislation has given impetus to efforts to supplant traditional functional planning with comprehensive land management planning programs that recognize the integrative and interdependent nature of the forest resource systems.

In meeting this need in recreation, planning and management have developed the Recreation Opportunity Spectrum (ROS) framework for guiding recreation planning and management. Although not a new idea, the ROS has only recently been sufficiently operational to permit its systematic application in planning, allocation and management.

DIVERSE RECREATION

The basic assumption underlying the Recreation Opportunity Spectrum is that options to realize the number of recreational experiences sought by users are best assured by providing a diverse set of recreation opportunities. A recreation opportunity is a chance for a person to engage in a specific recreational activity within a specific environmental setting to realize a predictable recreation experience. Thus, the ROS conceives of the recreation management and planning task as a behaviorally-based production process, with three distinctive aspects of demand that must be considered.

MORE THAN JUST ACTIVITIES

First, visitors seek opportunities to participate in certain activities.

Traditional analysis has focused on activities and levels of participation in them, but there is increasing recognition that such an approach is inadequate as a basis for establishing meaningful management objectives or assessing the output of the recreation management system.

SETTINGS

Second, visitors seek certain settings in which they can recreate.

Settings are composed of three primary elements: The physical setting, the social setting, and the management setting. These three elements exist in various combination and are subject to managerial control so that diverse opportunity settings can be provided.

DESIRED EXPERIENCES

These settings, however, are not ends in themselves. Providing settings is a means of meeting the third aspect of demand, desired experiences. Settings are used for providing opportunities to realize specific experiences that are satisfying to the participant. In offering diverse settings where participants can pursue various activities, the broadest range of experiences can be realized. The task of the recreation planner and manager, then, is to formulate various combinations

of activity and setting opportunities to facilitate the widest possible achievements of desired experiences-- or to preserve options for various types of recreation opportunities.

EIGHT GUIDELINES

These ideas about a spectrum of recreation opportunities were used to design the Recreation Opportunity Planning system. In developing this system, several additional guidelines were followed so that the system would: (1) build on the existing system, (2) have intuitive appeal to managers and give them useful results, (3) be both simple and inexpensive to implement, (4) fit with the land planning and management process, (5) give consistent results, (6) provide objective criteria for evaluating the recreation opportunity potential of different types of resources and landscapes, (7) assure that the total range of recreation opportunities is considered, and (8) be based on tested behavioral science theories that are relevant to recreation choices. Using these guidelines, a number of existing planning systems were reviewed and useful elements of each were combined with the fundamental precepts of the ROS concept to produce the ROS system.

USE AND VALUE

The ROS framework is useful for several purposes. It helps specify more clearly the recreation opportunities demanded, guides resource inventory for arriving at recreation planning recommendations, combines recreation opportunity analysis into integrated forest resource planning, assesses the impact of a recreation allocation on other resource outputs or the impacts of other resource uses on recreation opportunities, guides recreation demand analysis by better defining recreation outputs, and ensures consistency between allocation, action, and project plans. The ROS provides a framework that will aid in the systematic provision of diverse opportunity settings that build to different styles as well as kinds of activities, thus promoting the equitable, effective, and efficient delivery of outdoor recreation services. Through the diversity which the ROS promotes, the kinds of change for tomorrow's forests with which planners must contend can be accommodated and, as suggested earlier, the consequences of alternative solutions to meet these changes can be more readily identified.

VISITOR EXPECTATIONS

Finally, ROS concepts can themselves be used as a framework for communicating and interacting with recreationists. By providing information to visitors about ROS with regard to acceptable activities, the nature of the setting, and the likely kinds of experiences, the likelihood of linking recreationist's expectations and desires with places that meet their demands is greatly increased. Similarly, by asking recreationists

of activity and setting opportunities to facilitate the widest possible achievements of desired experiences-- or to preserve options for various types of recreation opportunities.

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to specify what it is they want, managers can help people find these desired opportunities, thus avoiding problems related to conflict and displacement.

TITLE 2300 - RECREATION, WILDERNESS,
AND RELATED RESOURCE MANAGEMENT

2310.3 - Policy. In addition to general planning policy presented in 36 CFR 219.1, FSM 1903, FSM 1920.3, FSM 1922.03, and FSM 2303:

1. Use the Recreation Opportunity Spectrum (ROS) to establish planning criteria, generate objectives for recreation, evaluate public issues, integrate management concerns, project recreation needs and demands, and coordinate management objectives.
2. Use the ROS system to develop standards and guidelines for proposed recreation resource use and development.
3. Use the ROS system guidelines to describe recreation opportunities and coordinate with other recreation suppliers.
4. Recognize individual National Forests need not provide recreation opportunities in each ROS class.
5. Do not provide urban opportunities with appropriated or other public funds. Channel urban class provided by private sector funds to private land if available.

2311 - RESOURCE OPPORTUNITIES IN RECREATION PLANNING.

Stratify and define outdoor recreation setting opportunities to:

1. Establish outdoor recreation strategies and supporting standards and guidelines.
2. Ensure the proper scale and design criteria of development as explained in FSM 2330 and FSM 2340.
3. Support tradeoff analysis of possible recreation opportunities and quality (36 CFR Part 219.21 and Part 219.26 and FSM 1922.12-15).
4. Monitor the quality of recreation outputs and effects in Forest plan implementation (36 CFR Part 219.11(d) as defined in each Forest plan).

2311.1 - Recreation Opportunity Spectrum (ROS). Use the Recreation Opportunity Spectrum (ROS) system and the ROS Users Guide (U.S. Department of Agriculture, Forest Service. ROS Users Guide. Washington, DC: U.S. Department of Agriculture, Forest Service; 1982. 37 p.) to delineate, define, and integrate outdoor recreation opportunities in land and resource management planning (FSM 1922.15, item 2). Recreation integration/coordination provides for integrated management prescriptions and associated standards to deal with the recreation resource. ROS defines six recreation opportunity classes that provide different settings for

recreational use: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban. Use ROS classes to describe all recreation opportunity areas--from natural, undisturbed, and undeveloped to heavily used, modified, and developed. Apply the criteria involving the physical, social, and managerial environments found in the ROS Users Guide to delineate the different ROS classes of land. Urban class areas are not normally an appropriate management objective for National Forest lands.

2311.11 - Recreation Opportunity Spectrum Visual and Access Guides. Exhibit 1 presents visual quality guides for each ROS class. Exhibit 2 presents access strategies for each ROS class.

2311.12 - Recreation Opportunity Spectrum Subclasses. Each Recreation Opportunity Spectrum class may be divided into subclasses to better reflect local or Regional conditions. Regions using subclasses shall define subclasses clearly and coordinate with adjoining Regions. Subclasses must fall within the six major classes for regional and national data summarization.

TITLE 2300 - RECREATION, WILDERNESS,
AND RELATED RESOURCE MANAGEMENT

RECREATION OPPORTUNITY SPECTRUM / VISUAL MANAGEMENT SYSTEM

ROS	Visual Quality Objectives				
	Preservation	Retention	Partial Retention	Modification	Maximum Modification
PRIMITIVE	Norm	Inconsistent	//////	//////	//////
SEMI-PRIMITIVE NON-MOTORIZED		Norm	Inconsistent	////// Unacceptable	//////
SEMI-PRIMITIVE MOTORIZED	Fully	Compatible	Norm*	Inconsistent	//////
ROADED NATURAL			Norm	Norm	Inconsistent
RURAL				Norm	Norm
URBAN**	Acceptable				Norm

* From sensitive roads and trails. (USDA Handbook 462)

** Normally inappropriate on National Forest land.

TITLE 2300 - RECREATION, WILDERNESS,
AND RELATED RESOURCE MANAGEMENT

ACCESS STRATEGY AND THE RECREATION OPPORTUNITY SPECTRUM

	I Cross-country & trails	II Easy trails	III TSL D roads	IV Controlled TSL B & C Rds	V Full Access TSL A, B, & C
PRIMITIVE	Norm	Inconsistent	Unacceptable		
SEMI-PRIMITIVE NON-MOTORIZED	Acceptable	Norm	Inconsistent	Unacceptable	
SEMI-PRIMITIVE MOTORIZED		Norm	Norm	Inconsistent	Unacceptable
ROADED NATURAL			Norm	Norm	Norm
RURAL				Norm	Norm
URBAN					Norm

II-27

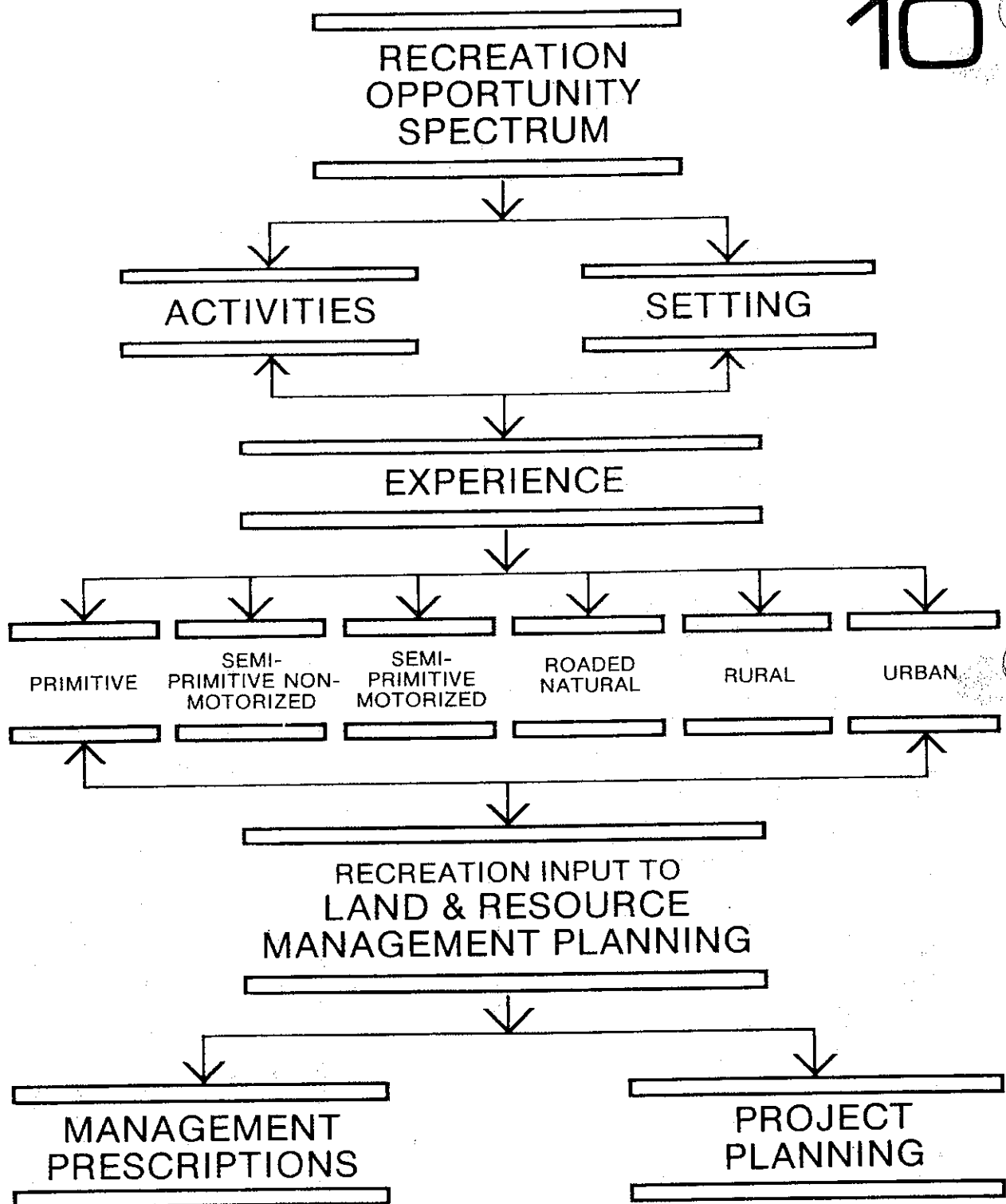
- I Cross-country travel to difficult trails.
- II Trails, easy to most difficult.
- III Low-standard primitive roads (Traffic Service Level D) (See FSM 2355 for ORV management).
- IV Controlled-access TSL B and C roads.
- V Full-access TSL A, B, and C roads.

Norm: The normal conditions to be found in the physical setting.

Acceptable: Conditions which are acceptable, but more restrictive than normal.

Inconsistent: Conditions which are not generally compatible with the norm, but may be necessary under certain circumstances to meet the management objective.

Unacceptable: Unacceptable conditions under any circumstances.



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 setting, 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 turn reflects amount of use, or a further breakdown of Primitive based upon aircraft or boat use.

The Recreation Opportunity Spectrum provides a framework for stratifying and defining classes of outdoor recreation opportunity environments. As conceived, the spectrum has application to all lands regardless of ownership or jurisdiction. Its use in the National Forest System will facilitate the consideration, determination and implementation of the recreation management role.

Figure 1

Recreation Opportunity Spectrum					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban

Table 1

ROS Activity Characterization*					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Land Based:					
Viewing Scenery Hiking and Walking Horseback Riding Tent Camping Hunting Nature Study Mountain Climbing	Viewing Scenery Automobile (off-road use) Motorcycle and Scooter Use Specialized Landcraft Use Aircraft Use Hiking and Walking Horseback Riding Camping Hunting Nature Study Mountain Climbing	Viewing Scenery Viewing Activities Viewing Works of Human-Kind Automobile (includes off-road use) Motorcycle and Scooter Use Specialized Landcraft Use Train and Bus Touring Aircraft Use Aerial Trams and Lifts Use Hiking and Walking Bicycling Horseback Riding Camping Picnicking Resort and Commercial Services Use	Viewing Scenery Viewing Activities Viewing Works of Human-Kind Automobile (includes off-road use) Motorcycle and Scooter Use Specialized Landcraft Use Train and Bus Touring Aircraft Use Aerial Trams and Lifts Use Hiking and Walking Bicycling Horseback Riding Camping Picnicking Resort and Commercial Services Use	Viewing Scenery Viewing Activities Viewing Works of Human-Kind Automobile (includes off-road use) Motorcycle and Scooter Use Train and Bus Touring Aircraft Use Aerial Trams and Lifts Use Hiking and Walking Bicycling Horseback Riding Camping Picnicking Resort and Commercial Services Use	Viewing Scenery Viewing Activities Viewing Works of Human-Kind Automobile (includes off-road use) Motorcycle and Scooter Use Train and Bus Touring Aircraft Use Aerial Trams and Lifts Use Hiking and Walking Bicycling Horseback Riding Camping Picnicking Resort and Commercial Services Use
Water Based:					
Canoeing Other Watercraft (non-motorized use) Swimming Fishing	Boating (powered) Canoeing Sailing Other Boating Swimming Diving (skin or scuba) Fishing	Resort Lodging Recreation Cabin Use Hunting Nature Studies Mountain Climbing Gathering Forest Products Interpretive Services	Resort Lodging Recreation Cabin Use Hunting Nature Studies Mountain Climbing Gathering Forest Products Interpretive Services	Resort Lodging Recreation Cabin Use Hunting Nature Studies Gathering Forest Products Interpretive Services Team Sports Participation Individual Sports Participation Games and Play Participation	Resort Lodging Recreation Cabin Use Hunting Nature Studies Gathering Forest Products Interpretive Services Team Sports Participation Individual Sports Participation Games and Play Participation
Snow and Ice Based:					
Snowplay X-Country Skiing/Snowshoeing	Ice and Snowcraft Use Skiing, Downhill Snowplay X-Country Skiing/Snowshoeing	Tour Boat and Ferry Use Boat (Powered) Canoeing Sailing Other Watercraft Use Swimming and Waterplay Diving (skin and scuba) Waterskiing and Water-Sports Fishing	Tour Boat and Ferry Use Boat (Powered) Canoeing Sailing Other Watercraft Use Swimming and Waterplay Diving (skin and scuba) Waterskiing and Water-Sports Fishing	Tour Boat and Ferry Use Boat (Powered) Canoeing Sailing Other Watercraft Use Swimming and Waterplay Diving (skin and scuba) Waterskiing and Watersports Fishing	Tour Boat and Ferry Use Boat (Powered) Canoeing Sailing Other Watercraft Use Swimming and Waterplay Diving (skin and scuba) Waterskiing and Watersports Fishing
Snow and Ice Based:					
		Ice and Snowcraft Use Ice Skating Sledding and Tobogganing Downhill Skiing Snowplay X-Country Skiing/Snowshoeing	Ice and Snowcraft Use Ice Skating Sledding and Tobogganing Downhill Skiing Snowplay X-Country Skiing/Snowshoeing	Ice and Snowcraft Use Ice Skating Sledding and Tobogganing Downhill Skiing Snowplay X-Country Skiing/Snowshoeing	Ice and Snowcraft Use Ice Skating Sledding and Tobogganing Downhill Skiing Snowplay X-Country Skiing/Snowshoeing

*These activities (from RI 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.



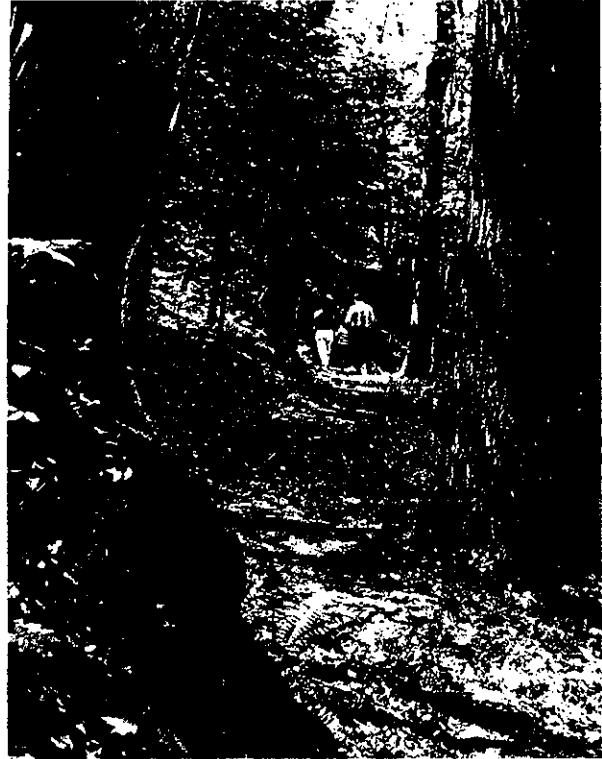


Table 1 (Continued)

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, tranquility, 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 wilderness 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 classes in the formulation of Land and Resource management prescriptions provides the primary recreation framework for:

1. Establishing outdoor recreation management emphasis, standards and guidelines for specific management areas.
2. Trade-off analyses of available recreation opportunities as environmental characteristics might be changed by other proposed resource management actions.
3. Monitoring outputs in terms of established Recreation Opportunity classes.
4. Providing guidelines for project plans.



Recognition that National Forest System lands potentially have a large and diverse variety of recreation opportunities does not imply that equal or balanced allocations of classes be provided, nor does it mean that individual National Forests provide some of each class. Specific kinds and quantities of recreation opportunity classes are more appropriately established considering Forest capabilities with other resource integration needs as guided by national policy direction.

15—MANAGEMENT PRESCRIPTIONS

In the Land and Resource Planning process the management emphasis selected for a specific management area is 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" that 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

Project plans take their direction from Forest land and resource plans which include prescriptions for specific management areas. The Recreation Opportunity Spectrum class determination as an integrated part of the management area prescription in conjunction with the standards and guidelines provides for the overall project planning direction.

D1 ↔ D2 → D3

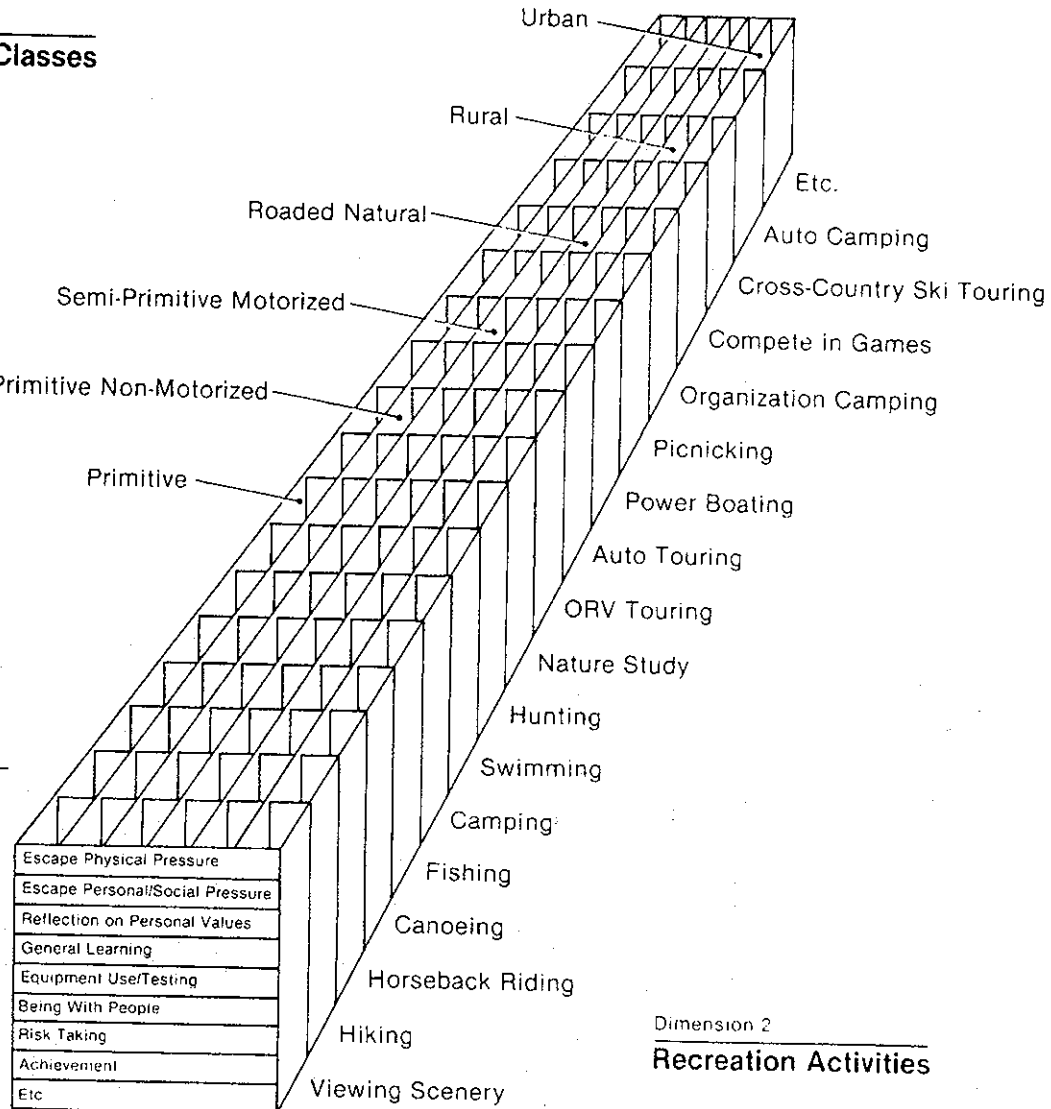
Dimension 1

Recreation Opportunity Classes

Physical Setting
Social Setting
Managerial Setting

Dimension 3

Recreation Experiences (Psychological Outcomes)



Dimension 2

Recreation Activities

III RESEARCH

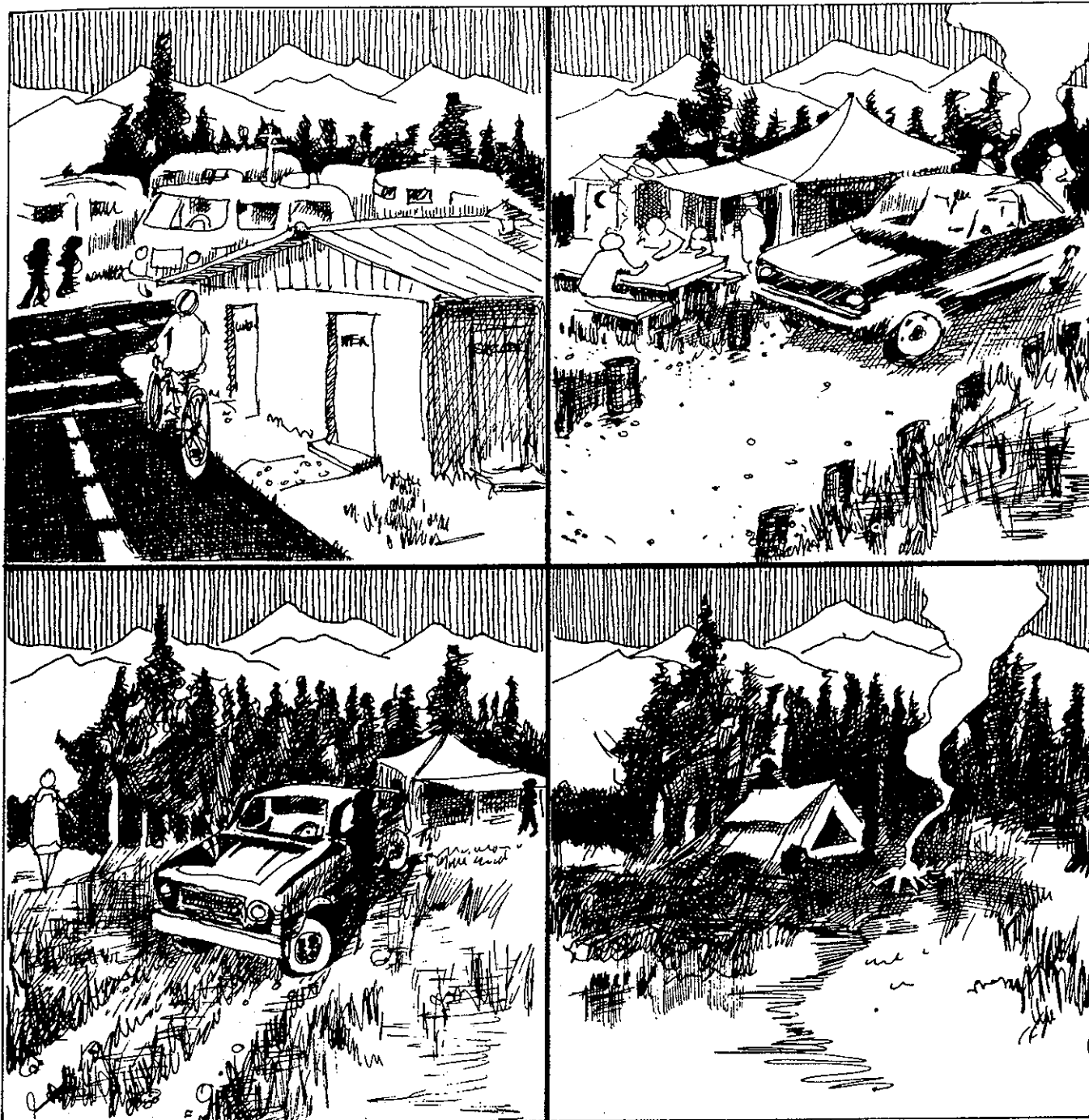
U.S. Department of Agriculture
Forest Service

Pacific Northwest Forest
and Range Experiment Station

General Technical Report
PNW-98 December 1979

The Recreation Opportunity Spectrum: A Framework for Planning, Management, and Research

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Abstract

The end product of recreation management is a diverse range of opportunities from which people can derive various experiences. This paper offers a framework for managing recreation opportunities based on six physical, biological, social, and managerial factors that, when combined, can be utilized by recreationists to obtain diverse experiences.

Keywords: Recreation, land use, multiple use -)recreation, management planning (forest).

Metric Equivalents

1 acre = 0.4047 hectare
1 mile = 1.61 kilometers

PREFACE

In 1890, two alpine lakes on the east flank of the Cascade Range in Washington State--Little Kachess and Big Kachess--were accessible only by game trails and were used infrequently by people. The lakes (about 2 miles apart) were connected by a trout-filled stream. The area was rich in wildlife. Groves of trees many hundreds of years old were interspersed through the area. Human impacts were virtually nonexistent; only a few people entered the area for recreational activities. Hunters and a few trappers were known to use the area on occasion. The Kachess area offered a true wilderness opportunity for those wishing to use it.

In the early 1900's, as part of its water program, the U.S. Bureau of Reclamation designated the Kachess drainage as a potential impoundment, and a dam was soon constructed. The water in the newly created lake reached its first high level in the spring of 1912. The resulting lake, known as Lake Kachess, was approximately 11 miles long and became an attraction for a variety of recreational activities. For the next several decades, the road system used for building the dam and for logging was expanded, facilitating access to recreational opportunities. Evidence of use became obvious as people camped and played along both the lakeshore and several streams that emptied into the recently completed lake. The primeval conditions that once characterized Lake Kachess were no longer present, but the people who came looking for semiprimitive types of recreation were apparently happy with what they found.

By the 1940's, use at Lake Kachess had increased markedly, and several camping areas had been established by users. Firepits abounded in favored spots, trails led to prime fishing locations, and vegetation had been trampled in frequently used areas. In response to these impacts, the USDA Forest Service, the agency responsible for managing the area adjacent to the lake, developed several sites that had been heavily used for recreation along the west side of the lake. Roads were improved and rustic tables and outhouses installed. Agency presence became more evident as fire prevention and directional signs and a list of Federal regulations regarding recreational use were posted. The area, now much more developed, appealed to people looking for some of the conveniences of modern living. Most were apparently happy with what they found.

In response to rapidly growing recreational use and the increasing impact on resources, the USDA Forest Service further modified the area in the early 1960's. Paved roads were developed within the campgrounds, a new camping area was constructed to accommodate the increasing number of travel trailers, and heavily used areas were closed to overnight camping. Parking barriers were also added to prevent cars from driving off established road systems. The 100-acre recreation complex included three separate camping areas with a total capacity for nearly 100 parties, and a mile-long nature trail. Most resemblance to a primitive area had disappeared by this time. Campers had the convenience of paved roads, modern toilets, and running water. Campers seeking modern kinds of camping opportunities came in ever-increasing numbers and were apparently happy with what they found.

As use increased, the USDA Forest Service further developed the area. New campsites brought the total to nearly 200. More flush toilets, permanent fireplaces, and concrete and wood tables were built. The access road, extending some 5 miles from Interstate 90, was widened and paved. By the late 1970's, Lake Kachess represented a modern, highly developed, intensively used recreation complex, readily accessible to large numbers of people. On a typical summer weekend, hundreds of recreationists enjoy a variety of pastimes.

The level of recreational activities in the Lake Kachess area has slowly evolved for more than three-quarters of a century from a primitive environment to a highly developed, modern setting for recreation. Several questions can be asked about this process of change: What opportunities for recreation was Lake Kachess best suited to provide? What range or mix of opportunities might be developed in conjunction with the Lake Kachess development? What effects have past management decisions had on opportunities for recreation in the area? How have the changes in the nature of the opportunity affected the kinds of experiences the area provides?

The scenario of recreational development at Lake Kachess is not uncommon. Many campground and recreational areas throughout the country have followed a similar pattern of development. Nor are the questions we raise unusual. In the following pages, we try to answer them.

INTRODUCTION

Today, many agencies at Federal, State, and local levels are responding to the burgeoning demand for outdoor recreation. In addition, many private firms offer facilities and services for recreation, such as campgrounds, computerized reservation systems, and equipment rentals. With this expansion in the demand for recreational services has come a number of complex policy issues. What range and mix of opportunities should be provided and what are the roles of the various suppliers? Who can most effectively and efficiently serve public needs at national, regional, and local levels?

In this paper we describe a framework for outdoor recreation managers and policymakers who must answer questions concerning both the allocation and management of opportunities for recreation. This framework rests on the concept of the Recreation Opportunity Spectrum (ROS). It is distinguished by varying conditions, ranging from modern and developed to primitive and undeveloped, or as Nash (1973) succinctly phrased it, "from the paved to the primeval." We will review the background of the opportunity spectrum concept and how it has been used in the past; describe six manageable factors or setting attributes that influence the opportunities for recreation; and describe uses of the spectrum concept for identifying and measuring the consequences of alternative allocations of and management actions on opportunities for outdoor recreation.

THE RECREATION OPPORTUNITY SPECTRUM

In this paper we focus on the setting in which recreation occurs. When considering opportunities for outdoor recreation, people must make choices about activities in which to engage, settings in which to recreate, and kinds of recreation experiences to seek. We believe that, by describing the factors that influence or define the range of possible settings and by communicating this information to recreationists, they will be able to choose the experiences they desire.

We define a recreation opportunity setting as the combination of physical, biological, social, and managerial conditions that give value to a place. Thus, an opportunity includes qualities provided by nature (vegetation, landscape, topography, scenery), qualities associated with recreational use (levels and types of use), and conditions provided by management (developments, roads, regulations). By combining variations of these qualities and conditions, management can provide a variety of opportunities for recreationists (fig. 1).



Figure 1.--A recreation opportunity setting includes features provided by nature or management and associated with recreational use.

Recreation opportunity settings imply a choice for recreationists; people must be aware of the opportunities, and the opportunities must be comprised of conditions desired by recreationists. Thus, opportunities are a function of user preference and a product of management actions designed to provide desired settings and to make people aware of their existence.

We recognize that the recreational value of an opportunity is a function of the perceived ability of that opportunity to provide certain activities and experiences. Our definition focuses on the social, physical, and managerial attributes of settings, not on the psychological values that may be derived. The link between the setting and experiences or "psychological outcomes" (Driver and Brown 1978) is an issue to which we will turn shortly.

The basic concept underlying ROS is not new. Many authors have remarked that a range or continuum of opportunities is needed to efficiently serve diverse public tastes for recreation. Wagar (1966) called for campgrounds ranging from highly developed sites suitable for modern self-contained campers to remote locations accessible only to backpackers. Similar continua have been suggested for hunting (Potter et al. 1973), wildland areas (Marshall 1933, Lloyd and Fischer 1972, Helburn 1977, Driver and Brown 1978), and parks (Field 1976, McCool and Elmer 1975). All these continua are characterized by a range of conditions from modern to primitive.

The spectrum concept is also reflected in a variety of land management descriptions. A basic recommendation of the Outdoor Recreation Resources Review Commission (1962) was for classification of recreational resources along "a spectrum from areas suitable for high-density use to sparsely used extensive primitive areas."

To implement terms of the National Forest Management Act (NFMA) (U.S. Laws, Statutes, etc. 1976a), the USDA Forest Service published draft regulations that note, "a broad spectrum of dispersed and developed recreation opportunities... will be provided." Through provision of this spectrum, land management planners will best be able to offer the diversity deemed so important by NFMA. To develop operational guidelines for the implementation of the ROS, the USDA Forest Service has established a task force of managers and researchers.^{1/} This group will be responsible for development of procedures to apply the opportunity spectrum concept on the ground. The Bureau of Land Management, U.S. Department of the Interior, is similarly involved in developing such guidelines.

^{1/} Members of the task force include Thomas Hoots (Task Force Leader, Washington Office), John Asterford (San Bernadino National Forest), Wendell Beardsley (Northern Region, USDA Forest Service), Perry Brown (Colorado State University), Leon Buist (University of Nevada), Roger Clark (Pacific Northwest Forest and Range Experiment Station, USDA Forest Service), Charles McConnell (Rocky Mountain Region, USDA Forest Service), Gary Morrison (Mount Baker-Snoqualmie National Forest), George Olson (North Carolina National Forest), Doug Smith (Southwestern Region, USDA Forest Service), George Stankey (Intermountain Forest and Range Experiment Station, USDA Forest Service), Lance Tyler (Arapaho-Roosevelt National Forest), Donald Warman (Pacific Northwest Region, USDA Forest Service), Bev Driver (Rocky Mountain Forest and Range Experiment Station, USDA Forest Service).

The tabulation below further illustrates the spectrum concept as used in legislation, in land management planning procedures, and in user-oriented classifications of recreational opportunities, such as river running

and mountain climbing. These examples are evidence of growing recognition by both managers and recreationists of the importance of diversity in settings for recreational opportunities.

Federal legislation:

Wild and Scenic Rivers Act
(U.S. Laws, Statutes, etc.
1976c)

Recognizes three classes of rivers
varying in level of modification,
development, and permitted activities

National Trails Act
(U.S. Laws, Statutes, etc.
1976b)

Recognizes three classes of trails
varying in purpose, permitted uses,
and adjacent development

National Forest Management
Act (U.S. Laws, Statutes,
etc. 1976a)

Calls for providing a broad spectrum
of dispersed and developed recreational
opportunities

Federal agency planning:

USDA Forest Service

Recognizes five recreation experience
levels, ranging from those offering
challenge, solitude, and demanding
high skills to those involving extensive
facilities and few skills.

Heritage Conservation and
Recreation Services
(formerly Bureau of
Outdoor Recreation)

Recognizes six types of outdoor
recreation settings ranging from class
I (high density recreation areas) to
class VI (historic and cultural sites)

Opportunity for recreation:

River running (e.g. Arighi
and Arighi 1974)

International scale of river difficulty
recognizes six classes of conditions,
ranging from class I (moving water
with a few riffles and small waves,
and no obstructions to class VI (nearly
impossible, very dangerous)

Mountain climbing
(e.g., Robbins 1971)

International Decimal System describes
climbing skills ranging from class 1.0
(hiking) to class 5.0 to 5.11 (increasingly
difficult piton-protected climbing)

DIVERSITY AND QUALITY IN OUTDOOR RECREATION

The basic assumption underlying the ROS is that quality in outdoor recreation is best assured through provision of a diverse set of opportunities. A wide range of tastes and preferences for recreational opportunities exists among the public and, as Wagar (1966) points out, "Quality seems to be a highly personalized matter." Providing a wide range of settings varying in level of development, access, and so forth insures that the broadest segment of the public will find quality recreational experiences, both now and in the future (fig. 2).

The importance of supplying diverse opportunities for camping has been illustrated by Wagar (1966). As he indicates, even a few different kinds of camping facilities greatly increase the probability of meeting more people's desires. If any generalization can be made from the body of knowledge about recreationists, it is that people vary enormously in what they desire from their recreational pursuits. This generalization is true, even for specific categories of recreationists; not all campers, hikers, or wilderness users are alike. Building management programs around average tastes can greatly miss the mark, because often such averages are statistical phenomena that do not adequately account for the wide variation in tastes (Shafer 1969).

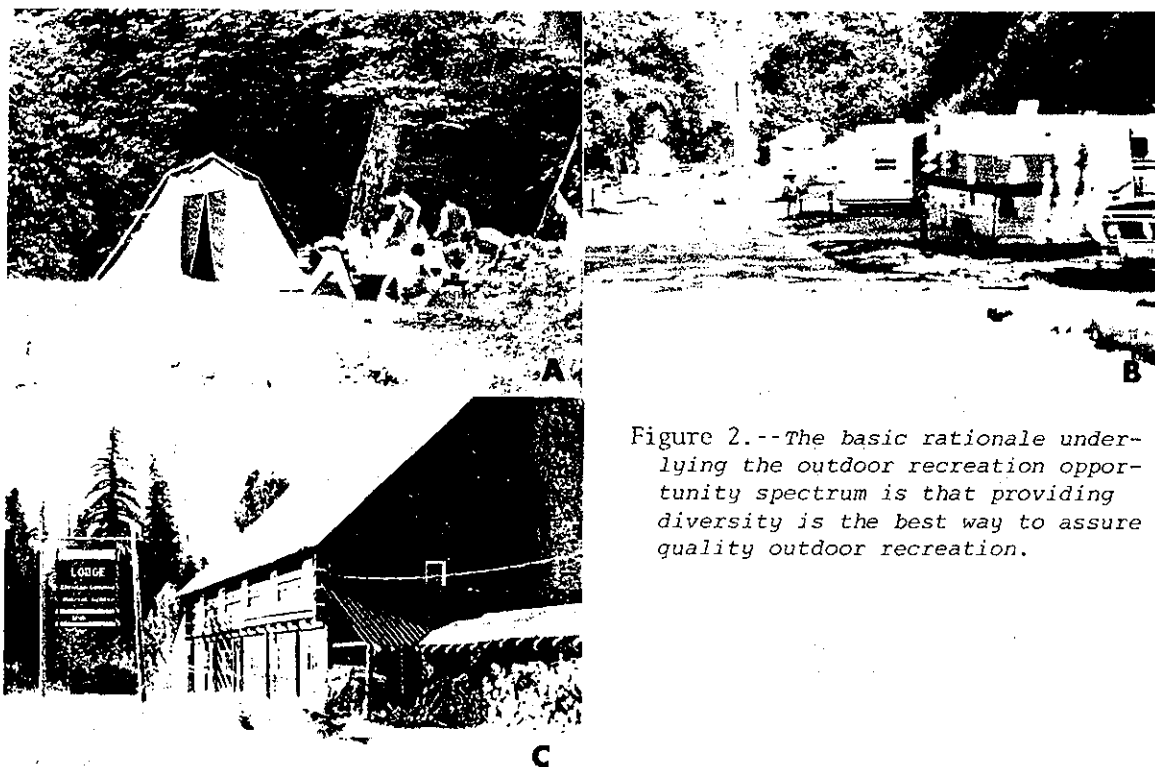


Figure 2.--The basic rationale underlying the outdoor recreation opportunity spectrum is that providing diversity is the best way to assure quality outdoor recreation.

Diversity represents an important characteristic of any recreation system. Managing opportunities for recreation to promote a diversity of experiences is crucial for social equity (Watt 1972). Failing to provide diversity of opportunity invites charges of favoritism, elitism, and discrimination. Further, diversity insures the flexibility necessary to mitigate changes or disturbances in the recreation system stemming from such factors as social change (changing age structure of U.S. population) or technological change (outdoor recreation vehicles, etc.).

But diversity is only a means to an end. Quality recreation, producing desired satisfactions and benefits for participants, is the objective and concern of both managers and recreationists. But what is quality? From an individual perspective, it is fairly easy to describe a quality recreational experience. For one person, it might be an extended backpacking trip in a very primitive area. For another, it might mean a camping trip in a motor home along a lightly used logging road. For yet another, a quality recreational experience may be camping in a 500-unit intensively developed campground where it is easy to visit with other people. Furthermore, the same person may find all these experiences enjoyable and of high quality at one time or another. Recreation is indeed a phenomenon in which quality is in the eye of the beholder.

The existence of different conceptions of quality does not mean that it is a meaningless concept; the provision of opportunities for quality outdoor recreation is a legitimate goal of recreation management. Quality is a relevant notion along the entire spectrum. Quality, then, is not judged by the presence or absence of some factor (facilities, naturalness, or other visitors), but as the extent to which a given setting satisfies the

desires of a particular recreationist. The recreation opportunity spectrum helps clarify the quality issue by providing a framework that calls for the systematic provision of diverse settings for recreation (fig. 3).

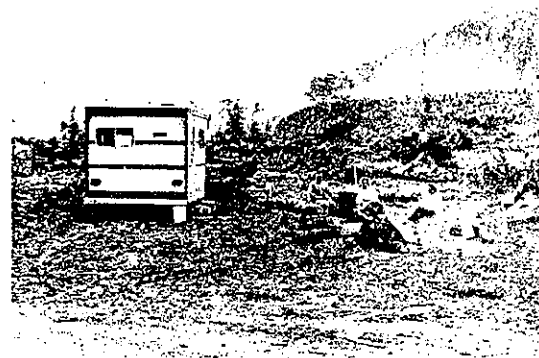


Figure 3.--The opportunity spectrum is not a quality continuum. Quality reflects the extent to which a setting meets the recreationists' desires and needs. Camping in a clearcut area is as satisfying to some people as camping in a wilderness is to others.

THE LINK BETWEEN RECREATIONAL OPPORTUNITIES AND EXPERIENCES

Development of opportunities for recreation is not an end in itself. By providing different kinds of recreational settings and accommodating different types and styles of recreational use, managers can best give people the opportunity for various kinds of experiences.

Driver and Brown (1978) proposed a hierarchical framework that specifies four distinct levels of recreational demands: (1) for activities, (2) for certain situational attributes (settings), (3) for specific psychological outcomes--experiences and satisfactions and (4) for benefits. Our focus is primarily on level 2, the situational attributes that comprise a recreational opportunity. We concur with these authors that level 2 demands do not

exist in and of themselves, but for the satisfactions and benefits derived at levels 3 and 4. Figure 4 shows the link between these levels of demand and the opportunities provided by managers.

Some gains have been made in the ability to define links between activities and outcomes (Driver and Tocher 1970, Brown et al. 1977, Potter et al. 1973). And it is clearly possible to facilitate the achievement of certain

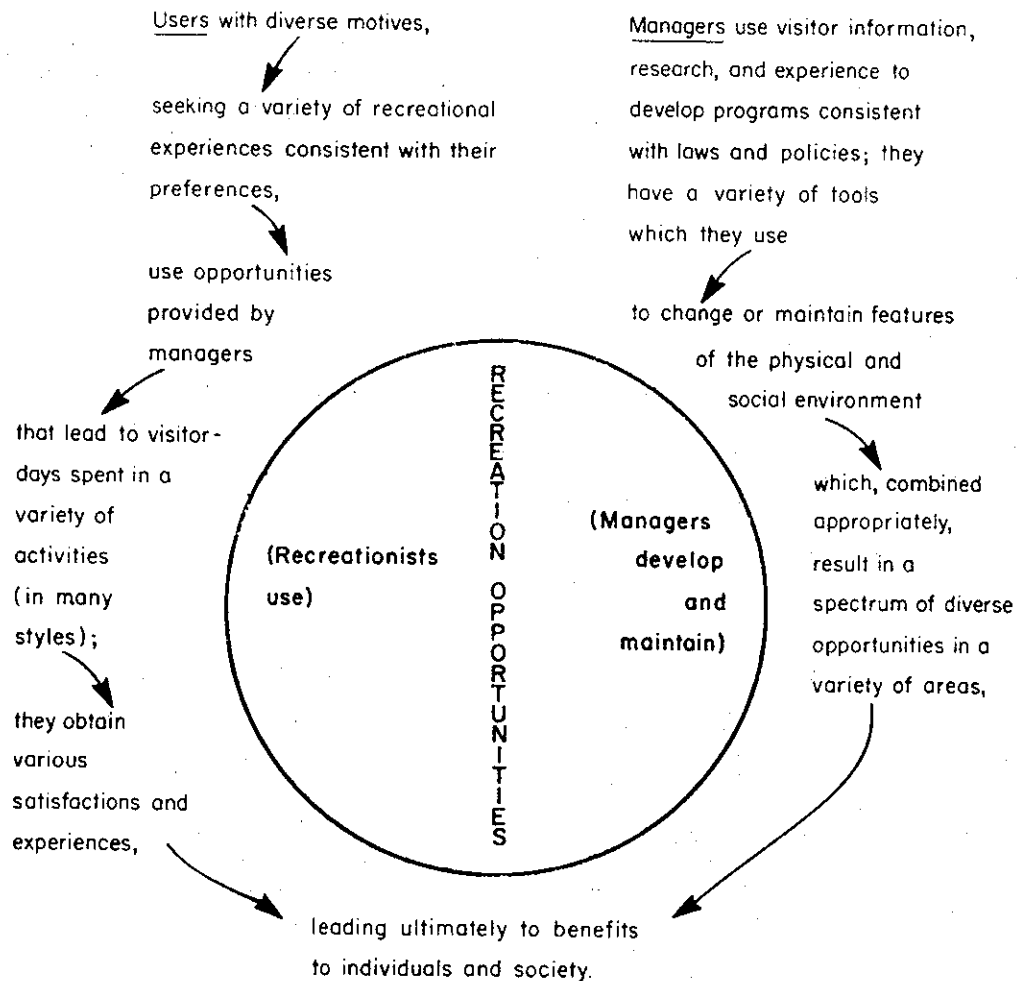


Figure 4.--Link between recreationists' desires and the opportunities provided by managers.

experiences by the way situational attributes are manipulated. Furthermore, by altering the setting, the same activity can be participated in in a variety of styles, thereby producing different satisfactions (fig. 5). As Knopp (1972) indicates, characteristics of a place will influence whether or not a given individual will recreate there, because the place is closely tied to the function of specific activities. As our knowledge of the linkage among settings, activities, experiences, and satisfactions improves, our ability to fine-tune the supply sector to most efficiently meet demands of visitors will grow.

Opportunities for recreation ought to differ in terms of producing distinctive experiences or "psychological outcomes" (Driver and Brown 1978). Work by a number of investigators increasingly improves the ability to do this (Lime 1971, Clark et al. 1971, Knopf et al. 1973, LaPage and Ragain 1974, Brown et al. 1977). Application of the opportunity spectrum framework outlined in the following pages, however, is not contingent on understanding the link between experiences (a psychological outcome) and opportunity settings. Simply put, the ROS can be used by

managers to provide specific information to potential visitors about what a place is like, not about experiences they will derive.

The individual's choice of opportunity (or their expressed preference) provides feedback on the degree to which the opportunities might fulfill the desired outcomes. The specific experiences derived are a function of the individual's past experience, expectations, present state of mind, and so forth, not a function of an explicit management decision to produce a given outcome or set of outcomes.

ROS offers a framework within which to explicitly vary situational attributes (access, density, etc.) to produce different recreation opportunity settings. From these opportunity settings, recreationists participating in different kinds and styles of activities derive different satisfactions and experiences and, ultimately, benefits. Our intent here is to systematically and explicitly describe a framework that permits managers to provide diversity in the range of opportunity settings available to individuals.

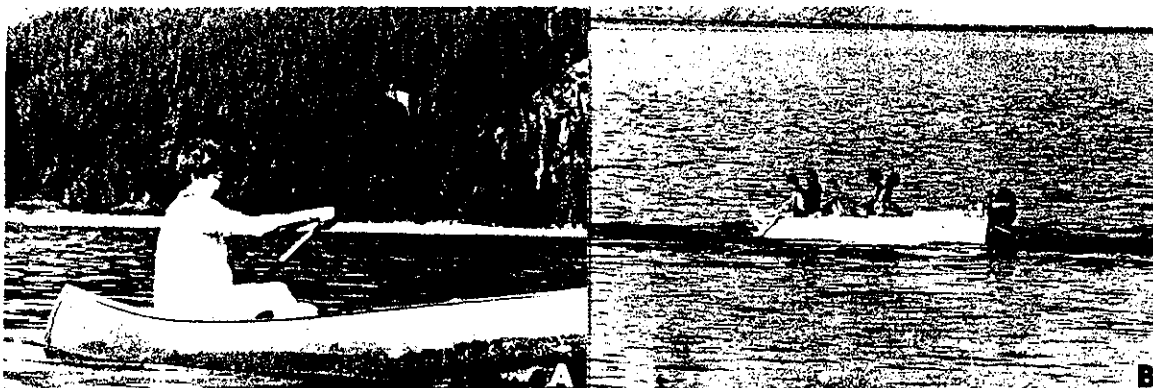


Figure 5.--Different activities can produce different experiences. But different styles of the same activity, carried out in various settings, can also produce different experiences.

DEFINING OPPORTUNITY FACTORS

Four criteria were used to select factors that define the opportunity spectrum:

1. The factor is observable and measurable,
2. The factor is directly under management control,
3. The factor is related to recreationists' preferences and affects their decisions about areas to use, and
4. The factor is characterized by a range of conditions.

When these criteria were applied to existing conceptions of the ROS, previous research on recreationists' preferences, management experience, and state-of-the-art judgment, six factors emerged:

1. Access,
2. Other nonrecreational resource uses,
3. Onsite management,
4. Social interaction,
5. Acceptability of visitor impacts, and
6. Acceptable level of regimentation.

Each factor is described below. Natural features (topography, scenery, water, wildlife, etc.), which are important across the spectrum are discussed in a later section.

In this paper we describe the end points of the opportunity spectrum as modern to primitive. Other authors have used urban, developed, wild, natural, remote, etc. The labels are really unimportant and reflect authors' preferences rather than any conceptual difference between what we are proposing here and what is described in papers by others.

Opportunity Setting Factors

1. Access

Several elements can be used to describe access. Managers can control the ease of access by the types of access (e.g., roads, trails, cross-country travel) and by the means of conveyance allowed (e.g., cars, all-terrain vehicles, horses, feet). Both access elements can vary across the spectrum from easy to difficult. Design and management standards are important in defining the range of access systems. For example, roads and trails can be designed as high standard systems, requiring intensive maintenance, to low standard roads and trails needing little or no maintenance. In many cases, the topography and type of vegetation will help define the conveyances that can be used. Thus, managers are able to use a combination of natural features, design and maintenance standards, and regulations for determining and enforcing ease of access.

Research indicates that recreationists' preferences for alternative types of access cut across the range of access conditions (fig. 6). For example, among wilderness users, there is a spectrum of preferences for trails ranging from highly developed to no trails at all (Stankey 1973, Lucas 1973). Although users of forest lands with roads are there because they prefer a more primitive recreational setting than is typically found in developed campgrounds, they, too, vary in their preferences for paved or unpaved roads.^{2/}

^{2/} Clark, Roger N. Russell W. Koch, Mack L. Hogans, and Harriet H. Christensen. Dispersed recreationists along forest roads in three areas of the Pacific Northwest: Their recreation patterns, opinions, and attitudes. Unpublished data on file at Pacific Northwest Forest and Range Experiment Station, Seattle, Washington.



Figure 6.--Visitor preferences for access within recreation areas range from well-developed, paved roads, to gravel roads, to trails, to cross-country travel. Access also controls the type of conveyance recreationists may use.

2. Nonrecreational resource uses

This factor considers the extent to which nonrecreational resource uses (grazing, mining, logging) are compatible with various opportunities for outdoor recreation. Other uses can severely conflict with opportunities for primitive experiences. For example, Stankey (1973) found that grazing in the Bridger Wilderness in Wyoming was the most serious source of conflict reported by visitors. In other cases, a variety of resource management activities that might even contribute to visitor enjoyment can be found in conjunction with outdoor recreation.

For example, recreationists in semi-primitive areas with roads often find grazing and logging acceptable (see footnote 2). But these users do express concern about large clearcuts, so the scale at which the activity is conducted, as well as the activity itself, influences perceived compatibility (fig. 7). Planners and managers must consider the lasting effects of a resource activity (mines, clearcuts), as well as short-term effects (logging trucks, noise from a mine) to determine the impacts on the recreational opportunity.

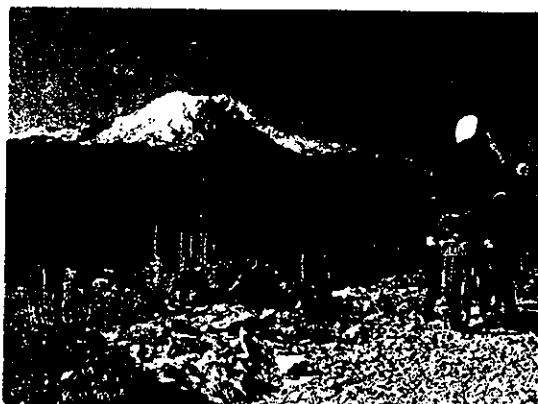


Figure 7.--Generally opportunities for primitive experiences are incompatible with nonrecreation resource uses. For example, timber harvests conflict with the kinds of experiences wilderness visitors seek. But in semi-primitive or semimodern areas with roads, clearcuts may be acceptable to some recreationists.



Figure 8.--Onsite management includes modifications, such as bridges, which can vary from simple logs for foot travel to complex developments capable of supporting automobiles.

3. Onsite management

The onsite management factor includes site modifications, such as facilities, exotic species of vegetation, vegetation management, landscaping, traffic barriers, etc. The appropriateness of site management should be considered in light of four elements:

- a. Extent of the modification. Is it limited to a few isolated locations or distributed throughout the area?
- b. Apparentness of the modification. Has the use of native materials helped blend the modification into the natural setting or do artificial materials make the modification readily apparent?
- c. Complexity of the modification. A bridge could be a simple log foot-path (fig. 8) or a complicated engineering effort.



Figure 9.--In modern settings, well-developed toilet facilities may be provided for convenience of visitors; in more rustic settings, they may be for safety of visitors or for protection of resources.

- d. Facilities. Facilities can be largely for convenience and enjoyment or safety of users, or only for protection of the resources. In some areas, no facilities whatsoever are appropriate; in others, all possible conveniences would be appropriate. Toilet facilities can range from heated buildings with flush toilets and showers, to pit toilets, or, in some settings, to no toilet facilities at all (fig. 9).

4. Social interaction

The appropriate amount of social interaction is an important characteristic of different recreational opportunities. Generally, in more primitive settings, low levels of interaction are appropriate and expected. In more modern settings, interaction can rise to very high levels. The level of use beyond which crowding occurs, then, is not absolute but varies by expectations of visitors and the extent to which interaction levels are perceived as appropriate (fig. 10). Insufficient levels of interaction in some modern settings can be just as unacceptable to some people as excessive levels in primitive settings (Heberlein 1977).

Both natural variations (topography and vegetation patterns) or management actions (access) can greatly influence the actual level of contact among people. Consequently, standard measures of density (number of people or parties per unit area) are inappropriate because they fail to consider the potential for contact between people. The number of people in an area, how they are distributed in space and time, and the probability of interaction between parties are important elements in determining the appropriate social carrying capacities at different points along the opportunity spectrum. Although the recreation opportunity spectrum will not give a specific number for the carrying capacity of a specific opportunity type, the basic concepts underlying the framework help in resolving the carrying capacity issue. Managers and planners must apply these concepts on an area-by-area basis.

Appropriate levels of interaction vary along the spectrum; they can also vary for the same physical setting defined as a different kind of recreational opportunity. For example, for travelers on the Rogue River in Oregon who defined the area as

wilderness, appropriate daily levels of contact averaged 2.6; for those who perceived the river as a semiwilderness setting, 4.4; and for those who defined the river as an undeveloped recreation area, 7.0.^{3/}

In addition to the level of interaction, managers must also give attention to the type of use appropriate for each setting. Generally speaking, there is greater diversity of activities possible in modern settings than in primitive. Such factors as access may account for some of this difference; for example, in the most primitive setting, travel is by foot, but farther along the spectrum, travel by horses, outdoor recreational vehicles, and automobiles becomes appropriate. In the most modern setting, all types of groups and activities might be acceptable.

It is necessary to consider the acceptable diversity of use because interaction alone is not a sufficient measure of an area's social carrying capacity; the types of use found at a particular setting may be more important in defining capacity than the amount of use. Lucas (1964) found that canoeists in the Boundary Water Canoe Area thought that up to five encounters per day with other canoeists was acceptable, but even one contact with a motorboat was not acceptable. There are probably many reasons why this variable pattern of acceptability occurs (perceived inappropriateness of use, experience, or values), but the central implication for management is that a greater diversity of uses can be accommodated in modern settings than in primitive.

^{3/} Presentation made by Dr. Bo Shelby, Oregon State University, Corvallis, at the Rural Sociology Society Annual Meeting in San Francisco in 1978.



Figure 10.--In primitive settings, any other people might represent crowding; in modern settings, large numbers are acceptable. Crowding is a relative measure; there are no absolute standards.

5. Acceptability of visitor impacts ^{4/}

Human use of resources inevitably results in impacts, and recreation is no exception. These impacts might be on resources (trampling of vegetation or polluting of water) or on other people (noise, depreciative behaviors, inappropriate activities). Any use creates some impact; thus, the relevant question for managers is not "how can impacts be prevented" but "what level of impact is consistent with the type of opportunity being supplied."

The acceptable level of impacts on recreation is a concern to both users and managers. Managers must be concerned about maintaining opportunities for quality recreation, as well as protecting other resource values. Research indicates that managers' perception of what constitutes impacts may be very different (generally more conservative) from users' perceptions (Clark et al. 1971, Bultena and Hendee 1972, Downing and Clark 1979, Lucas 1970). When users' perceptions are considered, acceptable impacts take on a range of conditions across the ROS.

Two concepts are useful in resolving how much impact is appropriate. In assessing environmental impacts, one should consider both magnitude and importance. The magnitude of impacts is based on an objective assessment--there should be no substantive disagreement on the magnitude of the impact. The importance of environmental impacts is based on a value judgment which can result, however, in considerable disagreement between managers and recreationists, depending on expectations, knowledge, and points of view of each group. It is the professional's responsibility to insure that objective measurement procedures are used to

determine the magnitude of environmental impacts resulting from recreational use. It is also a professional responsibility to provide accurate assessments of the kinds of impacts stemming from recreational use, their implications for the environment and solutions to their management. But the importance of impacts must be considered in light of the desired opportunity and subsequent impacts on people's experiences. As noted above, total prevention of impacts is impossible, short of complete prohibition of recreational use.

Thus, damage or a level of impact necessitating correction by management occurs only when the impact exceeds the magnitude defined in area management plans as appropriate for an opportunity level. The level of impact defined as damage in an area managed for modern opportunities will be quite different from that in the same area managed for primitive opportunities. Definitions of impact as "damage," then, depend on the type of opportunity or context in which they occur, rather than on any absolute measure. Generally, recreationists' tolerances for impacts (ecological, social, or managerial) are greater among modern styles of recreation than among primitive styles in both degree and prevalence.

6. Acceptable regimentation

The nature, extent, and level of control over recreational use is an important factor characterizing different opportunities. A continuum of controls can be described, ranging from subtle techniques--such as site design and providing visitors with information to fairly heavy-handed measures that are authoritarian and perhaps accompanied by legal sanctions (Lime 1976). Specific techniques for regimenting recreationists' activities include regulations, rules, side design, and laws.

^{4/} See Clark and Stankey (1979) for discussion of the acceptability of recreation impacts, noise in particular.

Modern opportunities are generally characterized as more highly organized and regulated than are primitive types. But the "principle of minimum regimentation" should apply across the spectrum; we should regiment only as much as necessary to protect the qualities of the opportunity in question (Stankey and Baden 1977).

Ideally, the most primitive opportunities should have few regimenting influences. With the reality of increasing pressures from use of primitive settings, regimentation may be necessary to protect the integrity of the opportunity and to insure its use into the future. This is particularly true where management objectives call for the preservation of naturalness. Thus, management actions that might otherwise be appropriate for protecting an area (facilities, on-site management) would not be satisfactory if they themselves would alter natural integrity. Control of visitation would be necessary, and such measures have been instituted in several Wilderness Areas and in National Park back country (Stankey 1979, Fazio and Gilbert 1974).

POSSIBLE COMBINATIONS OF FACTORS

In figure 11, each factor is displayed graphically. The range of conditions that a factor can have (for example, from very easy to very difficult access), represents relative rather than absolute limits of what is acceptable and appropriate along the ROS. Certainly, when the framework is applied, specific criteria must be developed. Our objective, however, is to focus on the process by which the ROS factors can be managed to achieve desired objectives in a conceptual fashion. After the reader understands the approach, then more specific values

for each factor can be estimated. Readers are encouraged to review Driver and Brown (1978) and Brown et al. (1978) for examples of proposed criteria developed for recreation inventory purposes. Information for selecting management objectives is found in Brown (1977).

A recreation opportunity setting is the result of a specific combination of the six factors in a particular location. Alternative combinations of the factors (and other natural features discussed later) create different opportunity settings that give recreationists many options from which to choose. Considerations about appropriate criteria for any one of the factors are largely judgmental; there are seldom absolute standards.

There are no obvious points at which boundaries for the different opportunities can be established. For purely illustrative reasons, we use four generic opportunity types in the discussion below. But any number of categories could be substituted across the top of figure 11. For example, modern-urban, semirural, rural, semi-primitive motorized, semiprimitive non-motorized, and primitive as used by Driver and Brown (1978). The key is that the type of setting is determined by the combination of factors, rather than the name or number of categories.

Existing knowledge about visitors' preferences, managers' judgments, and public involvement can help guide development of appropriate opportunity setting categories. By packaging recreational settings in terms of the six factors we have described, we can begin to explicitly develop a range of opportunities to better meet public desires.

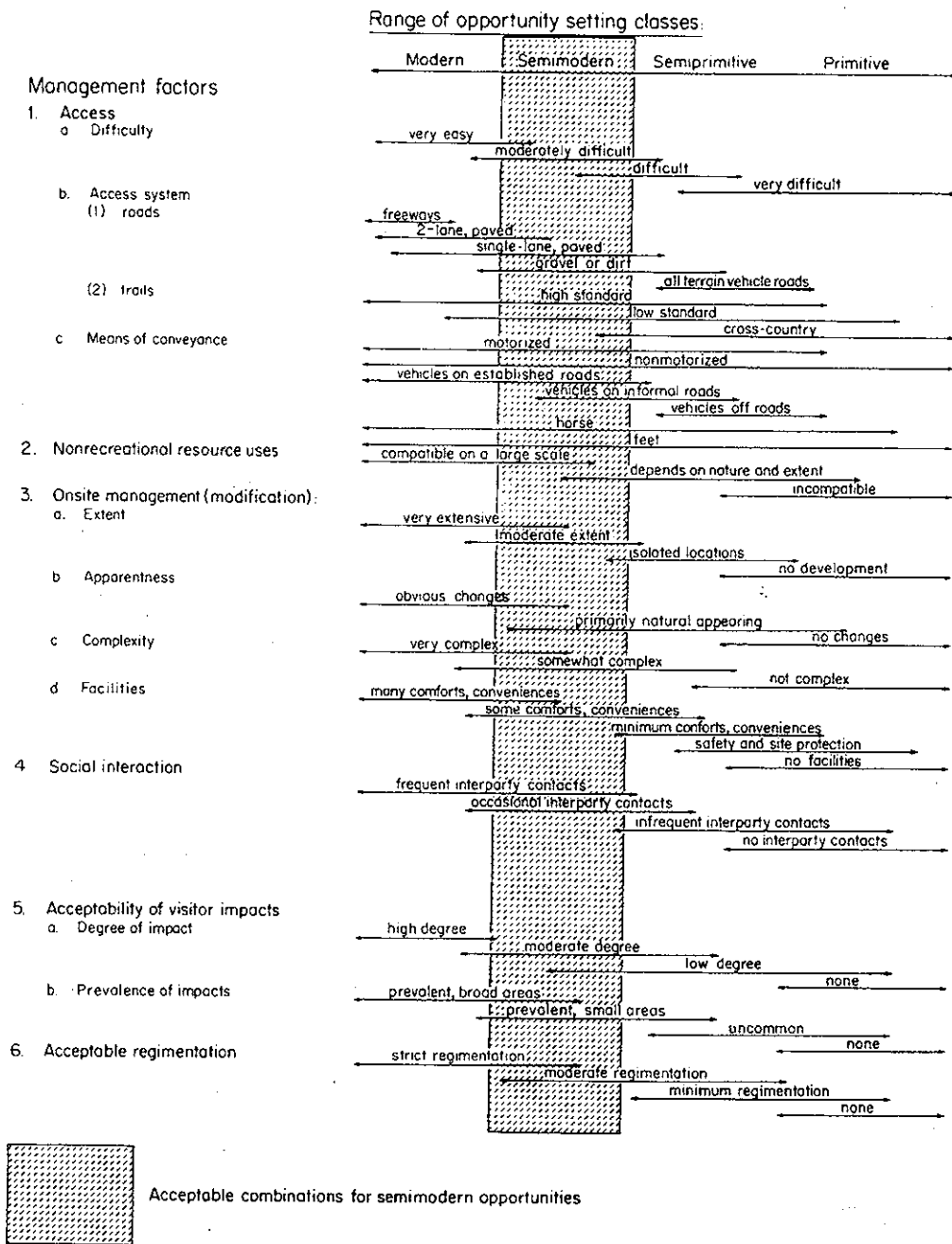


Figure 11.--Factors defining outdoor recreation opportunity settings.

In this discussion, we assume that all the factors have coequal weight; they all influence recreational behavior in the same way. In reality, we are sure that this is not the case. For some people, type of access might be the most important influence. For others, it might be the type of facilities, or the nature of previous visitor impacts, etc. When choices of recreation in general, are considered however, such individual differences may balance out. Further research will be required to determine under what conditions this assumption is appropriate.

An approach for combining the factors is shown in figure 11. All the conditions represented by the six factors are arrayed along the modern to primitive opportunity continuum. For any generic type of opportunity--modern, semimodern, etc.--a band of acceptable combinations can be described in area management plans through the use of objectives and standards.

In figure 11, for example, we show a band of acceptable combinations for the semimodern types of opportunities. This band simply means that any of the conditions within the range indicated for the six factors are acceptable in an area managed as semimodern. Anything outside the band would be unacceptable. We will talk more about conditions outside the band of acceptability in the section, "Inconsistencies."

It should be clear that, although we describe only four generic opportunity types here, each represents many possible combinations of the six factors. It is important that we provide diversity, not only between opportunity types but also within individual types. For example, semimodern opportunity settings might include sites where access, facilities, and so forth are relatively highly developed; other settings might have developed facilities but be accessible only by foot or bicycle; still

others might feature a rustic setting reached by gravel roads, but with extensive site modification to minimize impacts on the resources. The point is, designation of an opportunity as "semi-modern", "primitive", etc., does not imply a single standard of development for areas within that category. Variations in settings within and among opportunity types within a band of acceptability further increases the range of options for recreationists pursuing different types and styles of activities.

Other Features of Settings

We have mentioned several times that a recreation opportunity setting is composed of other natural features in addition to the six factors. Land-form types, vegetation, scenery, water, wildlife, etc., are all important elements of recreation environments; they influence where people go and the kinds of activities possible. Considerable work has gone into developing procedures for measuring and managing visual resources (USDA Forest Service 1974). Planners and managers should also consider these features when determining for which types of opportunity to manage an area.

But it is important to recognize that there is no intrinsic quality of these other natural features that suggests the appropriate type of recreation opportunity setting. Any of the opportunity types are as possible and appropriate in mountainous areas as they are in desert settings. Indeed, greatest diversity would be assured if the full spectrum of opportunity types (modern to primitive) could be found across the range of environmental settings (fig. 12).

Environmental settings	Opportunity types			
	Modern	Semi-modern	Semi-primitive	Primitive
Mountains	All possible combinations are appropriate			
Rivers				
Lakes				
Deserts				
Etc.				

Figure 12.--Appropriate combinations of opportunity types and environmental settings.

And it is the combination of these environmental settings and opportunity types that determines the range of allowable recreational activities in a specific area. The nature of participation in recreational activities depends on the place in which it occurs (Cheek et al. 1976). Thus, natural features (terrain, rivers, lakes) will influence the activities that are possible; for example, you cannot waterski without a relatively large body of water. The type of opportunity for which the area is managed, however, will help determine the appropriateness and styles of activities. It is inappropriate to expect to be able to waterski in primitive areas, even if there is a large body of water and one could get a powerboat there. Conversely, it would be inappropriate for a back-packer to expect to find a low level of social interaction in a highly developed, modern campground (fig. 13).

Inconsistencies

One important issue that must be considered when specific opportunity settings are being developed is the avoidance of inconsistencies. An inconsistency occurs when the status of a factor (or factors) exceeds the parameters specified in the area management plan; for example, Brown et al. (1978) propose a series of standards



Figure 13.--There is nothing intrinsic in the landscape to dictate the best type of opportunity. Modern opportunities in an alpine setting are needed as much as primitive opportunities in deserts or plains.

for selected criteria that define appropriate conditions for different opportunity types. Although their criteria differ somewhat from ours, their process is identical. By specifying standards for the range of appropriate conditions for a given type of opportunity, managers have a rational basis for determining inconsistencies. Formulation of appropriate standards combines information from research, public input, administrative policies, legislative guidelines, and managers' judgments. Examples of standards would include such things as standards for constructing highways and trails, frequency and type of user interaction, types and amounts of facilities, and other specific onsite management actions.

In some cases, laws or policies provide guidelines for what is appropriate (no mechanized access is permitted in Wilderness Areas). More commonly, managers must rely on other guidelines. Studies of recreationists' preferences or other measures of appropriateness can help identify the factors that users define as consistently related. In other cases, managers will be able to use the ROS framework to identify potential undesirable consequences that would follow from an inconsistent combination of factors.

For example, when access roads along the southern edge of the Boundary Waters Canoe Area were paved and straightened, levels of use rose rapidly (much as they did at Lake Kachess). Following this change in the access factor, pressures developed for increased facilities and other measures to control use--developments generally inconsistent with primitive type opportunity and so recognized by land managers, recreationists, and the Wilderness Act (fig. 14).



Figure 14.--A road used to reach the timber near wilderness is now used by increasing numbers of recreationists. This may lead to increased need for facilities and more regimentation.

The opportunity spectrum does not offer a prescribed formula for providing outdoor recreation opportunities. It does provide a systematic framework for looking at the actual distribution of opportunities and a logical procedure for assessing possible management action. To demonstrate how one might use the framework to test for consistency, we present the following example:

For illustrative purposes, we have shown within the band of acceptability the relative range of conditions one might describe as a "semimodern" opportunity (fig. 11). Such an

opportunity could be characterized in general by relatively well-developed access roads, extensive development of facilities for both resource protection and visitor convenience, relatively high densities of users and social interaction, etc. Thus, the opportunity setting has all six factors approximately equal in their position along a modern to primitive continuum; i.e., there is a "consistency" among the various factors within the band of acceptability.

But what if one or more factors is outside the band of acceptability? In figure 15 the overall pattern suggests that the area has potential as a supplier of a primitive type opportunity; however, access to the area is well developed along paved roads (in the "modern" category). Thus, an apparent inconsistency exists. If an objective of the opportunity spectrum concept is to minimize the effects of inconsistencies, a series of questions concerning the apparent inconsistency can be asked.

Management factors:	Recreation opportunity types (X = existing condition for the management factors):			
	Modern	Semimodern	Semiprimitive	Primitive
1. Access	X			
2. Nonrecreational resource uses				X
3. Onsite management				X
4. Social interaction			X	
5. Acceptable impacts				X
6. Regimentation			X	

Figure 15.--An example of an inconsistency.

How did the inconsistency occur? A variety of causes could be responsible for the inconsistency. It might result from an earlier management action (e.g., roadbuilding for timber harvest), for which the effects on recreational use were never identified or anticipated. Had these effects been recognized, the road might not have been built, the type of construction or the road's location might have been changed, or perhaps the road would have been closed after the timber was removed.

Or, the impacts on recreation of an earlier action might have been identified and considered but judged to be unavoidable. Such a situation might develop where the anticipated benefits seem to outweigh costs (the benefit of a timber harvest exceeding the costs incurred by changing the nature of the recreational opportunity). Perhaps different administrative jurisdictions were involved, one controlling the management action, the other the recreational opportunity. Even though the latter jurisdiction had fully identified anticipated impacts, it did not control the management action and was thus unable to influence the other organization's decision.

Finally, the inconsistency could be the result of a purposeful course of action. The apparently inconsistent factor might, in fact, be more in line with the kind of opportunity most needed in the area. For example, there might be plans to convert the generally primitive opportunity in figure 15 to a semimodern opportunity where relatively easy access is desirable. This conversion could be based on an assessment that the relative availability of primitive opportunities in the region is high, whereas the supply of semimodern opportunities is low. Or it might be that an apparent inconsistency is required to achieve certain objectives; it may be desirable to provide a primitive setting with some

form of modern access to allow easy entry for the handicapped or to provide cabins for protection in primitive areas with dangerous bears.

What are the implications of the inconsistency? Consistency as we describe it above is an ideal concept. In reality, one or more factors may be inconsistent with the others. It is not the inconsistency per se that should be of concern; rather, the consequences of the inconsistencies constitute the problem, particularly when they are not anticipated or recognized.

In the early 1900's, the Lake Kachess campground was a primitive setting. Access was difficult and use was light. But over the ensuing three-quarters of a century, a number of changes altered Lake Kachess. Improved access made it possible for greater numbers of people to reach the area. Management concerns with overuse (both resource impacts and crowding) led to development of various facilities (tent pads, vault toilets, parking areas) and other onsite modifications. Each action at Lake Kachess changed the nature of the opportunity the area provided. Yet visitors still filled the campground. Clearly there was no optimum environment for recreation at the lake; nor is it possible to say that current conditions are either better or worse than they once were. But they certainly are different.

Our purpose in describing the evolution of events at Lake Kachess is not to cite it as an unnatural situation nor to suggest that one particular set of conditions was better than another. Rather, it is to illustrate the consequences stemming from the lack of precise management objectives and an explicit monitoring and evaluation process. As problems arise and management responds to them in an effort to correct or offset impacts, inconsistencies may result and a chain reaction of secondary changes can occur,

ultimately altering the entire nature of the original opportunity. The principal implication of the Lake Kachess example is that the process of change was largely inadvertent and that most of the changes were the result of reactions to problems rather than a deliberate and conscious effort to alter the kind of opportunity the area provided.

Serious problems can develop from inadvertent changes. As the nature of a setting is altered, inconsistencies may occur, resulting in subsequent changes in use. The "new" campground attracts a different type of user, camping in a different style and seeking different kinds of experiences. As the new type of user becomes increasingly established, original users move to other locations more to their liking; that is, where the combination of all opportunity factors (including access, use density, and facilities) still resembles the kind of opportunity formerly enjoyed. This process of "invasion and succession" (Clark et al. 1971) can drastically change the nature of the available opportunities, the clientele served, and their recreational experiences. Particularly where the process is unnoticed, opportunities can be lost and clientele disfranchised.

Given inconsistencies such as those that occurred at Lake Kachess, managers must answer the question, What are the implications associated with the factors for both themselves and the users? Part of the answer to this question rests on how far out of line the factor apparently is. It is obvious that a factor only moderately out of line (e.g., density and regimentation in fig. 15) has less significant implications than one substantially inconsistent with the remaining factors (e.g., access). Managers must make judgments about the importance of these inconsistencies.

Implications for managers might involve questions, such as: Will the inconsistency accelerate change in other factors that will, in turn, lead to further undesired changes in the kind of opportunity provided (such as at Lake Kachess)? For example, will the highly developed access shown in figure 15 lead to higher levels of resource impact because of increased use at the site and necessitate development of more facilities or further regulation of use? And, if these outcomes appear likely, are they desirable or undesirable?

It is important to remember that we are looking at recreation as a system, with an interdependence among the various elements of that system. Thus, a change or modification in one element may affect (perhaps slowly or very quickly) the other parts of the system. Remoteness from humans and their impacts, for example, is a major consideration in primitive settings. But the level of remoteness can be affected by changes in several management factors--access, social interaction, and nonrecreational resource uses. Changes in any one factor may lead to an inconsistency resulting in a negative impact on other factors. Consequently, remoteness in an area managed for primitive values may be reduced below acceptable limits.

The basic problem of an inconsistency is that it introduces the potential for triggering a chain of events that might alter the entire nature of the intended opportunity. When such a situation develops, rapid changes in the distribution and use of opportunities can occur.

What should be done about inconsistencies? When inconsistencies occur, managers have three basic responses available. First, a "no action" response can be adopted. This might be the case if no significant effects are anticipated, at least within the foreseeable future. Or jurisdictional problems between agencies or functional problems within an agency may mean the inconsistency cannot be directly controlled by recreation managers; for example, planned changes in the access to an area by one government agency might affect adjacent recreation lands managed by another agency. Offsetting the problems brought about by these changes might involve such measures as site modifications, development of facilities, and regimental controls--actions whose costs outweigh any benefit they might have.

A second response is to restore the inconsistency to a status in line with the parameters specified for it. Closures of certain types of roads, elimination of facilities, or other onsite modifications might be instituted to restore consistency.

Finally, managers can respond to an inconsistency by altering the remaining factors to bring them into line with the original inconsistent one. This could occur where changing conditions of demand call for an opportunity not presently provided. Response to a situation where well-developed access is inconsistent with a primitive type opportunity might involve altering the remaining factors to make the area semimodern. Such a change would have its justification outlined in the area management plan.

USING THE RECREATION OPPORTUNITY SPECTRUM

At the broadest level, the ROS offers a way of thinking about opportunities for recreation, of considering recreation as something more than activities or areas. But beyond this, the opportunity spectrum has specific application for at least four major concerns: (1) allocating and planning recreational resources, (2) inventorying recreational resources, (3) estimating the consequences of management decisions on recreational opportunities, and (4) matching experiences recreationists desire with available opportunities.

Allocating and Planning Recreational Resources

The ROS is a helpful concept for determining the types of recreational opportunities that should be provided. And after a basic decision has been made about the opportunity desirable in an area, the ROS provides guidance about appropriate planning approaches--standards by which each factor should be managed.

Three concepts related to the ROS are useful in making such decision: (1) the relative availability of different opportunities, (2) their reproducibility, and (3) their spatial distribution.

Relative availability, although not directly manageable by any one recreation supplier, is a fundamental consideration affecting decisions about the opportunities that should be provided. The concept addresses the issue of supply as well as the appropriate role of the recreation supplier. Adequacy of supply is a function of, among other things, the spatial distribution of opportunities,

and it may be appropriate to estimate relative availability within a regional framework that extends beyond agency boundaries. When one type of opportunity is in abundant supply, it may be necessary for an agency to provide alternative opportunities even though these are not normally a responsibility of the agency. For example, the USDA Forest Service recreation program emphasizes the provision of opportunities for dispersed recreation. In an area like southeast Alaska, however, where such opportunities are abundant and the USDA Forest Service manages most of the land, the agency might find it necessary to also provide modern and semimodern opportunities in the interests of offering diversity (Clark and Lucas 1978) (fig. 16).



Figure 16.--The role of the private sector will be especially important in areas where the public sector is not a major supplier of certain opportunities.

Reproducibility and reversibility are also fundamental considerations. They address the question of the extent to which an opportunity can be technologically reproduced, as well as the ability of management to reverse the outcome of decisions. Opportunities at the modern (developed) end of the

spectrum are generally more reproducible (capable of creation through use of technology, infusion of capital, etc.) than those at the primitive end. There is a test of reasonableness here, because it is at least possible to reproduce any opportunity, given sufficient time and money. The spectrum is characterized by asymmetry in the reversibility of management actions because changes from modern to primitive can be more easily reversed than changes in the other direction (fig. 17). The obvious implication here is that decisions transforming an area from a primitive condition to something more developed needs to be carefully weighed because of the relative inability to reverse that decision.



Figure 17.--Through use of capital, design, and engineering, modern opportunities can be more readily created than can primitive settings which are a product of natural processes.

In planning and managing large areas for recreational purposes, managers must consider the spatial distribution of opportunities (fig. 18). Sharply dissimilar opportunities generally should be kept apart so that conflicts are minimized (Hart 1966, Gould 1961, Stankey 1974, Clawson 1975).



Figure 18.-- Sharply dissimilar opportunities should be separated. Conflicts between mechanized and nonmechanized use, for example, can seriously interfere with the experiences of both users. Spatial zoning can help reduce such conflicts.

For example, opportunities featuring high standard road systems and highly developed campgrounds should not be constructed adjacent to primitive opportunities. Keeping dissimilar opportunities apart also reduces the likelihood that impacts from one opportunity will "spill over" onto an adjacent opportunity (e.g., noise from an area catering to outdoor recreational vehicle users reaching an adjacent area managed for primitive opportunities). Some recent planning efforts have attempted to incorporate this concept; the recently dedicated Alpine Lakes Wilderness in Washington's Cascade Range will be bordered by a management area featuring primarily semiprimitive recreational opportunities.

Unfortunately, planners and managers often do not have the necessary flexibility to organize opportunities according to this ideal spatial arrangement. They are constrained by previous management decisions, other resource uses, established recreational use, or a variety of other factors that complicate the job. But even within these limitations, mapping recreational opportunities--existing and proposed--can help identify potential conflicts.

Inventory of Recreational Opportunities

The ROS provides a useful framework for the review and evaluation of inventory data (for a good review of various recreation inventory systems, see Brown et al. 1978). Because the ROS focuses on specific situational attributes (access, facilities, etc.) that comprise recreation opportunity settings, managers easily can relate inventory data to the spectrum. From this, the relative availability of different settings can be determined. Moreover, because of the focus on situational attributes, managers will be able to tell how they could change the relative availability of different settings. For example, if semimodern settings were in short supply, the inventory could indicate areas where such settings could be most easily created.

Inventories should encompass at least regional levels and transcend administrative boundaries. Ideally, the goal should be to insure that recreation opportunity suppliers--public and private--collectively provide a range of diverse opportunities. This clearly calls for interorganizational coordination in inventory of planning for recreational opportunities.

A comprehensive inventory conducted at a regional scale and involving all public and private suppliers would provide several critical pieces of information: (1) a profile of existing and potential opportunities; (2) a catalog of administrative responsibilities (i.e., who has which opportunities); and (3) an indication of the spatial relationships between various opportunities for recreation (thereby suggesting the potential for conflicts or complementary relationships). Additionally, when such inventory data are combined with studies of recreation demand and preference, it may be

possible to determine gaps in the distribution of opportunities that ought to be filled. Conversely, such information could reveal which opportunities are in excess supply.

Inventory data compiled over a regional setting is critical data in the formulation of appropriate roles for the various suppliers. Seldom will any one supplier be capable of meeting the entire range of recreation opportunity demands. Data about existing and potential opportunities, who manages them, and their location would be important input to decisions about who is best equipped to fulfill which roles. The USDA Forest Service recently completed an analysis of its appropriate role in the provision of opportunities for outdoor recreation (USDA Forest Service 1977). This study is based on assessment of the kinds of opportunities the agency has under its jurisdiction, as well as on such things as expertise, legislative direction, and so forth.

Identifying the Consequences of Management Actions

Because the recreation opportunity spectrum focuses on specific features of the physical, social, and managerial setting, it facilitates analysis of how proposed management actions will alter the nature of a specific opportunity.

For example, the decision to develop an area for timber harvest has the obvious consequence of changing the level and obtrusiveness of nonrecreational resource uses. But logging also often alters the amount and type of access into an area. This improved access, in turn, can lead to higher use and greater demand for facilities. Many of these changes can be anticipated, however, and the ROS provides a simple, graphic way of portraying these anticipated outcomes and evaluating whether or not they are appropriate or desirable.

Such an approach means that explicit recognition of changes affecting the opportunity spectrum is assured. By providing a framework in which the consequences of different decisions can be considered in relation to how they affect opportunities for recreation and their use, many undesirable problems related to functional decisionmaking (about logging, road development, etc.) can be anticipated and possibly avoided.

The key to using the ROS effectively is the area's management plan. Only with clearly specified management objectives is it possible to say whether the consequences of an action are acceptable and appropriate or not. Management without such objectives can only be reactive.

Matching Desired Experiences With Available Opportunities

Matching the experiences visitors seek with opportunity settings best suited to providing those experiences is one of the major challenges to the outdoor recreation manager. We often assume this requires direct management actions, whereby managers know who wants what and direct recreationists accordingly. But without good information about the various types of experiences recreationists seek, this is a hopeless task. To further complicate matters, there is no simple link between experiences sought, recreational activities, and opportunity settings.

One approach that does not rely on a prior knowledge of desired experiences is to upgrade the flow of information to people about the nature and location of existing opportunity settings. At present, recreationists' lack of knowledge about existing opportunities is sometimes as great a deterrent to participation as is the actual unavailability of opportunities (fig. 19).



Figure 19.-- *Providing visitors with information about available alternatives may be one of the most effective actions open to recreation managers. From descriptions of opportunities, visitors can choose the setting that seems to best meet their particular desires.*

If the recreationists are given information about the various opportunities, they can then choose the most appropriate locations for their particular types and styles of activity. For example, recreationists' interests in driving for pleasure (a type of activity) might range from looking at fall leaf colors along a modern paved highway to four-wheel driving off roads.

Several examples of efforts to improve information to users can be cited. On the Suislaw National Forest in Oregon, managers have described five types of camping experiences available, ranging from remote wilderness to highly developed settings. They have not only identified what is available on National Forest lands but also included opportunities provided by other agencies, such as highly developed campgrounds in State parks. After selecting experiences desired, visitors can examine a listing of available campgrounds in the area, categorized by the type of opportunity provided. This approach also gives managers a chance to measure demand for the various opportunities and, if necessary, to make adjustments in their supply (relative availability) to more accurately reflect the actual demand. Using this approach effectively

requires, at a minimum, that managers have a complete and regularly updated inventory of various opportunities in their areas (including those supplied by other agencies).

This approach assumes that people do know, in general, the characteristics of the recreation opportunity setting they prefer or dislike. Thus, management ought to strive to provide recreationists with information about such things as the level of interparty contact, access, or facilities they may find at any given site. Through a trial-and-error process, recreationists can find what suits them best.

Managers can also use predictable, seasonal changes at specific locations to provide diverse opportunities for recreationists. For example, many campgrounds have been developed to provide modern experiences during the summer season of peak use (June through August). These campgrounds are often in spectacular locations that have year-round appeal. Frequently, however, they are closed from August to June (and even on weekdays during the summer season, in some instances). Such closures concentrate use into a relatively short season and eliminate the potential for off-season use.

Natural processes can also alter the opportunities available even in open areas--snowfall may preclude access by conventional, wheeled vehicles, thereby converting a modern opportunity to a more primitive one for part of the year. Such changes, whether by management or natural processes, affect one or more of the opportunity factors and thereby change the opportunity available. Utilizing these seasonal changes, management can provide variety at individual sites, thereby extending use throughout the year, gaining greater use of expensive recreational developments, and broadening the range of options from which visitors can choose (fig. 20).



Figure 20.-- One way to provide additional opportunities for recreationists is to encourage off-season use of settings. For example, summer use of developed ski areas for picnicking, sightseeing, etc., provides a different opportunity for visitors, even though the same area is involved.

We believe that the key to matching the experiences users desire with available opportunities is to let users make their own choices based on reliable information about the opportunities available. Such information, aimed at creating realistic expectations, should be about the nature of the opportunities, where they are, and how conditions might change throughout the year.

CONCLUSIONS

The recreation opportunity spectrum provides a framework for integrating recreational opportunities and nonrecreational activities. The central notion of the spectrum is to offer recreationists alternative settings in which they can derive a variety of experiences. Because the management factors that give recreational value to a site are interdependent, management must strive to maintain consistency among these factors so that unplanned or undesired changes in the opportunities do not occur.

In this paper we focused primarily on existing social conditions and technology. But, technology and socioeconomic changes often produce impacts beyond the ability of managers to fully anticipate or control. For example, few people anticipated the enormous growth in outdoor recreational vehicles that has occurred in the past decade. Similarly, the consequences of scarce energy resources were not foreseen until the scarcity was already a fact (Shafer et al. 1974). The impact of the changing age structure of the U.S. population has yet to be fully recognized (Marcin and Lime 1977). Such changes can produce dramatic shifts in the type and intensity of demand for opportunities for outdoor recreation. Although the future can be only imperfectly predicted, the ROS does provide a framework for accommodating these shifting demands, as well as estimating the kinds of impacts associated with these changes.

If a full range of opportunity settings is provided, changes in demand can be more easily accommodated because the kinds of features an activity requires are more likely to be available. Although the supply to meet the increased demand might be insufficient, nonetheless some areas with the necessary features should be available. Management of the full opportunity spectrum should permit accommodation of these changes with minimum disruption. Providing opportunities for quality recreational experiences means providing sufficient opportunities across the spectrum. Diversity is the key to meeting this challenge.

There may be an insufficient supply of the opportunities needed to meet changing demands, however, and managers may wish to consider increasing the supply. Such an increase will probably take place at the expense of some other

opportunity setting. The outdoor recreation opportunity spectrum provides a framework for identifying some of the consequences (social impacts) of such a decision. By identifying which specific opportunity factors will be altered and how, we gain knowledge regarding the changing distribution of opportunities, which clientele groups may be affected, the relative availability of alternative settings to meet these people's needs, and the extent to which a proposed alteration may result in a loss of settings formerly available. To allow such an assessment of change requires the routine collection of sufficient baseline information to document the types and amounts of recreational use occurring. Only after the change has been documented can managers rationally determine the most appropriate course of action.

RESEARCH NEEDS

The ROS framework described in this paper is based on state-of-the-art judgments. As such, the relationships we describe are tentative and need further verification; however, we believe that the framework offers a useful approach founded in management reality as well as research on visitors' attitudes and actual behavior. New information from research will aid full development of the outdoor recreation opportunity spectrum. This research should take several directions.

First, further investigations of the relationship between activities, settings, and experiences are needed. Specific efforts to define the psychological outcomes associated with different activity-setting combinations would help reveal how management can better help visitors achieve a diversity of experiences (e.g., see Brown et al. (1977) for an example of this in hunting). Such data would also be useful in defining boundaries between the generic opportunity classes.

Second, how are people's taste for recreational settings and activities shaped by the available supply? Are preferences merely a reflection of opportunity? If not, how can latent demand be identified to better fill out the opportunity spectrum?

Third, to what extent does substitutability exist among the various experiences recreationists seek? Are experiences uniquely linked to certain settings or activities? If not, what is the nature of the interchangeability (Field 1976, Hendee and Burdge 1974, Christensen and Yoesting 1979)? How do differences in style account for differences in the satisfactions received (e.g., what differences, if any, exist between hunting big game, upland-birds, or waterfowl in terms of the satisfactions participants seek)?

Fourth, and related to the earlier concerns with estimating demand, we need a better understanding of how tastes in recreation evolve over time. Are there orderly and predictable evolutions in tastes along the spectrum of settings? If so, how do persons at different stages in this evolution differ in terms of the experiences, activities, and settings they seek (Bryan 1977, 1979)? Does early exposure to modern opportunities lead to a demand for increasingly more primitive styles--do people learn as they recreate and seek more demanding settings and activities to refine their skills (Davidson et al. 1966)?

Finally, there is a need for research on the analysis of policy on such questions as: What are the appropriate roles for the various suppliers to adopt? What role should the private sector undertake and how might this vary across the country? What incentives might promote private development?

ACKNOWLEDGMENT

We acknowledge the help of many managerial and research colleagues who provided critical reviews of earlier versions of this paper in the past several years.

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REVIEW DRAFT

THE USE OF WORKSHOPS IN TECHNOLOGY TRANSFER:
A CASE STUDY ON APPLYING THE RECREATION OPPORTUNITY SPECTRUM

by

George H. Stankey, Perry J. Brown, Roger N. Clark, and John Wood

This paper is a review draft; plans are to submit it, following review and revision, for publication. However, many of the results and ideas regarding the use of workshops as a technology transfer device may be of assistance to readers. Therefore, it is included in this handbook.

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INTRODUCTION

The recreation opportunity spectrum (ROS) is a planning and management framework developed in recent years in response to the need for an improved system of integrated resource management. Constantly growing use pressures, increasing conflicts over resource allocation, and the imposition of legislated planning directives coalesced to make development of an integrated and systematic approach to recreation planning necessary. In this paper we discuss technology transfer efforts related to ROS.

Details on development of the ROS framework are described elsewhere (e.g., Brown, et al. 1978; Clark and Stankey, 1979 Stankey and Brown 1981; Buist and Hoots, 1982). However, a brief outline of the ROS system is in order.

The ROS rests on the idea that recreationists seek a range, or spectrum, of recreation opportunities, from the highly constructed and interactive to the natural and solitude oriented. It assumes that people participate in different activities in different settings in order to obtain desired experiences. Settings are a key element of this scheme as they are the element that management can most easily influence. The setting is composed of three components: the physical setting—evidence of human-caused environmental modification; the social setting—the amount and type of contact between people; and the managerial setting—the amount and kind of restrictions placed on people's behavior.

Although the ROS is a continuum, its implementation as a planning framework in both the USDA Forest Service (FS) and USDI Bureau of Land Management (BLM) has resulted in its being divided into six classes, or opportunities:

primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and modern-urban. These class names tend to characterize the setting component of the opportunity more than they characterize the experience or activity components, and thus are reflective of the agency focus on management of recreation settings.

Criteria and standards have been developed to describe the appropriate conditions for the physical, social, and managerial setting for each class. This makes it possible to inventory the extent and distribution of the setting opportunity in an area. Also, because the settings are described in terms of measurable conditions, it is possible to estimate the nature of changes that will occur in recreation opportunities as a result of changes in other land uses. Thus, the system facilitates integration of recreation concerns with other resource management activities.

While the settings are a key feature of the planning system, they nevertheless are only the means to an end, with the end being the production of satisfactory experiences. The conditions defined as appropriate for each setting are conceived of as being the kinds of conditions upon which certain experiences (e.g., solitude, challenge) either are dependent or at least related. For example, all other things being equal, the experience of solitude is more likely to be realized when a large area is available and when contacts with others are low.

The ROS is not a new idea; the basic idea has been in the literature for over 40 years. Only recently, however, has the need for a comprehensive planning approach been matched by advances in the understanding of recreation behavior in a way that allowed development of a system that met the criteria of simplicity, validity, reliability, and comprehensiveness.

Although the ROS System has been mandated as the recreational planning framework the FS and BLM will use, this administrative directive is only as good as the understanding and acceptance it acquires among field staff. To achieve this, the agencies have utilized task forces, user guides, and field applications in addition to agency manuals. Gradually, the ROS system is gaining acceptance and being applied on the areas under administration of the Forest Service and BLM.

In 1980, George Stankey moved to Australia for a 2-year teaching appointment. He had been involved with development of the ROS system over the previous 3 years. Discussions in Australia suggested that the ROS could be usefully applied to problems confronting recreation planners and managers. The situation was, on the one hand, very similar to that in the United States. Recreational use levels were rising constantly, increasing the pressure on resources and leading to increased levels of conflict among users. Conflicts between recreation and other resource uses also were sharp and escalating.

On the other hand, there were many differences. The physical-biological characteristics differ greatly, particularly given that much of the experience with the ROS in the U.S. has been in the forested mountain country of the Intermountain and West Coast regions. Much of the Australian landscape, especially that along the southeastern seaboard where most of the population resides and the recreation planning problems are intense, is low-lying hill and coastal country. In the U.S. it is the federal government, largely through the Forest Service and BLM, that controls large blocks of land; in Australia, state agencies and local government are the key organizations. Additionally, agencies in Australia that control significant amounts of land have no recreation mission. Professional recreation management is in its very

which participants brought with them. The relief models proved to be enormously successful as they stimulated participant involvement and further gave a sense of realism to the project. Their only drawback was their size since each was derived from several topographic quadrangles. Emphasizing derivation of management prescriptions enabled demonstrating that ROS is more than an inventory tool and forced participants to make allocation plans and management actions consistent. It also allowed those participants who were familiar with general ROS concepts to extend their knowledge into a new realm.

Because the Danish, Swedish and 1985 U.S. workshops were shorter, compromises in workshop content were necessary, with the effectiveness of the technology transfer effort correspondingly reduced. In Denmark we eliminated the videotape presentation and nominal group exercise and presented background information about ROS and information needs using a lecture with handouts format. We also omitted the first exercise where participants build their own ROS for a hypothetical area. For the second exercise we substituted topographic maps of Danish landscapes for the relief maps and had the participants build an ROS system for these areas. For the final segments of the workshop we dealt with issues supplied by the planning and management authorities, and answered many questions posed by participants. The major difference between the Danish and Swedish workshops was a further reduction of hands-on experience. The exercise using the Danish maps was demonstrated by the instructor.

The half-day workshop in the U.S. focused on introducing ROS concepts and structure and tying them to information needs and planning processes. We used the nominal group exercise (but with a question asking about what would make an effective planning system), the videotapes, and lectures with

While a workshop approach seemed best, there remained the question as to whether it should be conducted as a single national-level session or as a series of smaller, regionally oriented meetings. Both approaches have certain advantages and disadvantages in terms of logistical and organizational considerations as well as substantive reasons. A single national workshop would have made planning and organizing simpler and the wide cross-section of participants could have helped engender useful discussion and debate. On the other hand, such an approach would have lead to higher average participant travel costs, fewer total participants, and difficulty in dealing in depth with a range of specific problems.

Thus, a decision was made to organize the workshops around a series of regional sessions. In order to obtain some idea of where best to conduct these meetings, as well as to obtain a rough estimate of participation, a brochure announcing the sessions and soliciting interest and suggested locations was mailed throughout the country in late 1981. Over 2,000 were sent.

Analysis of responses to the brochure indicated a high level of interest in the workshop. The decision was made to hold three sessions—one each in the cities of Canberra, Melbourne, and Brisbane. In addition, the brochure had come to the attention of several persons in New Zealand and a strong level of support for workshops to be held there was also received. Consequently, it was decided to hold two additional workshops in New Zealand—one at Rotorua on the North Island, and the other at Hanmer Springs, approximately 100 km north of Christchurch on the South Island.

Maximum workshop size was set at 45 participants per session. This figure was based on budgetary considerations as well as a concern with maintaining a staff/participant ratio that facilitated a close working relationship.

The five workshops were scheduled to be held over a 5-week period in July and August 1982. This coincided with the break between first and second semesters at Australian colleges and also, being the southern hemisphere winter, was a time when most potential participants were not heavily involved with field duties.

A final step to promote interest and support for the workshop involved publication of a paper "The Recreation Opportunity Spectrum: An Introduction" in the February 1982 issue of Australian parks and Recreation, a journal with a wide readership among recreation professionals in Australia. This was followed up with a special issue of the journal, published in May, with six papers on the ROS, three of which were written by Australians regarding efforts to apply the ROS concept to problems there. This was the first of a series of efforts associated with the workshop to deemphasize the idea that the ROS was another "American fix."

CHARACTERISTICS OF WORKSHOP PARTICIPANTS

A total of 202 participants attended the five workshops. It was a highly diverse group. Many had little knowledge or understanding of the ROS beyond what had been written into the workshop brochure. On the other hand, the New South Wales National Parks and Wildlife Service had established a task force to develop ROS guidelines for local conditions and had prepared documents and maps describing the use of the ROS in some national parks.

Organizational responsibility varied widely, from senior policymakers to junior level staff. Several organizations purposely sent a range of individuals with differing organizational responsibilities so that they would be able to determine the applicability and usefulness of the ROS from a variety of levels.

In Australia, much of the authority and responsibility for recreation management rests at state and local levels. This was reflected in the composition of the workshops, with 45 percent representing state organizations, 21 percent local (including regional and municipal authorities), and only 6 percent from the Commonwealth government. In New Zealand, on the other hand, the national government was a more dominant participant, accounting for nearly 70 percent of the attendees, with another 21 percent from municipal and regional organizations.

Some participants represented organizations in which recreation was a primary mission (e.g., National Parks and Wildlife Services), while others had either a multiple use orientation or were from organizations for which recreation was, in effect, being forced upon them as a result of growing use pressures and demand for access to recreational opportunities. A good example of this latter situation was the Hunter Valley Water Board, a large engineering oriented authority located north of Sydney, which had substantial land holdings and, until recently, had excluded recreation from its lands and reservoirs.

Finally, there was a diversity among the participants in terms of the type of recreational settings represented, from large national parks with very low levels of use and development to small urban parks intensely developed and used. A wide range of physical-biological settings were also represented including deserts, coastal and marine areas, and rain forests.

In sum, the participants brought a wide range of experiences, responsibilities, and problems to the workshop. While this diversity created some problems, the overall effect was a positive one as it provided a situation where the widespread application of the ROS could be demonstrated.

THE WORKSHOP STRUCTURE

The workshops were built around four major premises designed to promote their effectiveness. These premises included: 1) a hierarchical structure from the general to specific, 2) an emphasis on self-learning, 3) the use of a variety of visual aids and hands-on exercises, and 4) being responsive to the problems and issues that arose in each workshop. Each of these premises were interwoven in the structure of the workshop.

Each workshop lasted 2 1/2 days and could be broken down into five relatively discrete half-day subsessions. The opening session was designed to help participants form some realistic expectations of what was to come, to identify what was expected of them, as well as to provide the first basic introduction of the ROS system. In particular, the ROS was presented as a framework for dealing with problems, not a pat answer, and it was emphasized that their involvement was necessary to adapt and modify the ROS concept to the Australian (New Zealand) situation. At this opening, we also emphasized our concern that the ROS not be taken as an "American fix," but that it be seen as a general framework for dealing with some of the generic problems facing recreation planners everywhere.

Three activities occupied this first session. One, a short slide presentation, narrated by Wood, was given in which some of the basic principles underlying the ROS were introduced. The slides used were Australian settings primarily, and objectives at this point were to provide participants with some very elementary information about the ROS and to set a tone to the workshop emphasizing informality and mutual learning.

A second element of this opening session was the presentation of selected excerpts of three video tapes prepared in the U.S. for the Forest Service and Bureau of Land Management. These tapes presented a more formal

discussion of the ROS system as used by these agencies, presented additional material on the concepts and principles underlying the ROS, and described some of the ways in which the ROS had been applied and used. Group discussion followed each tape segment.

The final element of the first session was a 1-hour nominal group technique (NGT) exercise. Participants were divided into small groups (8 to 10) and each of the authors served as a group facilitator. The NGT provides a structured means of addressing a question in a short time and generating a range of responses to it, of developing a consensus as to the most important answers, and establishing a ranking among those answers. The NGT also served our purpose of emphasizing that the participants were an active part of the workshop session. It also yielded a large amount of information which would prove useful to the participants later in the workshop.

The question used in the NGT was "What information is essential to do effective recreation planning?". Information generated during the sessions was summarized by the authors during the lunch hour, typed, and given back to each participant. We explained that the answers to the question were the kinds of things that they, as recreation planners, probably had thought about often, but the diversity of participants meant that many new perspectives would be voiced. The kinds of concerns that urban planners would consider, for example, differed from those of national park planners. However, we made no effort to explain why or how such information might later be used in the workshop. We wanted the participants to discover the usefulness of the information they had generated.

The second block of the workshop consisted of having participants, working in small groups, begin exploring how some of the general concepts and principles of the ROS might be applied. Each group was given a large sheet of

butcher paper with an identical felt-tip sketch of an area, consisting of a city, the major transportation route through it, a river, some mountains, and forests. Additionally, a partially completed worksheet was distributed on which the participants were asked to develop both the rationale for some selected opportunity classes as well as to identify indicators and standards for the physical, social, and managerial settings.

The purpose of this exercise was to give participants firsthand experience in developing an ROS system. It was also intended to force them to begin thinking about what kinds of information they would need to have in order to identify and evaluate different management alternatives. For example, the nature and extent of alternative opportunities, landownership, and regional population structure would all be critical information for planners in deciding what opportunities can and should be provided, where, by whom, etc. The exercise provided an opportunity for participants to use the information generated from the NGT groups; it also revealed that some types of critical information needed for planning had not been identified in the NGT sessions.

Each group was provided a sheet of clear plastic and erasable felt-tip pens to work with. This allowed them to outline their ideas on the map and experiment with different indicators and standards to see how the type, distribution, and amount of opportunities varied.

The role played by the instructors during this session was one of facilitator. We posed questions, challenged assumptions held by the group, and worked to make them both identify the problems that needed to be solved as well as to develop answers, or at least options. One common problem in the groups was that they would quickly begin to draw lines on the map without adequate consideration of the rationale behind the opportunity classes or the

indicators and standards used to define the classes. This provided a good opportunity for us to challenge their efforts and to force them to articulate why something had been done in a particular way. Through such a process, a self-learning environment was fostered by creating a situation where participants were responsible for identifying the problems and conceiving solutions and options.

At the close of the first day, all groups were brought together for a brief plenary session. In reviewing the day's events, we pointed out that many new, complex ideas had been presented and that it was likely that many participants felt confused and frustrated. We assured them this was normal and that some of this confusion would probably crystallize by the following day.

Throughout the day we had encouraged participants to make their concerns and questions known. We strove to make questions and discussions the norm; we also took pains to make it clear that few questions had a single, explicit answer. Most issues could be addressed and resolved in different ways and we encouraged people to think about alternatives and their relative effects. Recognizing that some might be reluctant to raise questions in the open, we placed a question sheet on the wall and asked persons to put their questions on it. This provided a visible reminder to everyone of a concern that had to be addressed, either during the various work sessions or before the close of the workshop. To encourage this, we would occasionally go to the sheet to write a question that had arisen in one of the small groups.

The visibility of ideas, issues, assumptions, and questions was an underlying concern to us. Either orally or written, we stressed that participants make these matters explicit and visible.

On day two, we began a series of projects requiring participants to become increasingly familiar with the ROS process. In the morning session, each small group was given a raised relief map (scale = 1:25,000). These maps were of portions of the States of Oregon and Washington. They were also given the preliminary ROS guidelines that the National Parks and Wildlife Service of New South Wales had developed. The assignment was to apply these guidelines to the maps they were given, to analyze what difficulties and problems were encountered, to modify the guidelines as necessary, and to identify some different management alternatives for the area.

This exercise introduced a variety of issues with which participants had to contend. Most had little understanding of the regional geography of the areas covered by the maps. This required that they utilize the authors as information sources. Some groups quickly identified the NGT exercise results as a useful source of questions for which they needed answers; other struggled for some time. They also needed to contend with the problems of applying an ROS process developed for one particular situation (i.e., the park system in New South Wales) to a different geographic area (the U.S. Pacific Northwest). Additionally, two of the maps covered areas of a substantially marine character; the NSW ROS guidelines applied primarily to terrestrial settings.

The exercise also proved useful in that the New South Wales guidelines provided only the indicators and standards for the opportunity classes; they did not include the rationale and purpose of the classes. As groups began to consider changes in the indicators and standards, they encountered the difficulty of not knowing what kinds of objectives underlay the opportunity classes which in turn made disagreements over appropriate indicators and standards difficult to resolve. It therefore served as an effective demonstration of the critical role of the rationale to the overall ROS process.

Groups again were provided with heavy Mylar sheets to place over the maps. The raised relief maps also proved to be something of a novelty as they are not commonly found in Australia or New Zealand; therefore, the exercise quickly attracted group interest and helped illustrate how topographic influences and features might alter how the ROS was applied in developing different management alternatives (e.g., the role of steep slopes as an influence on remoteness.)

Again, the role of the instructors was to raise questions in the small groups as to why things had been done as they had, what consequences and implications might be associated with different decisions, what influence changes in demand or supply factors might have, and so forth. Because time was limited, we also used this as an opportunity to demonstrate how the ROS could be used in terms of evaluating consequences of alternative allocations, how recreation considerations could be integrated with other resource allocations, and how the ROS could be adapted to deal with differing circumstances, such as was the case on the maps of the coastal region.

This exercise also represented an intermediate step in our effort to work from an abstract, general discussion of the ROS to a more specific one. It introduced real places along with a real ROS system and allowed participants to place the principles and concepts into a realistic planning environment. Still remaining, however, was an attempt to apply these concepts to the specific problems confronting individual participants. This task formed the agenda for the fourth block of time in the workshop.

At the time participants registered for the workshop, they were asked to bring along any material related to recreation management problems they currently were dealing with. This could include such things as maps, management plans, photos, use or resource data, and so forth. During the

first day of the workshop, we circulated a short form asking for participants to identify what they had brought. Using this information, we selected a variety of problems to be dealt with on the second afternoon. To the extent possible, we selected problems that provided a wide range of situations; urban to primitive, local government to national, marine/coastal to desert, etc. Six to eight problems were typically used.

At the opening of the second afternoon session, the persons with the problems were asked to give the full group a very brief outline of the nature of the problem. Participants were then free to select the group with which they would spend the afternoon.

Each group was asked to identify the nature of the problem before them and to consider how the principles and concepts regarding the ROS and discussed in the previous sessions might apply to that problem. The exercise thus represented a specific and pragmatic contrast to the earlier, more general discussions of the ROS. It also represented a major shift in the role of the instructors. Up to this point we had operated as group leaders, raising questions and challenging assumptions. At this time, our role shifted from that of workshop leaders to that of participants. This was particularly the case in dealing with certain kinds of problems, such as the potential use of the ROS in urban recreation situations and in the management of coastal and marine resources. Most of our previous experience was limited to forest and mountain settings. Thus, as we moved into this phase of the workshop, we made it clear to the participants that we would be experimenting with new situations and learning just as they had been doing. We also stressed that we were not sure how, or if, some of the problems could be adequately dealt with in an ROS framework, although it was our hypothesis that they could.

One interesting example demonstrated both the adaptability of the ROS to new situations and an alternative way in which an ROS system could be set up. This involved management of Centennial Park, a 200 hectare area in the center of Sydney, a city of 3 million. Typically, the ROS has focused on the setting as being the most management-relevant aspect and has attempted to facilitate provision of a diversity of settings. This has proved successful in larger areas, but we did not have any experience in applying this to small areas. In the case of Centennial Park, the problem was resolved not by an initial focus on settings, but on activities. Taking the present range of activities (e.g., bicycling, running, informal sports), we next identified the various styles in which these activities were pursued. For example, cycling includes family excursions, children just learning, competitive racing, etc. For each style, we then turned to a consideration of what setting features either were necessary or at least enhanced a particular style and to some of the probable experiences from these different styles of activity. This allowed us to begin mapping the park into a series of different opportunity classes. An important thing learned here was that there is no fixed order for considering activities, settings and experiences when developing an operational ROS system. Once they found a comfortable place to begin, participants began talking about all three elements.

The final half-day session of the workshop involved the group leaders from the previous afternoon's project reporting back to the full group. We asked them to describe briefly the problem and then to outline what solution(s) had been proposed. We also asked them to point to difficulties or shortcomings in the ROS framework as it applied to their problem.

The general response of participants to the usefulness of the ROS was very good. In virtually all cases, the project groups had been able to

organize an effective solution to their problem and were enthusiastic about applying their efforts once back on the job.

We also used this closing session as a way of demonstrating how the ROS provides an integrative framework for many ideas and concepts regarding recreation. At the outset of the workshop we had placed several large sheets of paper on the wall with a list of important recreation concepts, such as substitutability, succession-and-displacement, carrying capacity, etc. As new ideas arose during the sessions, they were added to the list. In the closing session, as participants discussed the projects, we were able to return repeatedly to the list and briefly describe the relevance of some of these concepts to their problems. This helped demonstrate the importance of many of these ideas which all too often are viewed as abstract and irrelevant.

During this session we also made sure that we had responded to all of the questions placed on the question list. Frequently we were able to address these questions in the course of reacting to one of the project presentations. Again this helped integrate the concerns expressed in the question into the context of a real problem, thereby avoiding an abstract or hypothetical kind of response.

The Australia-New Zealand workshops were followed by a U.S. workshop during the winter of 1984, mini-workshops in Denmark (1 1/2 days) and Sweden (1 day) during summer 1984 and a short session within a broader U.S. workshop (1/2 day) during fall 1985.

The format for the 1984 U.S. workshop was identical to that reported except that: 1) relief models of southeastern Alaska and the Steens Mountain area of southeastern Oregon were substituted for the relief maps during the third segment of the workshop and 2) more emphasis was placed on deriving management prescriptions for Alaska and Steens Mountain and for the problems

early stages in Australia. Finally, there are different cultural values and perspectives in Australia from those in the U.S.

Despite these differences, there appeared to be major benefits to be gained from application of the ROS to the Australian situation. John Wood was on the staff of the Canberra College of Advanced Education. During a 6-month study leave in the U.S. in 1979, he had become familiar with the ROS concept and had since used it as a teaching framework in the college's Summer School of Park Management, a 2-week unit designed for recreation professionals. He had also used the ROS in some contract work. Thus, there was at least a limited awareness of the ROS already in the country.

The opportunity to apply the ROS in Australia also represented a chance to learn more about the adaptability, strengths, and weaknesses of the system applied in a different cultural and institutional setting. And, it represented a major opportunity for an experiment in technology transfer. In this paper, we want to describe how the task of organizing a workshop approach to the technology transfer challenge was undertaken, the philosophy and structure of the workshops, and the success achieved in meeting the workshop objectives.

THE WORKSHOP APPROACH

Discussions with recreation planners and managers in several Australian states indicated there was interest and support in conducting some type of training program in the ROS. The workshop format appeared most promising as it would allow participants a chance to work directly with the concept and would avoid the all-too-common sterility of a conference at which a series of papers were presented.

overheads to present the material. The final hour was spent in small group discussions exploring ROS issues and planning problems which the participants shared with the group.

While each course was favorably received by participants, the most effective technology transfer was done in the 2 1/2 day courses, with each successive reduction in time and exercises resulting in less understanding of the framework and its potential uses. With more time and more exercises there was greater opportunity to explore the ramifications and nuances of the framework, to discover how it fits different situations, and to practice implementing the concepts. With less time and more lecturing (to cover rather than to uncover the material) there was less time for interaction among participants thus limiting their ability to learn from each others' thoughts and perceptions.

Evaluating workshop success is difficult, in part because its objectives involved dissemination of a way of thinking about recreation management problems more than a specific and discrete process. Feedback from participants, both at the workshops and following them, indicated they found them useful, stimulating, and relevant to the problems they confronted. Most expressed intentions to work to apply the ideas they had learned to the tasks before them.

Since the workshops, interest in the ROS process has continued. In Australia, the New South Wales National Parks and Wildlife Service has continued its efforts to implement an ROS system throughout its holdings. The ROS has also been applied to park and forest plans in Victoria and South Australia. In New Zealand, the Forest Service has adopted the ROS as a basic recreation planning framework. At the local level, the Canterbury United Council in Christchurch has developed a regional recreation plan resting on

the ROS concept. The U.S. workshops have extended the idea to local, state and other federal agencies who are incorporating it into their planning activities. Researchers and planners in Scandinavia have examined it for utility in their situation (Wallsten, 1985) and it is being discussed widely in Taiwan where some of the ROS literature has been translated into Chinese and where ROS research has been undertaken.

The ROS also has been incorporated into resource and recreation management education programs at several colleges and universities in Australia, Canada, Denmark, New Zealand, Sweden, Taiwan and the U.S. This likely will have long-term impacts as graduates of these programs are employed by various agencies.

SUMMARY AND CONCLUSIONS

In summary, the workshop was built upon the premises of a general to specific approach, self-learning, an emphasis on visual, hands-on exercises, and being responsive to the individual problems and issues that arose in each. We worked to maintain a professional atmosphere, yet also tried to make the sessions informal and enjoyable.

Participant response was very good; many sessions continued on after the end of the formal working day. While no evening sessions were scheduled, many discussions among participants and with the staff continued. The model we used seemed to be successful in implementation.

Workshops as a technique for technology transfer command a high level of organization and planning. They also involve a very high-level commitment of time and energy on the part of both instructor and participant. The maximum concentrated period of 2 1/2 days seemed about right in terms of the ability of everyone to keep intensely involved. The informal nature of the sessions also helped make it possible to keep a high level of individual attention.

For example, we kept coffee, tea, and snacks available throughout the session and let participants choose their own time to break away.

Despite differences in physical, legal, and institutional aspects among the various countries in which we have conducted workshops, we feel we were able to communicate effectively the critical concepts and principles of the ROS and to demonstrate adequately its application to a variety of issues. It was a rich, mutually beneficial learning experience for both the instructors and the participants and demonstrated clearly the value of a workshop approach to technology transfer.

Literature Cited

- Brown, P.J., B.L. Driver and C. McConnell. 1978. The opportunity spectrum concept and behavioral information in outdoor recreation supply inventories: background and application. P. 73-84 in Integrated inventory of renewable natural resources General Tech. Rpt. RM-55, US Forest Service, Ft. Collins, CO.
- Buist, L.J. and T.A. Hoots. 1982. Recreation opportunity spectrum approach to resource planning. *Journal of Forestry* 80(2):84-86.
- Clark, R.N. and G.H. Stankey. 1979. The recreation opportunity spectrum: a framework for planning, management, and research. General Tech. Rpt. PNW-98, US Forest Service, Portland, OR.
- Stankey, G.H. and P.J. Brown. 1981. A technique for recreation planning and management in tomorrow's forests. P. 63-74 in Division 6, IUFRO World Conference Proceedings, Kyoto, Japan.
- Wallsten, P. 1985. Fritidsnatur - var och hur? Modeller och besrepp for friluftslivets plantering. Rpt. 34, Section of Environmental Forestry, The Swedish University of Agricultural Sciences, Uppsala.

A Bibliography of ROS Publications *

Compiled by

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Roger N. Clark
Perry J. Brown

The following list of publications contains many of the published papers, reports, and theses done over the past few years that discuss the ROS concept and its application. When abstracts were available, they have been included. We have included as many papers as we were aware of, but many other reports have been completed; readers are urged to add them to the list.

* We appreciate the assistance of Tim Schwecke, INT, for his assistance in compiling and organizing this bibliography.

Andreasen, Bart. Utilizing the recreation opportunity spectrum as a tool in land allocation decisions involving energy development and wildlife. In: Issues and technology in the management of impacted western wildlife: proceedings of a national symposium. 1982 November 15-17; Steamboat Springs, CO. Boulder, CO: Thorne Ecological Institute; 1984: 43-46.

The Recreation Opportunity Spectrum (ROS) serves as the basic framework for the recreation resource input to Land and Management Planning. It consists of six classes with each class defined in terms of its combination of activity, setting, and experience opportunities. Class delineation is based on five criteria - remoteness, size, evidence of humans, user density and management regimentation. The ROS system can be utilized to evaluate energy development activities and impacts to wildlife. Since the basic goals of both recreation and wildlife entail management practices involving the same physical land elements, the ROS system is a viable method of helping manage the wildlife resource. Based on the setting, activity and experience characterization by ROS class, program statements are developed to direct mitigation measures and help maintain the desired future conditions.

Ballman, G. Operationalizing the cross-country skiing opportunity spectrum. In: Proceedings, North American symposium on dispersed winter recreation. 1980 February 27-29; St. Paul, MN. St. Paul, MN: University of Minnesota, Agriculture Extension Service; 1980: 31-35.

Berry, Joseph K. Cartographic model for assessing outdoor recreation opportunity. 1979. Unpublished paper on file at: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

This report summarizes the results of an exploratory study of techniques of computer-assisted map analysis to characterize outdoor recreation opportunity. A cartographic model for assessing recreation opportunity is presented and evaluated using a constrained hypothetical data set. Although the model proved adequate for the constrained data set, several limitations to the practical application of the model are noted. Recommendations for further research are made.

Berry, J. K.; Brown, P. J. A cartographic model for assessing outdoor recreation opportunity. In: Proceedings, international user's conference on computer mapping hardware, software and data bases. [Place and date of conference unknown]. Cambridge, MA: Harvard University; 1979: 21-26.

Brown, Perry J. The opportunity spectrum: techniques and implications for resource planning and coordination. In: Shaw, J., ed. Dispersed recreation and natural resource management. Logan, UT: Utah State University, College of Natural Resources; 1979: 82-87.

The purpose of this paper is to discuss how the recreation opportunity spectrum concept has been operationalized for land management planning. Requirements of multiple use land management planning, operationalization of the recreation component through use of the ROS, and demonstration of how the ROS fits in land management planning are discussed.

Brown, Perry J. Recreation opportunity spectrum with implications for wildlife-oriented recreation. In: Transactions of the 47th North American wildlife and natural resources conference. Washington, DC: Wildlife Management Institute; 1982: 705-711.

Brown, Perry J. Management objectives, recreation, and recreation management planning. In: Dustin, Daniel L., ed. The Management of Human Behavior in Outdoor Recreation Settings. San Diego, CA: Institute for Leisure Behavior; 1985: 1-10.

Brown, Perry J.; Driver, B. L.; Berry, Joseph K. Use of the recreation opportunity planning system to inventory recreation opportunities on arid lands. In: Arid land resource inventories: developing cost efficient methods. General Technical Report WO-28. Washington, DC: U.S. Department of Agriculture, Forest Service; 1980: 123-128.

Recreation opportunity planning, which is being adopted by some land management agencies for recreation input to land management planning, is reviewed for its applicability to arid land situations. Particular attention is given to the inventory and analysis phases of the system and to what we have learned about its implementation during its development.

Brown, Perry J.; Driver, B. L.; Bruns, Donald H.; McConnell, Charles. The outdoor recreation opportunity spectrum in wildland recreation planning: development and application. In: Recreation planning and development: proceedings of the first annual national conference, Vol II. New York, NY: American Society of Civil Engineers; 1979: 527-538.

The Bureau of Land Management and the Forest Service are developing a new outdoor recreation planning system which is based on the Recreation Opportunity Spectrum (ROS) concept. This system and its development are described. Relationships of the system to multiple use land management planning are indicated.

Brown, P. J.; Driver, B. L.; McConnell, C. The opportunity spectrum concept and behavioral information in outdoor recreation resource supply inventories: background and application. In: Integrated inventories of renewable natural resources. General Technical Report RM-55. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station; 1978: 73-84.

The paper describes an outdoor recreation resource (ORR) Supply Inventory and Classification (SIC) System that is being developed for multiple use natural resource planning. Four previously developed ORR SIC's on which this system was built are described briefly. A general model for natural resource planning is presented to show how the proposed ORR SIC fits into a larger planning framework.

The proposed SIC System is described and its application for regional and unit planning is explained. Relationships between OR consumers' preferences for specific types of satisfying experiences and their preferences for specific attributes of the physical, social, and managerial settings are translated into specific and objective criteria proposed for inventorying and classifying lands as to their potential for providing particular types of OR opportunities on the spectrum.

Brown, Perry J.; Dyer, Allen; Whaley, Ross S. Recreation research--so what? *Journal of Leisure Research*. 5(1): 16-24; 1973.

Brown, Perry J.; Manfredo, Michael J. Recreation opportunity spectrum planning-an arid lands case. *Australian Parks & Recreation*. May: 45-49; 1982.

Brown, Perry J.; Ross, David M. Using desired recreation experiences to predict setting preferences. In: Lime, David W., compiler. *Forest and river recreation: research update*. Miscellaneous Publication 18-1982. St. Paul, MN: University of Minnesota, The Agriculture Experiment Station; 1982: 105-110.

Brown, P. J.; Ross, D. M. Recreation opportunity spectrum user preference study for the Glenwood Spings Resource Area. Report to the Colorado State Office, Bureau of Land Management. Fort Collins, CO: Colorado State University; 1981.

Buchanan, Thomas; Warder, Donald S.; Collins, Mark A.; Phillips, Glynn. Assessing the benefits of special fisheries management. In: Lime, David W., compiler. *Forest and river recreation: research update*. Miscellaneous Publication 18-1982. St. Paul, MN: University of Minnesota, The Agriculture Experiment Station; 1982: 58-63.

Buist, Leon J.; Hoots, Thomas A. Recreation opportunity spectrum approach to resource planning. *Journal of Forestry*. 80(2): 84-86; 1982.

Recreation opportunity planning incorporates the concept of a Recreation Opportunity Spectrum (ROS) into a planning system that combines relationships between natural resource settings, recreational activities,

and the resulting recreationist experiences into six ROS classes of land and water areas. The ROS provides a framework for planning and managing recreation for experience objectives, aids in clarifying agency and private sector roles, and is a means of informing the recreating public what to expect from given resource settings. Both the USDA Forest Service and the USDI Bureau of Land Management have adopted recreation opportunity planning as part of their integrated land and resource management planning process.

Burch, W. R., Jr. Two concepts for guiding recreation management decisions. *Journal of Forestry*. 62(10): 707-712; 1964.

Carhart, A. H. Recreation in the forests. *American Forestry*. 26: 268-272; 1920.

Clark, Roger N. Research roles and priorities for effective management of off-road vehicles. In: *Off-road vehicle use: a management challenge*. Richard N. L. Andrews; Paul F. Nowak, eds. Ann Arbor, MI: University of Michigan, School of Natural Resources, 1980: 245-258.

Clark, Roger N. Promises and pitfalls of the ROS in resource management. *Australian Parks & Recreation*. May: 9-13; 1982.

Clark, Roger N.; Gibbons, Dave R.; Pauley, Gilbert B. Influence of forest and rangeland management on anadromous fish habitat in Western North America-influences of recreation. General Technical Report PNW-178. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1985. 31 p.

Public and private lands in the United States are used by millions of people for recreational activities. Many of these activities occur in or near streams and coastal areas that produce various species of anadromous fish. A major concern of fishery managers is the possible adverse effect of recreational uses on fish habitat. Conversely, the management of fish habitats may have either positive or negative effects on recreation. This report describes interrelations between recreation and fisheries. Recreational issues affecting either the supply of habitat for anadromous fish production and use, or the demand for the fisheries are also discussed. Opportunities for research are outlined.

Clark, Roger N.; Koch, Russell W.; Hogans, Mack L.; Christensen, Harriet H.; Hendee, John C. The value of roaded, multiple-use areas as recreation sites in three national forests of the Pacific Northwest. Research Paper PNW-319. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1984. 40 p.

Dispersed recreation along forest roads in generally undeveloped areas is increasing rapidly in the West. To effectively manage this use and integrate it with other forest activities requires information about the preferences, expectations, and opinions of forest visitors and their patterns of recreation use. Results of a 3-year study of campers and day users in three national forest areas of Washington and Oregon suggest this type of area provides opportunities that are very different from those in developed campgrounds and primitive backcountry. Visitors to roaded, forested areas like the generally unpaved road access, the low level of use, and the freedom to alter campsites to suit their objectives. Although this type of recreation is found in conjunction with resource management activities, such as logging and livestock grazing, recreationists do have favorite sites they return to year after year. Such sites may, therefore, warrant some protection. Future management programs must consider the value recreationists place on these sites and area attractions and the noneconomic as well as economic costs associated with altering these settings.

Clark, Roger N.; Stankey, George H. Determining the acceptability of recreation impacts: an application of the outdoor recreation opportunity spectrum. In: Ittner, Ruth; Potter, Dale R.; Agee, James K.; Anschell, Susie, eds. Recreation impact on wildlands-conference proceedings. 1978 October 27-29; Seattle, WA. No. R-6-001-1979. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region; 1979: 32-42.

Impacts from recreational activities on wildlands are of increasing concern to resource managers and recreationists. Determining the acceptable level of recreation impacts is difficult because there are no absolute standards of acceptability. In this paper the Outdoor Recreation Opportunity Spectrum is used to describe the role recreation impacts play in defining recreation opportunities. Noise is used as a case example.

Clark, Roger N.; Stankey, George H. The recreation opportunity spectrum: a framework for planning, management, and research. General Technical Report PNW-98. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1979. 32 p.

The end product of recreation management is a diverse range of opportunities from which people can derive various experiences. This paper offers a framework for managing recreation opportunities based on six physical, biological, social, and managerial factors that, when combined, can be utilized by recreationists to obtain diverse experiences.

Ditton, Robert B.; Fedler, Anthony J.; Holland, Stephen M.; Graefe, Alan R.
A user/setting approach to understanding recreational experiences.
In: Conference Proceedings 1980 and 1981; 1980 February 18-19
and 1981 February 19-20; Asheville, NC. Athens, GA: University of Georgia,
Institute of Ecology; 1982: 237-252.

The type of experience expected by visitors at park settings may vary not only between different parks but even within a single park. Many natural park areas offer a variety of resource settings to visitors. This paper tests the idea that visitors using different settings within a park varied in their expectations and preferences about the experience they sought. Upper and Lower Buffalo National River floaters were surveyed to determine if floaters using two different river settings held different expectations about their visit. Results indicate that floaters' expectations and preferences are tied to specific settings within a park area. The utility of this approach for understanding recreational behavior and its application for managerial decision-making are discussed.

Driver, B. L., Brown, Perry J. The opportunity spectrum concept and behavioral information in outdoor recreation resource supply inventories: a rational. In: Integrated inventories of renewable natural resources. General Technical Report RM-55. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station; 1978: 24-31.

The paper describes five types of information needed for balanced outdoor recreation resource (ORR) planning and management decisions. The role of behavioral information in defining user preferences is explained within a "recreation opportunity demand hierarchy." Components of that hierarchy are related to ORR supply inventories by showing how preferences for activity opportunities, for specific features of physical settings, and for specific psychological outcomes (that give satisfaction) were incorporated into a system that was developed to classify wildland areas according to their potential for providing six broad types of recreation opportunity. The system is based on the concept of a recreation opportunity and resource classification spectrum which is explained and related both to ORR inventory and management decisions. Using the system, land areas can be inventoried in terms of their capability of providing both activity and experience opportunities.

Driver, B. L.; Brown, Perry J.; Stankey, George H.; Gregoire, Timothy G. The ROS planning system: evolution, basic concepts, and research needed. Leisure Sciences. [Forthcoming].

The paper describes the evolution of the concept of a largely resource-based spectrum of recreation opportunities. It explains the needs of the USDA Forest Service and USDI Bureau of Land Management for a recreation resource planning system and relates those needs to the development of the Recreation Opportunity Spectrum (ROS) system to

guide recreation planning of large areas. The basic concepts and tenets of the ROS system are explained, and the most critical questions that have been raised by researchers about the system are addressed. Needed research is outlined.

Driver, B. L.; Koch, Niels Elers. Conditions which nurture the application of forest research results. Journal of Technology Transfer. 6(1): 33-40; 1981.

Driver, B. L.; Rosenthal, D. H. Measuring and improving the effectiveness of public outdoor recreation programs. Washington, DC: George Washington University Press; 1982. 40 p.

Downing, Kent; Clark, Roger N. Users' and managers' perceptions of dispersed recreation impacts: a focus on roaded forest lands. In: Ittner, Ruth; Potter, Dale R.; Agee, James K.; Anschell, Susie, eds. Recreational impact on wildlands-conference proceedings; 1978 October 27-29; Seattle, WA: No. R-6-001-1979. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region; 1979: 18-23.

A 1976 study compared users' opinions, attitudes and recreation patterns on roaded forest lands in the Pacific Northwest with managers' perceptions of dispersed recreation. Users prefer a very low level of development or none at all and value privacy, freedom, peace and quiet-the opportunity to do their "own thing." Developed sites are not substitutes for dispersed road settings. Dispersed recreationists return to favorite sites and have been returning for many years. Many dispersed recreationists are not disturbed by logging and fewer are disturbed by even grazing of cattle and sheep. Users are receptive to some forms of management control to reduce impacts but not to others. Forest land managers, particularly those with public agencies, are generally favorable toward dispersed road recreation. Because of concern with possible impacts, managers support or encourage some dispersed road recreation activities more than others. When manager and user perceptions are compared, managers tend to rate recreation impacts as more serious than do users; litter and garbage, vandalism and theft, danger of fire, danger of accidents from logging traffic, conflicts with other recreationists, and human waste.

Harrison, Robin T.; Clark, Roger N.; Stankey, George H. Predicting impact of noise on recreationists. ED&T Project No.2688. San Dimas, CA: U.S. Department of Agriculture, Forest Service, Equipment Development Center; 1980. 36 p.

Jubenville, Alan; Becker, Robert H. Outdoor recreation management planning: contemporary schools of thought. In: Lieber, Stanley R.; Fesenmaier, Daniel R., eds. Recreation planning and management. State College, PA: Venture Publishing; 1983: 303-319.

King, D. A.; Walka, A. W. A market analysis of trout fishing on the Fort Apache Indian Reservation. Tucson, AZ: University of Arizona, School of Renewable Natural Resources; 1980. 86 p.

Knopf, Richard C.; Peterson, George L.; Leatherberry, Earl C. Motives for recreational river floating: relative consistency across settings. Leisure Sciences. 5(3): 231-255; 1983.

Motive profiles for recreational travel on rivers by canoe, kayak, raft and inner tube are analyzed for 11 diverse rivers nationwide. Differences among the rivers exist and are described, but the profiles are noted more for their striking consistency across the wide range of environmental settings represented. River recreation motives were also compared with those for 17 other forms of recreation. Of the 17 activities studied, sailing, motorboating, and fishing are motivationally most similar to river floating. Through the data, we question the presumption that relationships are strong between the environmental character of outdoor recreation settings and the goal orientations of people attracted to them.

Lee, M. E. User perceptions of appropriate standards for recreation opportunity spectrum criteria at Steens Mountain, Oregon. Corvallis, OR: Oregon State University; 1983. 96 p. M.S. thesis.

Lee, M. E.; Brown, P. J. Visitor perceptions of appropriate standards for recreation opportunity spectrum criteria at Steens Mountain, Oregon. Vol. II of Steens Mountain recreation area study final report to USDA Forest Service. Corvallis, OR: Oregon State University; 1982.

Lee, M. E.; Brown, P. J.; Manfredo, M. J. User validation of planning criteria for inventorying and monitoring recreation resources. In: Renewable resource inventories for monitoring changes and trends: proceedings of an international conference. 1983 August 15-19; Corvallis, OR. Corvallis, OR: Oregon State University, College of Forestry; 1983: 318-322.

Lucas, Robert C. The "backcountry concept": a positive viewpoint. Montana Outdoors. 11(6): 24-25; 1980.

Lucas, Robert C.; Bacon, Warren R.; Beardsley, Wendell. [and others]. Outdoor recreation management. In: Wenger, Karl F., ed. Forestry handbook. 2d ed. New York; Chichester: John Wiley & Sons; 1984: 801-885.

Manfredo, Michael J. Wilderness experience opportunities and management preferences for three Wyoming wilderness areas. Fort Collins, CO: Colorado State University; 1979. 113 p. Ph.D. dissertation.

Behavioral information is important in implementing carrying capacity based planning and management. It aids in writing management objectives and selecting management tools, both crucial decision points in the planning process. Models proposed by Driver and Brown in the recreation area and Fishbein and Ajzen in the attitude area serve as a conceptual basis for obtaining needed behavioral information which was the focus of this study. The implications of the recreation models are that recreation experience opportunities can be described by the psychological outcomes realized by engaging in a recreation activity in a specific setting having certain physical resource, social and managerial attributes. Additionally the attitude model suggests potential management actions would be supported according to how they would affect valued activity settings and psychological outcomes. A specific test of the theory was conducted.

The study was conducted at the Bridger Wilderness, the Fitzpatrick Wilderness and the Popo Agie Primitive Area in Wyoming during 1978-79. Four hundred thirty-four users of the areas were sent questionnaires for which there was a 70 percent response. The questionnaire elicited background and socio-economic data and data in preferences for psychological outcomes, setting attributes and management actions. Additionally, in depth data were elicited on support for, and outcomes associated with, specific management actions to provide a recreational test of Fishbein and Ajzen's attitude theory.

Manfredo, Michael J.; Brown, Perry J. Use of recreation opportunity planning to inventory arid lands in Eastern Oregon-a demonstration. In: Arid land resource inventories: developing cost-efficient methods. General Technical Report WO-28. Washington, DC: U.S. Department of Agriculture, Forest Service; 1980: 331-337.

This paper reports on the use of computer and hand drawn techniques for implementing the Recreation Opportunity Planning inventory and analysis phases for the Steens Mountain Recreation Lands. Techniques were compared for land classifications and time and monetary costs. Results show computer mapping less likely to result in classification error, but more costly to conduct.

Manfredo, Michael, J.; Driver, B. L.; Brown, Perry J. A test of concepts inherent in experience based setting management for outdoor recreation areas. *Journal of Leisure Research*. 15(3): 263-283; 1983.

This study examines assumptions of the concepts which form the basis for experience based setting management of outdoor recreation areas. To test the assumptions a sample of wilderness users was surveyed and divided into experience groups based on differences in the specific experiences they desire. These experience groups

were then tested for differences in their activity and setting preferences. The study was conducted at the Bridger Wilderness, the Fitzpatrick Wilderness, and the Popo Agie Primitive Area in Wyoming during 1978-79. Data were collected by questionnaire, and responses were examined by object cluster analysis to group users on the basis of the types of experiences important to them. Results offer support for the concepts tested; three groups with different preferences for experiences were identified and were found to differ on the activities, setting, and management actions they prefer. Directions for future research are given and recommendations concerning the usefulness of experience based information to recreation planning are discussed.

Manning, Robert E. Diversity in a democracy: expanding the recreation opportunity spectrum. *Leisure Sciences*. 7(4): 377-399; 1985.

Diversity in tastes among the public for outdoor recreation has been a consistent finding from more than two decades of research. A number of planning and management systems have been designed to accommodate this diversity. The most recent and highly developed design has been the recreation opportunity spectrum, which suggests, among other things, relatively standard relationships between recreation setting conditions to produce a variety of opportunity classes. This paper suggests that these relationships may, ironically, limit rather than encourage potential diversity in outdoor recreation. More liberal interpretation of these relationships is suggested.

Manning, Robert E.; Ciali, Charles P. Recreation and river type: social-environmental relationships. *Environmental Management*. 5(2): 109-120; 1981.

Recreation use was studied on a diverse state river system to test the hypothesis that recreation use patterns vary systematically by river type. River segments were classified into representative river types through application of a two-fold classification system. The first classification factor, generalized geomorphology, defines and groups the dominant resource bases of which rivers are comprised. The second classification factor, cultural setting, defines the land use and settlement patterns in which each river type is found. Significant differences were found among resulting river types with respect to the nature and intensity of recreation activity, desired use density, and user perceived problems and conflicts. Management recommendations were developed, based on study findings, for each river type. It is concluded that when both environmental attributes and cultural setting are taken into account, regularities appear with respect to the way in which river resources are used and perceived by recreationists. Further exploration and expansion of such recreation-resource relationships to other activities and environments may hold substantial implications for the allocation and management of outdoor recreation resources.

Marshall, Robert. The forest for recreation. In: A national plan for American forestry. A report prepared by the Forest Service in response to S. Res. 175(72 Congress) Senate Document 12, Separate 6. United States Government Printing Office; 1933: 463-487.

Marshall, Robert. The universe of the wilderness is vanishing. Nature Magazine. April: 235-240; 1937.

Marshall, Robert. The people's forest. New York, NY: Harrison Smith and Robert Haas; 1938. 233 p.

McCool, Stephen F. Recreation resources inventories in wildland settings. In: O'Laughlin, Jennifer; Pfister, Robert D., eds. Management of second-growth forests: the state of knowledge and research needs: proceedings of a symposium: 1982 May 14: Missoula, MT. Missoula, MT: University of Montana, School of Forestry, Montana Forest and Conservation Experiment Station; 1983: 238-251.

Recreational uses occur in a wide range of second-growth settings, and second-growth forest management requires an understanding of a variety of multi-resource values. A number of inventory systems have been developed to identify such values. Most current systems are limited because of major structural defects in the inventory process itself or in the conceptual basis for the inventory.

This paper suggests that recreation inventory systems include identification of 1) landscape type, 2) environmental capability, 3) visual attractiveness, 4) type of recreation opportunity setting and 5) use capacity estimates. In addition, a recreation inventory system should address such design issues as: 1) unit of analysis, 2) sampling intensity, 3) multi-resource integration, 4) data storage retrieval and display and 5) classification principles.

Pitts, D. J. Opportunity shift: a new application of ROS concepts in park management. Australian Parks & Recreation. May: 34-38; 1982.

Pitts, D. J.; Anderson, D. R. Lake Wivenhoe: an example of comprehensive water storage planning. Paper prepared for the Australian Water Resources Council Workshop. 1984 December 3-5. 19 p.

Lake Wivenhoe in south-east Queensland is presented as an example of comprehensive water storage planning where recreation and outdoor education uses have been planned in conjunction with the major storage functions of water supply, flood mitigation and electricity generation. A three stage process of recreation planning that leads from broad policies to detailed design and management is described. The paper provides an example of the application of Recreation Opportunity

Spectrum (ROS) concepts to the recreational use of urban water storages and their environs.

Robertson, Bob; Wood, John. The 'shopportunity' spectrum, a help to recreation planning? Australian Parks & Recreation. May: 40-44; 1982.

Schwartz, Charles F.; Thor, Edward C.; Elsner, Gary H. Wildland planning glossary. General Technical Report PSW-13. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station; 1976. 252 p.

Stankey, George H. Some social concepts for outdoor recreation planning. In: Hughes, Jay M.; Lloyd, R. Duane. compilers. Outdoor recreation: advances in applications of economics. General Technical Report WO-2. Washington, DC: U.S. Department of Agriculture, Forest Service; 1977: 154-161.

Increasing competition for funds has increased the necessity for recreation managers to have accurate measures of outdoor recreation's costs and benefits. However, because many of the values of recreation cannot be measured in economic terms, it is important that other social sciences be utilized in addition to economics. Seven important concepts that provide added depth to our understanding of recreation behavior are discussed in this paper, including: 1) The recreation opportunity spectrum; 2) recreational preference; 3) substitutability; 4) carrying capacity; 5) dependent satisfaction; 6) externalities; and 7) cost effectiveness.

Coupled with economic analyses, these concepts offer recreation planners increased understanding of the various costs and benefits associated with alternative courses of action. Additional work is needed to refine these concepts into operational guidelines in the form of specific criteria.

Stankey, George H. Applying the recreation opportunity spectrum-an introduction. Australian Parks & Recreation. May: 7-8; 1982.

Stankey, George H. Carrying capacity, impact management, and the recreation opportunity spectrum. Australian Parks & Recreation. May: 24-30; 1982.

Stankey, George H.; Brown, Perry J. A technique for recreation planning and management in tomorrow's forests. In: XVII World IUFRO Congress Proceedings, Division 6; 1981; Kyoto, Japan. Kyoto, Japan: 1981: 63-74.

Tomorrow's forests will be affected by many pressures for forest-dependent goods and services and for non-forest uses such as urbanization

and agriculture. In preparing to address these pressures, forest recreation researchers and managers are developing new techniques for planning and management of the recreational use of the forest resource. One of these techniques is Recreation Opportunity Spectrum which is based on the idea that a Recreation Opportunity Spectrum needs to be offered to recreationists. This technique involves assessing recreational desires and demands, identifying resource capabilities, making choices among possible sets of recreation opportunities, and managing forest resources and users to insure delivery of desired recreation opportunities.

Stankey, George H.; Brown, Perry J.; Clark, Roger N. Monitoring and evaluating changes and trends in recreation opportunity supply. In: Bell, John F.; Atterbury, Toby, eds. Renewable resource inventories for monitoring changes and trends: proceedings of an international conference. 1983 August 15-19; Corvallis, OR. Corvallis, OR: Oregon State University, College of Forestry; 1983: 227-230.

The recreation opportunity spectrum (ROS) offers a framework for monitoring changes in recreation opportunity supply. It uses measurable criteria and standards to define recreation opportunity settings. The ROS is mainly used as an inventory tool; its use for monitoring has not been fully developed. Monitoring of trends, however, is fundamental to effective planning and management. A useful monitoring system requires clear definition of variables, systematic collection, replicable and cost-effective procedures, and sensitivity to changes. Monitoring provides feedback on conditions, changes in conditions, management effectiveness, and the effects of allocation decisions. Monitoring demonstrates how decisions regarding recreation and other resources alter the type and amount of recreation opportunity supply.

Stankey, George H.; Cole, David N.; Lucas, Robert C.; Petersen, Margaret E.; Frissell, Sidney S. The limits of acceptable change (LAC) system for wilderness planning. General Technical Report INT-176. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station; 1985. 37 p.

A wilderness management-by-objectives planning system is outlined. Through identification of standards, acceptable wilderness conditions are defined and appropriate management actions formulated. A case example is provided.

Stankey, George H.; McCool, Stephen F. Carrying capacity in recreational settings: evolution, appraisal, and application. *Leisure Sciences*. 6(4): 453-473; 1984.

This paper traces the historical evolution of the carrying capacity concept. It argues that many of the fundamental propositions of the concept were understood and articulated early in its evolution. Of particular importance was the recognition that the relationship between

visitor satisfaction and use levels was dependent upon the activities in which an individual participated, and the needs or desires that an activity was to fulfill. The literature reporting generally low levels of statistical association between reports of trip satisfaction and levels of encounters is reviewed critically, and a number of mediating influences in their association are suggested. Finally, it is suggested that research focuses on defining "How much is too much?" is directed at the wrong issue; rather, the focus should be on the question of what kinds of resource and social conditions are appropriate and acceptable in different settings. A reformulated approach to the carrying capacity issue--the limits of acceptable change--is introduced and described.

Stankey, George H.; McCool, Stephen F.; Stokes, Gerald L. Limits of acceptable change: a new framework for managing the Bob Marshall Wilderness Complex. *Western Wildlands*. 10(3): 33-37; 1984.

Stankey, George H.; Wood, John. The recreation opportunity spectrum: an introduction. *Australian Parks & Recreation*. February: 6-14; 1982.

Theisen, W. J. User preferences, psychological outcomes and recreation opportunity spectrum classes: a study of the relationships involved. Fort Collins, CO: Colorado State University; 1981. 182 p. M.S. thesis.

Tocher, S. R.; Wagar, J. A.; Hunt, J. Sound management prevents worn recreation sites. *Parks and Recreation*. 48(3): 151-153; 1965.

Udd, Edward. Visitor perceptions of recreation settings defined by the recreation opportunity spectrum criteria. Reno, NV: University of Nevada; 1981. 54 p. M.S. thesis.

The Recreation Opportunity Spectrum (ROS) system is a new recreation resource inventory system presently being implemented by the U.S. Forest Service and Bureau of Land Management. The ROS system criteria have been developed to allow classification of land and water areas of similar recreation opportunities. This study used a Likert-type scale to determine if visitors perceive differences between recreation settings in the way described by the ROS system. The findings indicate that visitors perceive some of the differences between recreation settings in the same way described by the ROS system, but not others. Visitors perceive differences in recreation settings defined by the remoteness and social criteria. Visitors perceive some differences in the recreation settings defined by the size of area criteria, but not when the areas become very large. Visitors do not differentiate between the more primitive recreation settings defined by the managerial and evidence of humans criteria.

- U.S. Department of Agriculture, Forest Service. Recreation input to land and resource management planning, FSH 1909.12, land and resource management planning handbook for national forest, chapter 500. Washington, DC: U.S. Department of Agriculture, Forest Service; 1981. 45 p.
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Williams, Daniel R.; Knopf, Richard C. In search of the primitive-urban continuum: the dimensional structure of outdoor recreation settings. Environment and Behavior. 17(3): 351-370; 1985.

A primitive-urban continuum has been a dominant feature of the psychological representation of large-scale environments and the basis of land classification systems for outdoor recreation planning. The ubiquity of the primitive-urban continuum is examined with respect to experiential (as opposed to perceptual) variation in outdoor recreation settings. A multidimensional scaling analysis of 42 rivers was conducted using reported recreation experiences as proximity measures. Two interpretable dimensions were revealed. Waterflow intensity (whitewater) and trip duration were more strongly associated with experiential variation across river settings than the primitive-urban continuum.

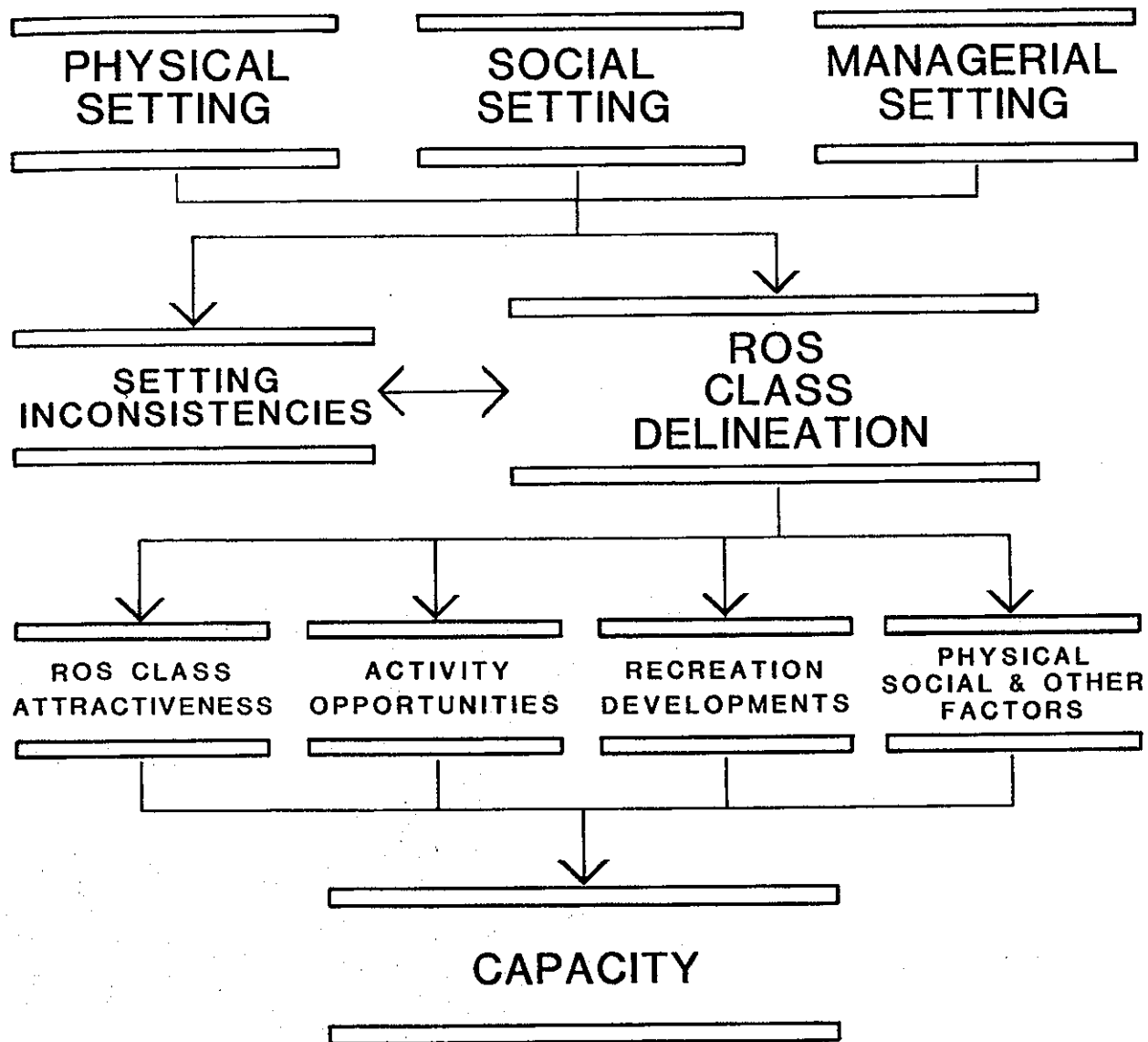
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IV LM PLANNING



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	Table 7	21.32
	Regimentation & Noticeability		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 uniformly 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 synonymous 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. Distinguish 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.



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.

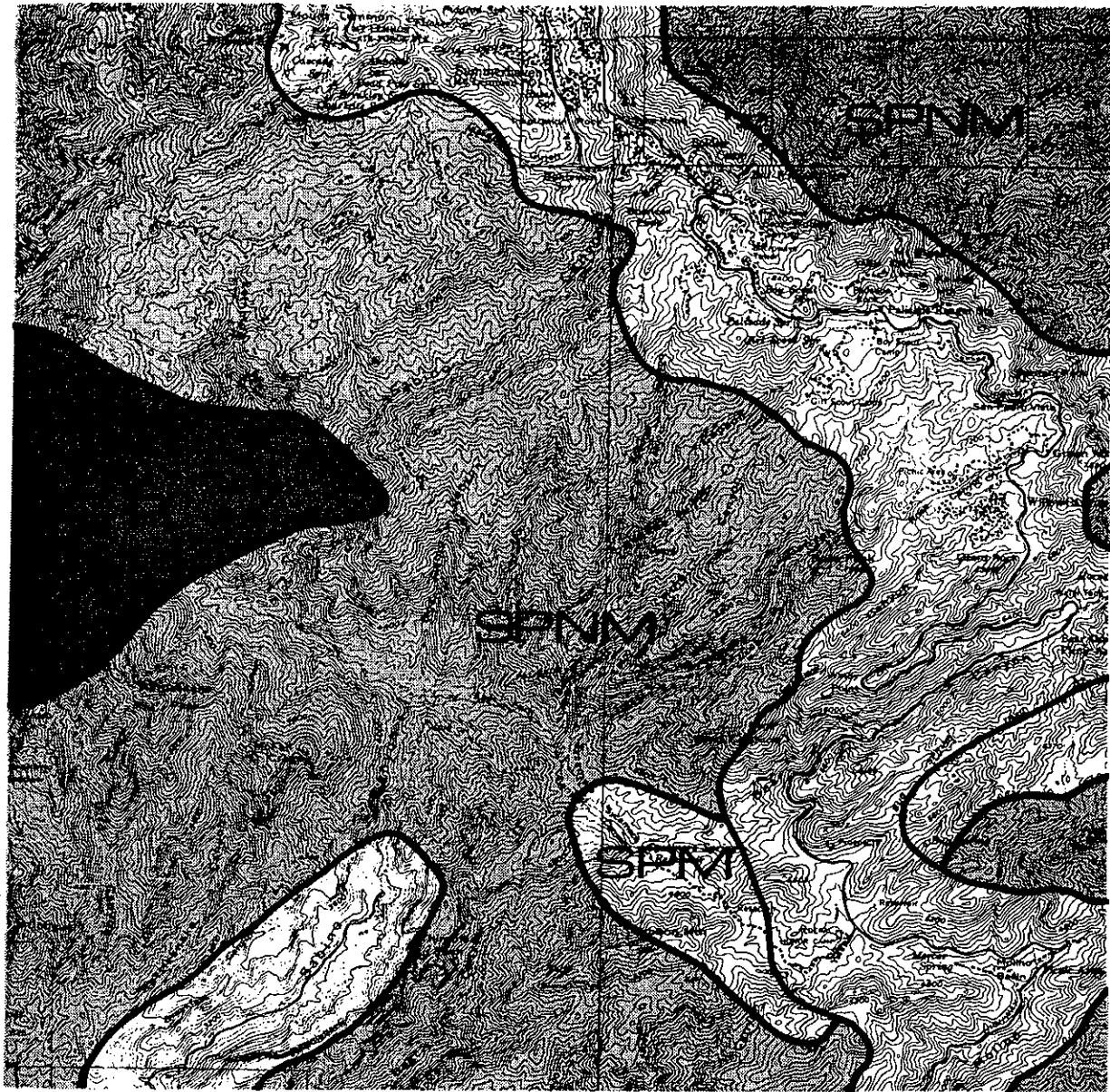
b. Step Two—Next delineate the Semi-Primitive Motorized class by a line approximately one-half mile—depending upon vegetation and terrain—from primitive roads and trails with motorized use. The Semi-Primitive Nonmotorized and Primitive portion of the spectrum now remain.

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 oppor-

tunities; in other settings the remoteness criteria alone do not. Therefore, apply the size criteria. Table 4, to 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.

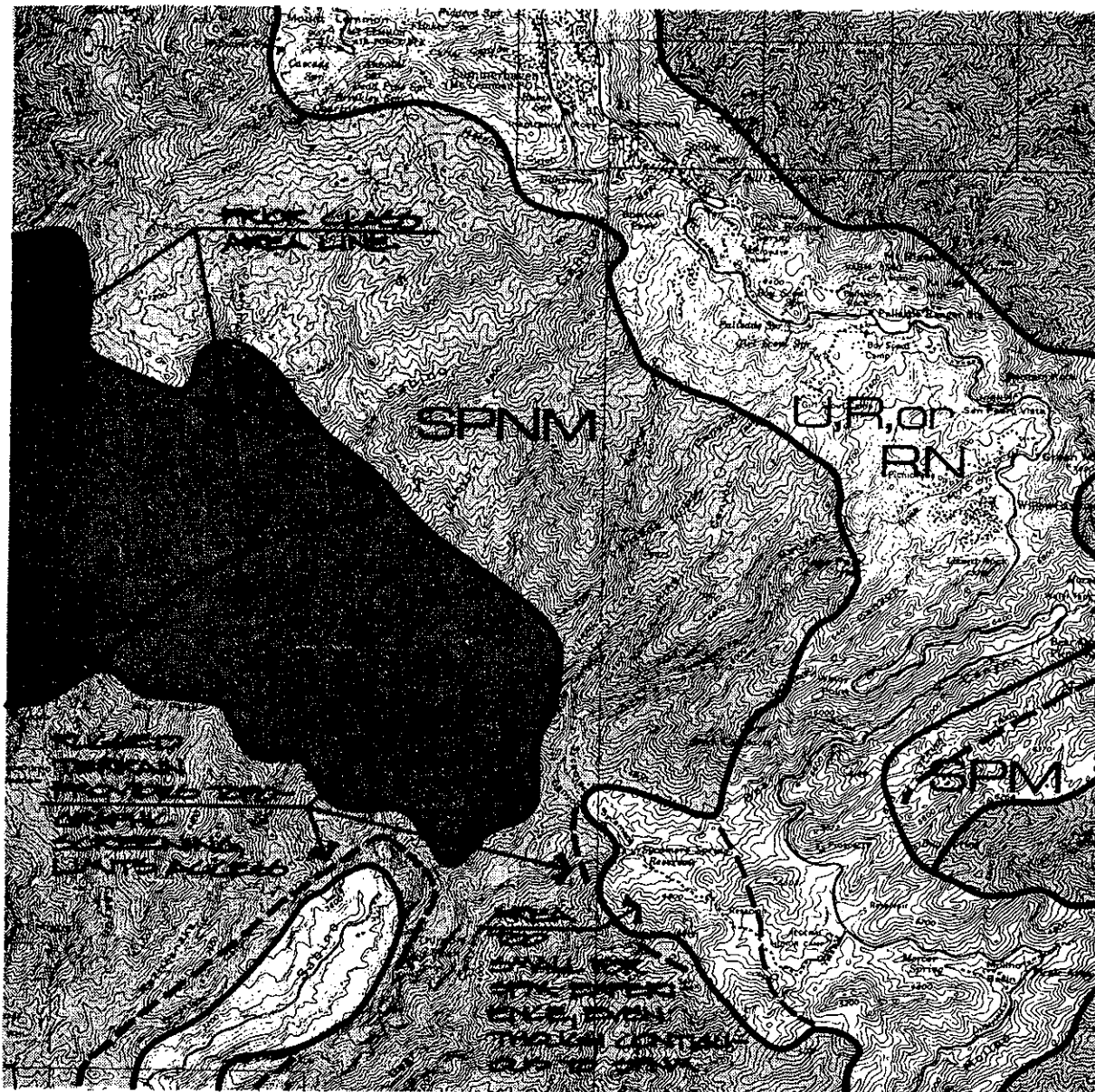
21.23—EVIDENCE OF HUMANS—Evidence of Humans is used as an indicator of the opportunity to recreate in environmental settings having varying degrees of human influence or modification.

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.

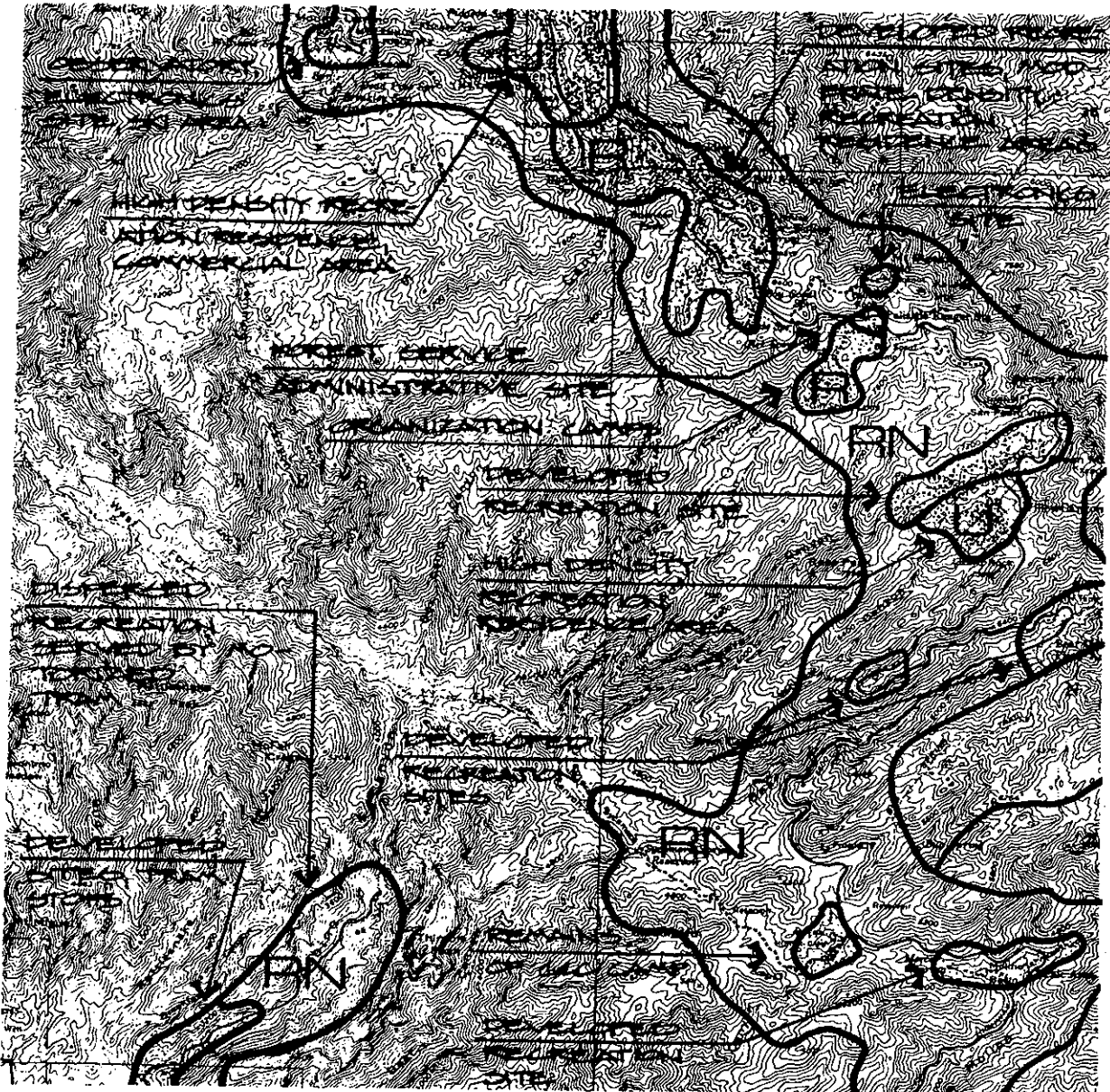
Forests which have completed an Existing Visual Condition inventory as part of their Visual Management System can use this information to assist in using the Evidence of Humans Criteria. However, interpretation of Existing Visual Condition data (short of determining Visual Condition Type) on location 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, microwave 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.

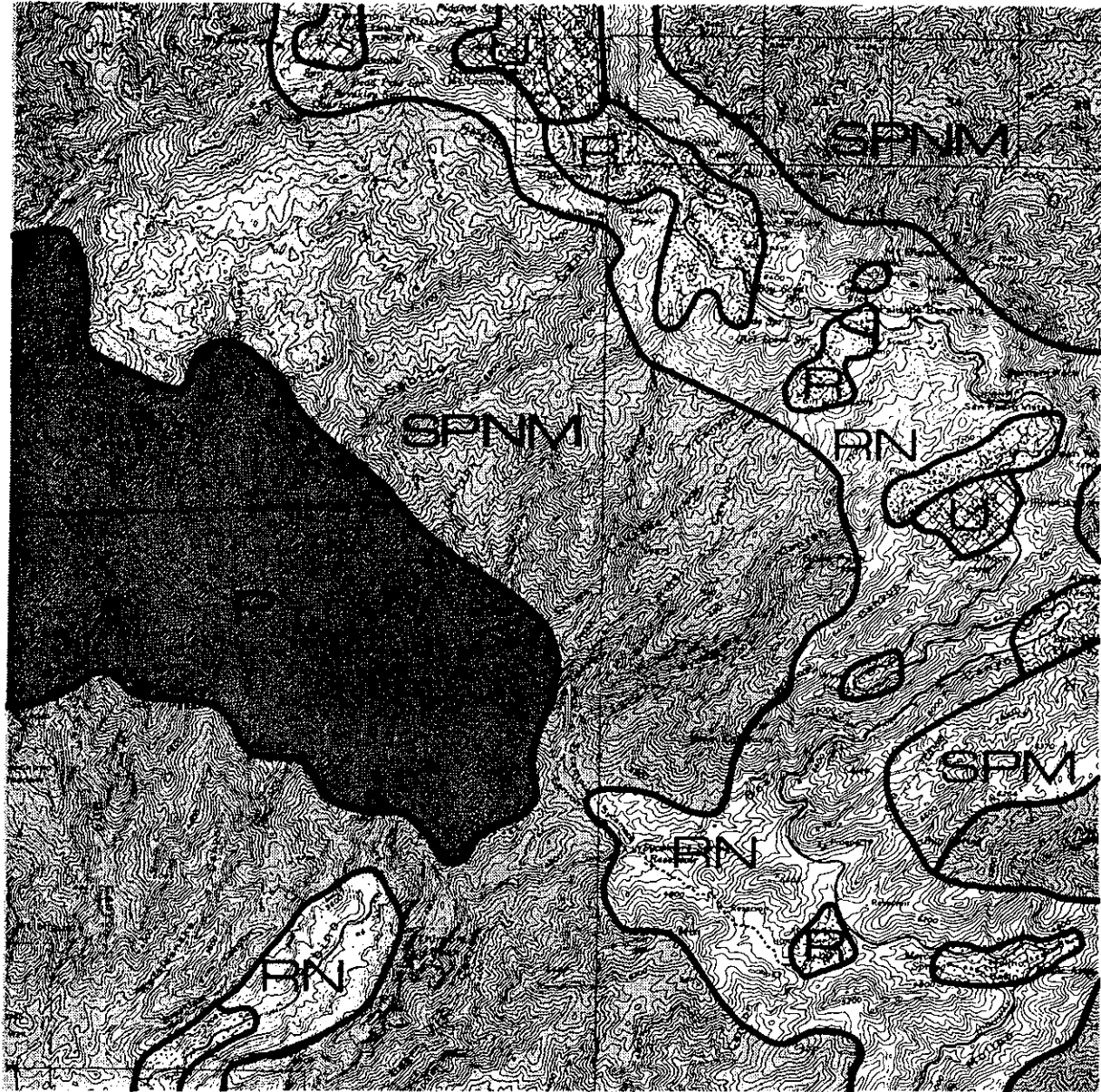
**Sensitivity level 1 and 2 travel routes from Visual Management System USDA Handbook 461.



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).



physical setting

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.

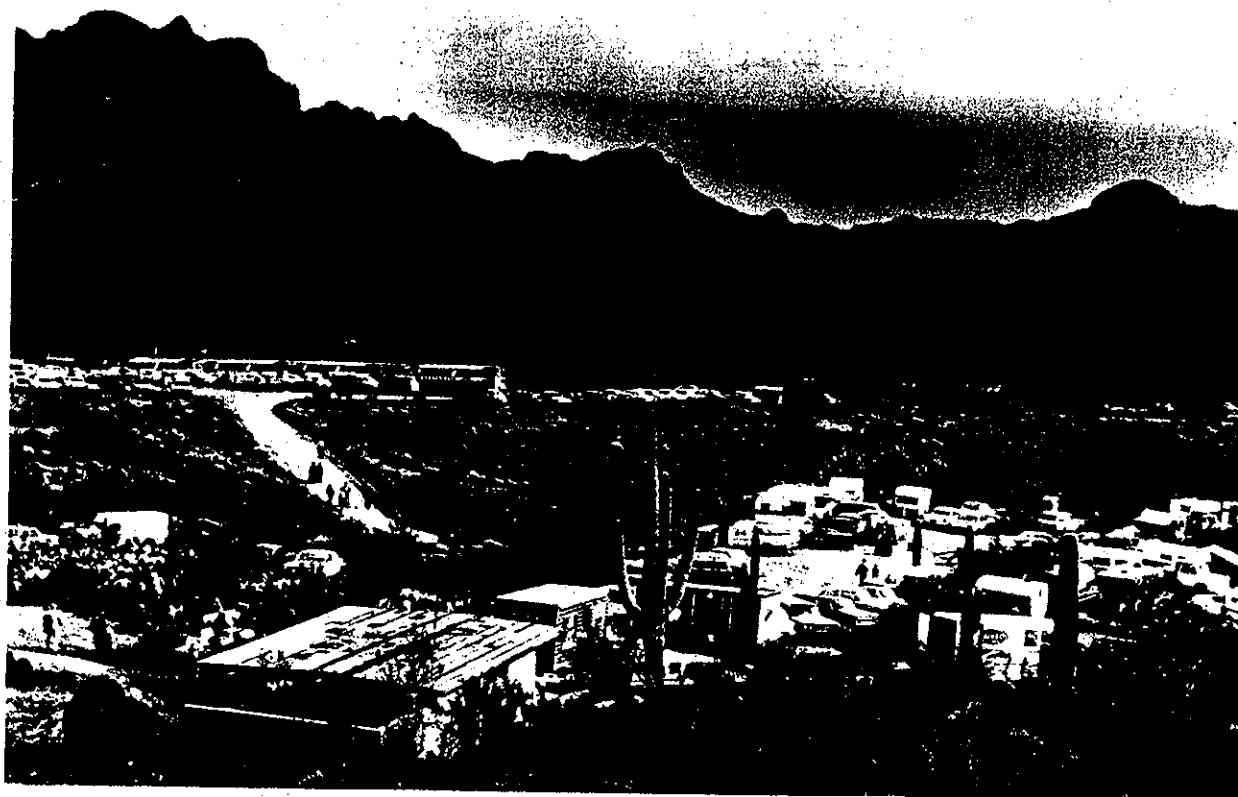


Table 6

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 campsites.	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

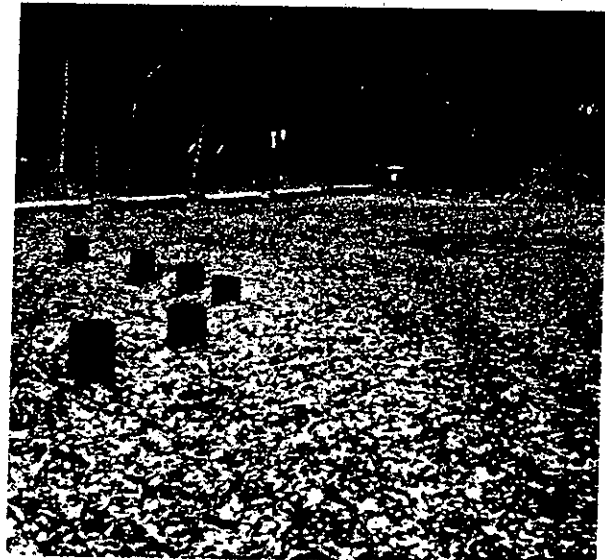
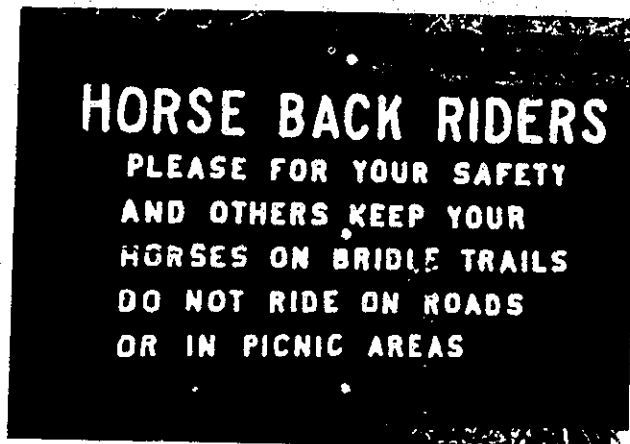
Managerial Setting Criteria					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
On-site regimentation is low with controls* primarily off-site.	On-site regimentation and controls* present but subtle.	On-site regimentation and controls* present but subtle.	On-site 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.

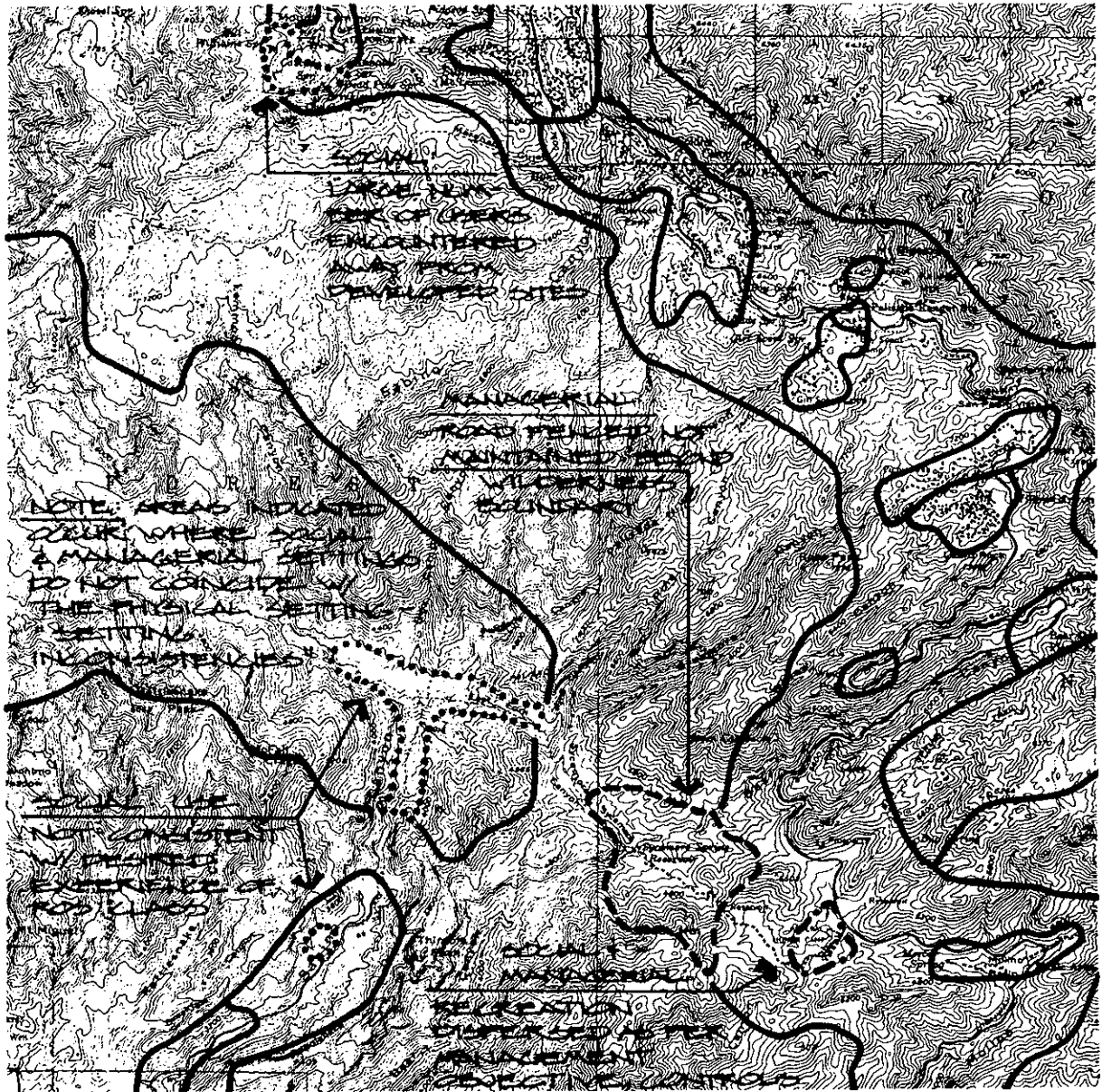
*Controls can be physical (such as barriers) or regulatory (such as permits).



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, 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 trail use is so high that it detracts 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 attractiveness 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.

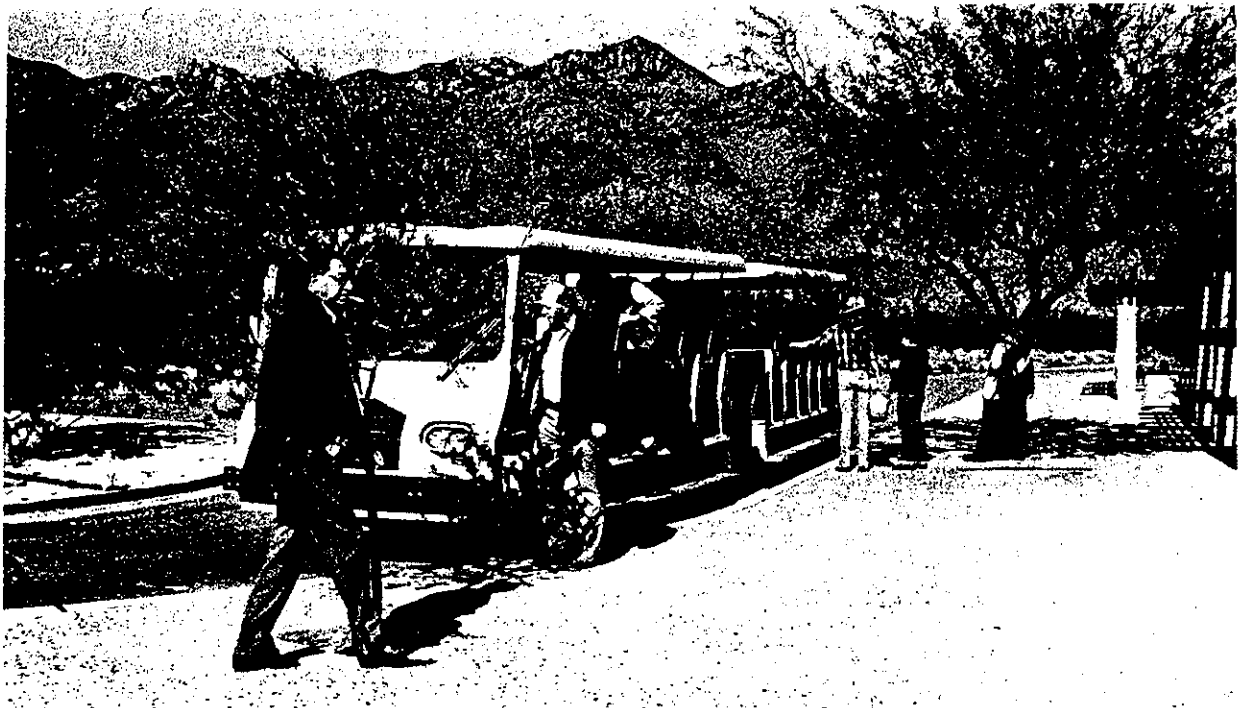
23.2—ACTIVITY CRITERIA—All activities considered must meet the following criteria:

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

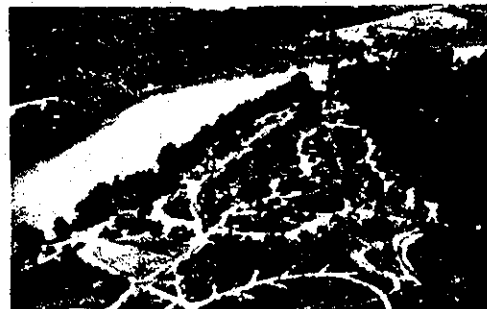
24.1—EXISTING DEVELOPMENTS—Indicate by kind and PAOT capacity on the activity, or another overlay, where Forest Service, other public agency, and private recreation developments exist within and adjacent to the planning area. Consider developments outside the Forest boundary when they may affect plan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

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

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

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.

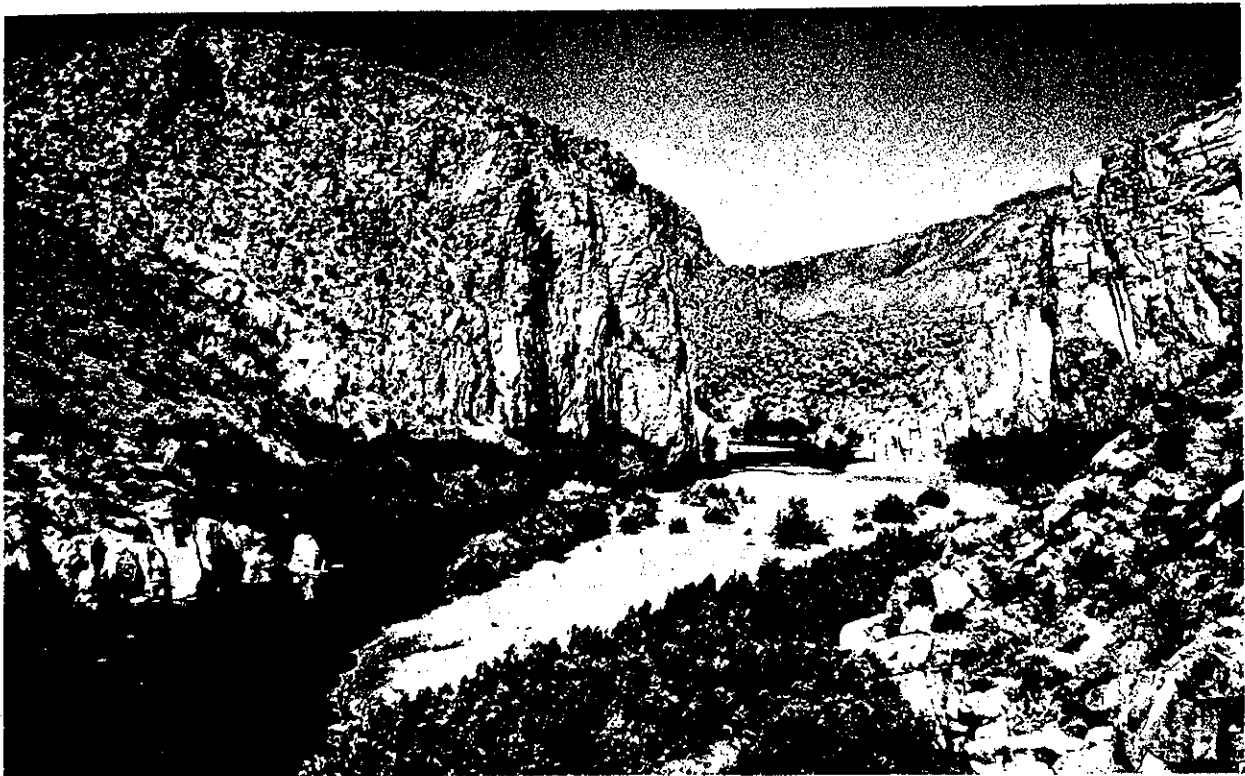


Table 10

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 prescrip-

tion 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.

CONCEPT OF ROS FRAMEWORK

Adopted from vidio tape script by Bev Driver, Rocky Mtn.
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INTRODUCTION

The United States is blessed with a vast, rich supply of natural resources, and has a relatively low population density. However, demands for timber production, water development, hiking, camping, and hunting opportunities have increased rapidly. Consequently, the competition for our dwindling resources has intensified.

COMPREHENSIVE PLANNING

In the past it was difficult to intergrate all resource information into a comprehensive plan. For example, until the Recreation Opportunity Spectrum or ROS, was developed, no system existed which adequately integrated outdoor recreation values into multiple-use land management planning. Now, however, the ROS system provides the land manager with a useful framework for thinking about recreation resources and their values during all stages of planning and management. Instead of being a set of hard fixed rules and requirements, the ROS is a conceptual scaffold on which management direction can be built.

BASIC CONCEPTS

This paper covers five short sections that describe the basic concepts of the ROS framework. The reader should have a general understanding of the ROS system such as obtained from the ROS Users Guide.

PRODUCTION

Contrasted with outputs of timber or mineral resource management--where the outputs are things or commodities--the recreation outputs are defined as opportunities for particular types of use. More specifically, the ROS framework defines a recreation opportunity in terms of three demensions of user demand. First, there is demand for activity opportunities such as picnicking, hiking, or cross country skiing. Second, there is demand for what the ROS system recognizes as setting opportunities, because users select activities within desired settings. The third dimension of recreation demand reflects the users' preferences for experience opportunities. The manager helps produce and provide the opportunity to realize these experiences. The actual experiences are produced by the users.

USER DEMANDS

User demands for specific types of recreation opportunities are inputs which need to be considered along with the supply-side inputs of land, labor, capital, and technology. Demand inputs help determine what types of recreation opportunities, or outputs, should be supplied. That demand determines the use of the outputs supplied. Demands also determine most of the positive impacts, because most of the benefits are realized by the users. User demands, particularly economic demands, are of fundamental importance in determining the dollar values assigned to the recreation goods and services, or opportunities produced. These economic values, or the users' willingness to pay for particular opportunities, vary by type and quality of the recreation opportunities provided. The value of these opportunities is measured by actual fees and entrance prices and through the use of surrogate value-estimating techniques, such as the travel-cost and contingent-valuation methods.

ROS FRAMEWORK

The ROS framework considers recreation goods and services to be outputs of the recreation production process. More significantly, recreation outputs are defined in terms of user demands for opportunities, and supply inventories are made using the same definition to determine the type, amount, and quality of these opportunities. In this way recreation demand is better integrated with supply. In addition, estimates of the economic worth of the recreation outputs are improved because the ROS framework provided a better identification of recreation goods and services. Recreation resources and values can be more fully integrated into land management planning, because the ROS framework allows a more precise evaluation of the desirable and undesirable impacts of alternative land and resource uses. In this way, the positive and negative impacts of logging roads or of mineral and water developments on recreation settings can be documented more systematically than in the past.

Recreation Diversity

The ROS recognizes that variables affect the types of experiences that the recreationists will produce for themselves. These variables include the size of the user group, past experience levels of the users, and the users' personality, skills and peer-social norms and pressures.

ROS IS
RESOURCE
BASED

While the ROS system is primarily resource-based and differentiates recreation opportunities mostly in terms of differences in the physical settings along the spectrum, it actually considers three types of settings: the physical, social and managerial. The characteristics of each setting will influence the type and the diversity of recreation opportunities that can be provided. To help assure that maximum diversity of recreation opportunity will be identified along the spectrum, the ROS system's inventory criteria and their associated standards were developed to consider each of these types of settings. It is necessary that users of the ROS system have a good understanding of the characteristics of each type of setting for each of the six ROS classes. (See the users guide.)

UNDERSTANDING
ROS

To increase understanding about the ROS framework three points are made. First, there has been a misinterpretation that the ROS is one dimensional, that it is just levels of development. Although the ROS system has never attempted to consider all dimensions of recreation, it is not one dimensional. It covers several dimensions, including: development levels, remoteness, user density, degree of managerial control, ease of access, and types of services offered. Although several of these dimensions are related, each is distinct and can independently affect recreation choice and management actions.

GUIDES
RECREATION
INVENTORIES

Second, the system was developed to guide recreation inventories and management of large land areas such as National Forests. As such, the ROS is a macro, or regional, system that establishes only general guidelines for site and project-level planning and management. Such a system cannot possibly address all dimensions of recreation diversity. However, the system does not constrain the recreation planner from providing for most, if not all, of the other dimensions of recreation diversity through site- and project-level planning.

NO BIAS
TOWARD
PRIMITIVE

Third, it has been suggested that the ROS system is biased toward the primitive end of the spectrum because early inventory direction suggested leaning toward the more primitive categories when in doubt. This has been dropped. Actually, the system simply presents a full spectrum of opportunities and should be used to identify types and quality of experiences without bias.

OBJECTIVE INVENTORY

The ROS helps to objectively inventory those types of recreation opportunities that can be, or are being, provided. It also provides guidelines for implementing the recreation component of the approved plan. The ROS says nothing about what types of opportunities should or should not be provided. Furthermore, the system does not endorse one type of recreation opportunity as contributing more to human welfare than another. The ROS describes opportunities that exist; it does not prescribe or limit opportunities. It identifies and provides options for those types of recreation opportunities that are demanded and can be supplied along the spectrum.

Characteristics Of The Settings

The settings are the focus of recreation resource planning and management.

RECREATION

For managerial convenience and uniformity, the ROS framework identifies six general classes of recreation settings that can be divided into subclasses as needed. They have been labeled Urban, Rural, Roaded Natural, Semi-primitive Motorized, Semi-primitive Nonmotorized, and Primitive. These names were selected to describe the dominant physical, social, and managerial characteristics of the settings of each ROS class. An understanding of these setting characteristics is necessary for effective use of the ROS System.

URBAN

Urban ROS class settings are characterized by high levels of human activity and by concentrated development, including developments for recreation opportunities. In urban settings levels of recreation use vary and can be extremely high or dense. There are a preponderance of signs and other indications of regulations on the users' behavior. The landscape is dominated by human structures, and green-space is only sporadically dominant.

RURAL

In the Rural class settings, the sights and sounds of human activity are readily evident, though less pronounced and less concentrated than in the Urban class. Levels of use vary, but do not reach those concentrations of the Urban class except at specialized and developed sites. While the characteristic landscape is often dominated

by human-caused geometric patterns, there is also a dominant sense of open, green-space.

The principles adopted by the ROS system to assess the visual attractiveness of the Urban and Rural settings dictate that human-caused visual patterns will dominate the landscape in these two settings. However, this should not be interpreted to mean that these areas are visually unattractive. On the contrary, there are many examples of beautiful cities, quaint villages and the pastoral beauty of farm and ranch lands.

ROADED NATURAL

The Roaded Natural class is characterized by predominately natural-appearing settings, with moderate sights and sounds of human activities and structures. The overall perception is one of naturalness. Evidence of human activity varies from area to area and includes improved highways, railroads, developed campgrounds, small resorts and ski areas, livestock grazing, timber harvesting operations, watershed restoration activities, and water diversion structures. Roads and motorized equipment and vehicles are common in this setting. Density of use is moderate except at specific developed sites, and regulations on user behaviors are generally less evident than in the Urban or Rural classes.

In some regions, a distinct subclass of setting features exists within the Roaded Natural class. This subclass occurs where human modification is locally dominant or codominant with a natural-appearing landscape, much like the rural setting. However, the recreation opportunities provided are significantly different from the Rural setting. For example, although numerous, highly improved roads might exist in this subclass, there is a sense of remoteness because of the distances from major travelways. In addition, the density of recreation use is often low compared to the Rural class. Also, users have the opportunity for exploration and to use both on-road recreation vehicles and ORV's. Camping is not confined to developed campsites, so users have considerable autonomy in choosing sites and using equipment.

SEMI-PRIMITIVE

Both the Semi-primitive Motorized and Nonmotorized classes are characterized by predominantly natural or natural-appearing landscapes. The size of these areas gives a strong feeling of remoteness from the more heavily used and developed areas. Within these settings, there are ample opportunities to practice wildland skills and to achieve feelings of self-reliance.

The most significant difference between the semi-primitive motorized and nonmotorized settings is the presence or absence of motorized vehicles.

In the nonmotorized settings, the presence of roads is tolerated, provided: they are closed to public use; they are used infrequently for resource protect and management; and the road standards and locations are visually appropriate for the physical setting. In many cases, old roads are acceptable as nonmotorized travelways so long as they do not reflect misuse or poor stewardship of the land. These roads would have motorized use in the semiprimitive motorized class, especially by ORV's.

PRIMITIVE

The Primitive settings are just that! Characterized by essentially unmodified natural environments, their size and configuration assure remoteness from the sights and sounds of human activity. The use of motorized vehicles and equipment is not permitted except in extreme emergencies, such as saving someone's life or protecting the resource.

In the Primitive class, the user is forced to be self-reliant and expects low levels of user density.

In the semiprimitive and primitive settings, the use of the visual management system plays a critical role in assessing and maintaining conditions which support the naturalness of the area. For example, it may not be enough to forbid motorized use in the nonmotorized ROS classes. The character of any roads or other structures, such as buildings, bridges, or fences, must also be in harmony with the natural landscape.

THREE SUB-SETTINGS

Within each of these six general classes, the ROS system identifies three interrelated sub-settings. They are the physical, the social, and the managerial settings. Identification of these sub-settings facilitated developing more specific inventory criteria for the ROS.

It also improved the system's ability to assess the impacts of alternative resource uses and to provide specific direction for management units within the area being planned. For these reasons, users of the ROS system must understand the general characteristics of each of these subsettings.

PHYSICAL
SETTING

The physical setting is best defined by an area's degree of remoteness from the sights and sounds of humans, by its size, and by the amount of environmental change caused by human activity.

REMOTENESS

Remoteness is a perceived condition of being isolated from human activities and developments. While most often measured in terms of distance, other factors such as topography, vegetative screening, or extremely difficult travel conditions can also create "remote" setting conditions. The relative size of an area not only influences the users' perceptions of the vastness of the physical setting, but also combines with the sense of distance, or difficulty of travel, to enhance the feeling of remoteness. In addition, the size of trees, rock formations, bodies of water, or open space add to the feeling of vastness and of relative remoteness.

HUMAN
DEVELOPMENTS

The apparent naturalness of an area is highly influenced by the evidence of human developments. If the landscape is obviously altered by roads, railroads, reservoirs, power lines, pipe lines, or even by highly visual vegetative manipulations, such as clearcuttings, the area will not be perceived as being predominately natural. Even if the total acres of modified land is relatively small, "out of scale" modifications can have a negative impact. On the other hand, evidence of activities that have been kept in harmony and scale with the natural landscape are often deemed acceptable.

PHYSICAL
SETTINGS

The features of the physical setting are relatively fixed and thus costly to change. Any changes will be relatively irreversible and have a long-lasting effect on the types of opportunities provided. The recreation-related features of the social and managerial settings are more easily changed or altered.

SOCIAL
SETTINGS

Social settings are described as the interactions between user groups within an opportunity setting. They play an important role in determining the types of experiences that can be realized, and whether or not a "satisfactory" recreation experience is achieved. If users continually encounter large numbers of people or see evidences of heavy use, an area will not be perceived as remote or as isolated as when such evidence is seldom encountered.

MANAGERIAL
SETTINGS

Managerial settings are defined as the interactions between user groups and the land manager. They play an important role in providing satisfactory recreation experiences. While not all elements of the social setting are within the control of the land manager, all managerial elements are, or should be.

These elements include: the degree to which users' actions are regulated; the visible evidence of such regimentation; the type and appropriateness of services and facilities provided by the land manager, and the types of maintenance operations performed.

REGULATION

The degree of regulation of the users' actions is determined by constraints the user experiences when making decisions such as selecting a camp site or mode of travel, or when attempting to practice certain skills such as hang gliding.

REGULATIONS

The visible evidence of regulation reflects the "style" with which the manager imposes constraints on the user. In settings where the density of use is high, the rules and regulations are usually obvious as signs or bulletin boards, or even via uniformed forest officers. In more remote areas, the rules and regulations are often provided to the user group "off-site" in the form of permits or maps, trailhead signs, and so on. Here, the user is relatively free to make many specific choices on-site, so long as they fall within the general rules and instructions. However, there are exceptions to these central cases. In some instances, a high degree of localized regulation might occur in a primitive area to limit use, confine use to particular areas away from trails or shorelines, or to protect wildlife by requiring that all dogs

be on a leash. Users might have to obtain a special permit to use such areas, and they might be checked for compliance while using the areas. Such regulations might not exist in a less remote location.

SERVICES,
FACILITIES,
OPERATIONS

Within the managerial setting, the provision of services, facilities, and maintenance operations, must be compatible with the physical and social setting. For example, the degree and type of security from other users, and from natural hazards, varies from ROS class to ROS class. In addition, the appropriateness of particular maintenance operations, such as the use of power or hand saws to clear trails, differ between some settings.

Establishing Management Direction

PRESCRIPTIONS

Management prescriptions are the building blocks for formulating planning alternatives, and for providing site specific management. Each prescription describes a set of compatible multiple-use management practices that will produce a particular mix of resource outputs. For example, one management area prescription might allow grazing and provide for primitive recreation opportunities, but permit only minimal water development structures and place strict controls on timber harvesting and mineral development. Another prescription for the same type of land might also permit grazing, but provide for roaded-natural recreation opportunities and allow for clearcutting and strip mining.

FOREST-WIDE
DIRECTIONS

The forest-wide directions respond to the issues, concerns, legal requirements, opportunities, and planning objectives that are forestwide in scope. Each direction is influenced by the capabilities and suitabilities of an entire forest. Management area directions also respond to the issues, concerns, opportunities, and management objectives but are related to a particular management area and its associated suitabilities and capabilities.

To understand how forest-wide and management area directions are developed and applied, one must appreciate that public issues, management concerns, and opportunities led to those directions, and that these same factors influence the location where a specific management area direction will be applied on the ground.

EXAMPLE:
ARAPAHO AND
ROOSEVELT NF

A better understanding of these relationships can be seen in recreation-related management area directions that were developed for the Arapaho and Roosevelt National Forests.

BOULDER
AND
REDFEATHER RD

Two Ranger Districts on the Roosevelt National Forest differ in size and distribution of lands that had been classified by a recreation supply inventory into various ROS classes. The Redfeather District, is relatively large. Much of the land is undeveloped and on the primitive end of the ROS. In contrast, the Boulder Ranger District is relatively small and highly developed, with most of its land classified as roaded natural and rural. Because of limited supply and close proximity to Denver, there was strong public concern for non-motorized recreation on the Boulder District. Much more land was available on the Redfeather District for this type of opportunity, so it was not a public issue there. On the other hand limited opportunities for motorized access was an issue.

MANAGEMENT
PRESCRIPTION

The Boulder District developed a management prescription that, while providing multiple-use outputs, would also emphasize semi-primitive nonmotorized recreation. This prescription was applied to feasible areas on the Boulder District in an effort to help meet these local needs. This prescription was carried through the planning process and remained in the approved plan as the management direction for land areas identified as 3A.

Other ROS-related management area directions also evolved during the planning process to become management area directions in the approved plan. One, for example, is designated 2A and emphasizes semiprimitive motorized opportunities, and another called 2B emphasizes Rural and Roaded Natural recreation.

The 2A area near Mammoth Reservoir has many low standard roads which were used years ago to access small mines in that areas. These roads help meet demands for semiprimitive motorized opportunities. The 2B area near Mt. Pisgah receives heavy day use, has a fragmented publicprivate land ownership pattern and is easily accessible, which facilitates its management for Rural and Roaded opportunities.

Other types of management areas, do not emphasize recreation--some emphasize wildlife habitat, and others emphasize fuelwood. Nevertheless, each area is managed to provide multiple outputs, so the directions do include guidelines for providing particular types of recreation opportunities even though recreation is not the dominant emphasis.

PHYSICAL
SETTING
CHARACTERISTICS

To maintain appropriate physical setting characteristics of the multiple-use management areas in which semi-primitive non-motorized recreation is emphasized, the standards and guidelines for that direction deal mostly with visual resources, silvicultural practices, and wildlife habitat. For example, although it was necessary to preserve natural appearing landscapes in the 3A semiprimitive nonmotorized settings, it was also necessary to utilize these management units as producers of multiple outputs, including timber. To meet both of these needs, additional standards and guidelines were developed to help assure that all resource treatments in the 3A areas would be compatible with the ROS setting criteria for the semi-primitive nonmotorized class. These guidelines required that the Forest Service's visual resource management system's visual quality objective of partial retention not be exceeded. This means that any developments or modifications, such as the consequence of timber harvesting practices, may be seen but will not be noticeable to the casual observer. The standards and guidelines also required that all travel routes in these management areas be considered at sensitivity Level 1, so users of those travel ways can expect them to be in harmony with the natural setting. (Note roads in semi-primitive non motorized areas are considered an inconsistency to be used only where necessary to meet the management area objective.)

SILVICULTURAL
TREATMENTS

Silvicultural treatments allowed in the 3A management areas permit clearcutting of aspen, with emphasis on regeneration for visual enhancement. Limited clearcutting is permitted in other vegetative types, but selection and shelterwood harvesting practices are recommended, because they are considered to be visually less obtrusive.

In many cases, the management setting criteria and the social setting criteria for a particular ROS class are met by the same standard or guideline. In management area direction 3A, the standard "prohibit or restrict motorized use" applies to the equipment that can be used by both the visitor and by the manager. Motorized equipment can be used to harvest timber in some semiprimitive non-motorized zones. However, discretion must be employed to assure that 3A areas will still provide semi-primitive nonmotorized opportunities. Other provisions of management area direction 3A also clearly deal with management, such as provide "foot and horse trails" or "manage campsites to meet a Frissell class 3 condition."

MANAGEMENT REQUIREMENTS

In many forest plans, managerial requirements such as law enforcement, visitor information services, and regulations are not included in the forest-wide or management area directions. They are either included as a part of specific programs or they are implemented by the local field manager.

FLEXIBILITY

Flexibility at that level of management is frequently needed to use different management practices to preserve the character of the ROS settings being managed. As an example, regulations needed in a wilderness area might not be needed in a roaded natural area. Flexibility is also needed in implementing the management area directions that are given in the plan. The parts of management area 3A on the east and west sides of the Continental Divide require different management. On the east side near Rodgers Pass, there are many attractive, high elevation lakes that are readily accessible. That semiprimitive nonmotorized area receives much use and therefore requires regulations to protect the physical settings that are not required in area 3A to the west, near the James Peak area. This need for flexibility is consistent with the point emphasized in the introduction. The ROS framework is not a set of hard, fixed rules and requirements. Instead it is a conceptual scaffold on which the planner and manager can build as conditions warrant.

The ROS In Plan Implementation

IMPLEMENTATION

Implementating a multiple-use plan involves active management of the recreation resources. Two basic tasks are involved in this process. The first is to determine whether the type, amount and quality of

recreation opportunities called for in the plan are actually being provided. The second task is to identify, justify, and document any revisions that need to be made in the plan.

MANAGEMENT DIRECTION

To accomplish these two tasks, the recreation specialist must refer to the recreation-related management directions in the plan. These directions define the actions that must be taken to provide the different types of recreation opportunities. They assure that planned ROS settings will be created or maintained. These guidelines and standards, along with the ROS class criteria, serve as indices for determining whether actual management departs from planned actions.

If the type, amount, or quality of the recreation opportunities provided are not the same as those called for in the plan, an inconsistency exists. The basic responsibility of the recreation specialist during plan implementation is to help prevent any inconsistencies from occurring.

INCONSISTENCIES

Inconsistencies are of two types, actual and potential. Actual inconsistencies are realized departures from planned actions. They indicate that the physical, social or managerial settings are not being managed to provide the ROS types of opportunity planned. Actual inconsistencies can also be caused by conditions not under managerial control, such as a wild fire or insect infestation.

HANDLING INCONSISTENCIES

Actual inconsistencies can be handled in one of three ways. First, they can be ignored, which is poor management. Second, an actual inconsistency can be corrected if the departure does not cause irreversible changes in recreation opportunities. Levels of recreation use might exceed the densities permitted by the plan's standards and guidelines. In this case, actions to bring use levels within the standards and guidelines of the ROS social setting criteria should be initiated. Third, if an actual inconsistency cannot be corrected because it causes irreversible change, then the plan itself can be changed.

MONITORING

Monitoring the implementation of the plan should concentrate on preventing irreversible inconsistencies. If changes in the planned actions are desired and justified, they should be documented and supported before they are made. Any revisions in the plan will mean that different types of recreation opportunities will be provided than originally planned. When such revisions are made, the plan's recreation management directions and their standards and guidelines should also be changed accordingly.

POTENTIAL INCONSISTENCIES

Potential inconsistencies can be prevented because a departure from planned actions has not taken place. If the decision is made not to prevent potential inconsistencies, then the plan should be revised before they occur.

ROS ANALYSIS CHECKLIST

One way to determine consistency between planned and actual recreation opportunities is to use an ROS Analysis Checklist. The checklist identifies the recreation characteristics of each management area, such as the type of ROS opportunity being provided, and its visual attractiveness rating. It also provides a method for documenting the impacts of proposed projects on the recreation opportunities being provided. The checklist can help trace any cumulative effects of management actions on the recreation opportunities available. This is an important part of monitoring, because some actions cause inconsistencies only when their impacts are considered simultaneously with other actions, or when the impacts are evaluated over time.

ROS GUIDES IMPLEMENTATION

The ROS framework directly and indirectly guides implementation of the recreation component of the multiple-use plan. The criteria and standards provided by the ROS system for defining characteristics of the physical, social, and managerial settings of each ROS class directly provide indices against which planned versus actual opportunities can be evaluated. The ROS also helps develop the recreation management directions and their associated standards and guidelines. Thus, the system also indirectly directs plan implementation through these management directions, standards, and guidelines.

ROS SUBCLASSES

AGGREGATE

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. Subclasses should be coordinated with adjoining units.

Some of the subclasses discussed to date are:

- | | |
|------------------------------|---|
| Pristine | A subclass of primitive used to describe areas having high quality solitude and where use is generally not encouraged by the construction of trails. |
| Motorized Primitive | Used in Alaska to designate very remote lightly used settings where access is traditionally by float plane or power boat. |
| Portal/Transition | These two subclasses have been used to describe heavily used unmodified settings such as gateways to the more popular wilderness areas. They are in the semi-primitive non-motorized ROS class, however the social setting is more toward roaded natural. |
| Roaded Modified | Used to sub-divide that part of roaded natural which has been heavily modified. Modification is generally more like rural except that the social setting is semi-primitive. Many feel this should be a separate ROS class. |
| Roaded Scenic | A sub-class of roaded natural which describes areas which are very sensitive to modification such as along scenic highways. |
| Roaded Natural Non-Motorized | Areas closed to motorized use, yet have been heavily modified or are not large enough to be set aside as semi-primitive non-motorized. |
| Roaded Natural Appearing | Another name for roaded natural. |

ROS AND FOREST PLAN STANDARDS AND GUIDELINES

THE FOLLOWING STANDARD AND GUIDELINE EXAMPLES FROM FOREST PLANS HAVE BEEN INCLUDED SO AS TO PROVIDE INSIGHT INTO THE FLEXIBILITY OF ROS APPLICATION. THE EXAMPLES ARE NOT INTENDED TO DEMONSTRATE A RIGHT OR WRONG APPROACH, MERELY TO DISPLAY HOW SOME FOREST AND REGIONS ARE MAKING PRACTICAL USE OF THE SPECTRUM. THIS IS THE ONLY WAY THAT MANAGERS CAN INSURE THAT RECREATION MANAGEMENT OBJECTIVES ARE MET.

EXAMPLES OF ROS (PRIMITIVE) STANDARDS AND GUIDELINES

AMS BENCHMARK PRESCRIPTION NO. DR-4

EMPHASIS: Dispersed Recreation

INTENSITY: Primitive (Nonwilderness)

This management intensity provides the opportunity for users to experience a very high degree of solitude and isolation from the sights and sounds of human activity, establish a strong sense of independence and closeness to nature, and develop a feeling of tranquility and self-reliance. These experiences are provided through the application of outdoor skills in an environment that offers a high degree of challenge and risk.

The setting for this class of recreation is characterized by an environment that is essentially unmodified and where the evidence of human activity would be unnoticed by most users. In addition, the area is managed to be essentially free from the evidences of human induced restrictions and controls. The area provided for this recreation opportunity class is fairly large in size to ensure dispersion of use and minimize interaction between users.

Activities associated with this intensity are exclusively non-motorized and nonmechanical in nature. Specific activities may be either consumptive or nonconsumptive in their use of the land and water resources of the area including hunting, fishing, camping, hiking, canoeing and horseback riding, etc.

PRACTICES	STANDARDS	GUIDELINES	RPA MIH CODES
TIMBER MANAGEMENT			
1. Silvicultural System	1a. No programmed harvest. 1b. Unregulated harvest for the purpose of salvaging mortality from catastrophic losses due to insects, disease, fire, or windthrow may be permitted on approval by the Forest Supervisor. 1c. See Gen. Mgt. Stds. Sec. 8. Timber Management #1 and 2.	1c. See guidelines for T1-A and T2.	
2. Logging Method	2a. All available aerial logging systems may be used.	2a. Give preference to those systems having the least effect on primitive recreation values. 2b. Flush cut stumps in road and trailside zones. 2c. Shape landings and reestablish ground cover.	
3. Transportation System	3a. Road development is not permitted. 3b. Any existing roads are closed to motorized use and access.		
4. Wood Residue Treatment			
a. Disposal	4a. See Gen. Mgt. Stds. Sec. 8, Fuel Management #1 and 2.	4a. See guidelines for T1-A and T2, except 4a(2). Preferred methods include: chip/disperse, chip/remove, truckload/remove, hand pile/burn.	
b. Utilization		4b. See guidelines for T1-A-T2.	
5. Cultural Treatments	5. See Standards for T1-A and T2.	5. See guidelines for T1-A and T2.	

RECREATION
MANAGEMENT

1. Area Use

1. The area shall be made available for maximum use for a range of activities that are consistent with maintaining area conditions and providing Primitive Recreation Experiences.

1a. Group sizes should not exceed more than 20 persons. Larger groups may be accommodated by permit.

1b. Campsites: Dispersed camp area should be located to take advantage of topographic and vegetation screening and placed outside of foreground view (100 feet) from lakes, streams, trails, and key interest features.

1c. Campfires: Open campfires may be limited to designated sites.

1d. Recreational stock should be held overnight outside the foreground areas of lakes, streams, camp areas, and trailsides.

2. Visitor Contact

2. Visitor contact shall be for the purposes of:

2a. Informing users of area management goals and objectives.

2b. Encouraging user behavior that is respectful of area resources.

2c. Ensuring that visitor activities are in compliance with established management standards.

2a-b. Provide information and educational material to prospective users through the media and at administrative headquarters.

2c. Forest officers or resource technicians may visit an average 25 percent of the dispersed sites annually.

3. Structures and
Improvements

3. Structures and improvements shall be provided to facilitate area use, protect resource values, and for administration.

3a. Trail management should be consistent with the Primitive ROS Class (I) requirements for construction and maintenance.

3b. Reconstruction, relocation, and maintenance of the PCNST shall comply with the requirements of the National Trail System Act.

3c. Toilet facilities may be provided for the protection of area resources and for the purpose of health and safety.

3d. Bridges and culverts may be provided to enhance visitor use, protect resource values, and for user safety.

3e. Dimensional and non-native materials may be utilized but should remain subtle to area users.

PRACTICES	STANDARDS	GUIDELINES	RPA MIH CODES
		3f. Soil compaction should not exceed established limits, except as necessary for dispersed campsites, administrative facilities, trail treads, trail head facilities, and other recreation-related facilities.	
4. Motorized Use	4. The general area is closed to off-road vehicle use.		
5. Administrative Coordination		5. Where area management is shared by two or more administrative units, coordinating conferences should be held to ensure continuity of management decisions and actions.	
6. Search/Rescue	6. The Forest Service will assist within its capacity and as requested by the County Sheriff in search and rescue and evacuation operations.		
VISUAL MANAGEMENT	1. Area management practices shall be commensurate with the preservation visual quality objective.	1. In the event that unregulated harvest is necessary to salvage timber within the area, practices should be employed in a manner that achieves a visual quality objective of retention.	
FIRE MANAGEMENT		1. Give preference to those suppression methods resulting in the smallest practicable area burned and having the least effect on primitive recreation values.	
ALL DESIGN AND IMPLEMENTATION PRACTICES	1. See Gen. Mgt. Stds. Sec. 8 for: 1a. Soil, Water, and Riparian, except 3b 1b. Threatened and Endangered Species		

11% PRIMITIVE OBJECTIVE

MANAGEMENT AREA 3

Description:

The 100,007 acre management area is composed of the Manzano Mountain Wilderness (36,402 acres) on the Mountainair Ranger District and the Apache Kid (44,530 acres) and the Withington (19,075 acres) Wildernesses Areas on the Magdalena Ranger District. Recreation use is light.

Ninety-two percent of the area is over 40 percent in slope. Vegetation ranges from grassland to spruce-fir. There are 5,782 acres of the management area classified as full capacity range, 1,309 acres as potential capacity and 93,315 acres as no capacity. Nearly 972 acres of the full capacity range are in satisfactory condition.

Analysis Area(s): 3

Management Emphasis: The primary management emphasis is to provide dispersed recreation opportunities compatible with maintaining wilderness values and protecting resources. Preserving the primitive-pristine character of the Apache Kid Wilderness is an important management concern. Livestock grazing will be permitted on full and potential capacity range. Ranges will be managed to balance grazing use with grazing capacity in a manner consistent with the wilderness grazing guidelines.

	<u>Decision Variables</u>	<u>Activities</u>	<u>Applicable Analysis Areas</u>	<u>Standards and Guidelines</u>
Range	140	D02	3	Manage range lands at or above the following intensity levels:

Period 1--Level A-- 3,324 ac.
 Level B--41,843 ac.
 Level C-- 0 ac.
 Level D-- 0 ac.
 Level X--55,235 ac.

Adjustments will occur during Periods 2 through 4 so that by Period 5 management of rangelands will be at or above the following intensity level:

Level A-- 3,324 ac.
 Level B--97,078 ac.
 Level C-- 0 ac.
 Level D-- 0 ac.
 Level X-- 0 ac.

Intensity level codes reflect management of allotments. Therefore, acres shown for each level include full capacity, no capacity and potential capacity range.

Through development of improved allotment management plans, the full capacity rangelands in unsatisfactory condition will be treated. The treatments will include, but may not be limited to:

1. structural range improvements; and
2. correction of stocking problems which include reduction in permitted use in those instances where management will not correct the unsatisfactory condition.

	140	D02	3	The condition class of full capacity rangelands may decline during Period 1
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MANAGEMENT AREA 3
(Continued)

Decision Variables	Activities	Applicable Analysis Areas	Standards and Guidelines									
			but will not decline further throughout the remainder of the planning horizon.									
			<table><tr><th>Condition</th><th>Period 2</th><th>Period 5</th></tr><tr><td>Satisfactory</td><td>972 acres</td><td>3,435 acres</td></tr><tr><td>Unsatisfactory</td><td>4,810 acres</td><td>2,347 acres</td></tr></table>	Condition	Period 2	Period 5	Satisfactory	972 acres	3,435 acres	Unsatisfactory	4,810 acres	2,347 acres
Condition	Period 2	Period 5										
Satisfactory	972 acres	3,435 acres										
Unsatisfactory	4,810 acres	2,347 acres										
150	D05	3	Construction, replacement and maintenance of structural range improvements will be to standards identified in the R-3 Range Structural Handbook. These will be directed toward improvements that correct management problems. Replacement of structural improvements is planned on a recurring basis of 20-30 years for waters and 40 years for fences. Maintenance of structural improvements will be scheduled on a planned basis that is defined in the allotment management plan or annual operating plan. Maintenance will continue until replacement is scheduled.									
			Improvements should, to the extent possible, blend into the wilderness character.									
150	D05	3	Structural Range improvements will be constructed and/or replaced at the following rate: 3 miles of fence per period in Periods 1 through 4 2 waters per period in Periods 1 through 4 3 storage-drinkers per period in Periods 1 through 4 1 mile of pipeline per period in Periods 1 through 4									
Recreation	010	A03	3	Manage for visual quality level of preservation.								
	050	B01	3	Coordinate trails and trailheads. Provide for fire management, user contacts and education and capacity management techniques. Manage these activities through annual implementation plan.								
	050	B02 B03	3	Manage for the following maximum group size by Wilderness Opportunity Spectrum (WOS) class: 5 PAOT--Pristine 5 PAOT--Primitive 10 PAOT--Semi-Primitive 25 PAOT--Transition								

MANAGEMENT AREA 3
(Continued)

<u>Decision Variables</u>	<u>Activities</u>	<u>Applicable Analysis Areas</u>	<u>Standards and Guidelines</u>
050	B02 B03	3	Manage the following acreage by WOS classification: 10,013--Pristine 1,045--Primitive 82,283--Semi-Primitive 6,666--Transition
050	B02	3	Manage use at capacity by WOS classification by use of visitor information techniques.
050	B02, B03 C01, D01	3	Permit only processed horse feed to be used.
050	B02 B03	3	Emphasize low-impact no-trace use of wilderness through the volunteer wilderness information specialist program, information service brochures, and media.
050	B02, B03 J06	3	Annually post wilderness boundary at major entry points and problem areas where motor vehicle entry occurs or can occur.
010 050	A14, A15 B02, B03 L23	3	Perform trail maintenance at Levels 3 and 4 at the following rates: Period 1--100 miles, one time Period 2--100 miles, one time Period 3--105 miles, one time Period 4--112 miles, one time Period 5--100 miles, one time
050 480	B03 J06 L21, L22	3	Perform trail preconstruction and construction/reconstruction at the following rates: Period 1: Trigo and 4th of July Trails--8.0 mi. Capilla-Commanche --3.0 mi. Period 2: Bosque Peak-Manzano --1.5 mi. Salas-Monte Largo Loop --2.5 mi. Water Canyon-Potato Canyon --1.5 mi. Little Monica-Potato Canyon --4.0 mi. Period 3: Road 138-Water Canyon --3.0 mi. Period 4: Vic's Peak --0.5 mi. Trail Reconstruction --3.0 mi.

MANAGEMENT AREA 3
(Continued)

	<u>Decision Variables</u>	<u>Activities</u>	<u>Applicable Analysis Areas</u>	<u>Standards and Guidelines</u>
	010	A14, A15 C01, F01	3	Maintain 100,007 acres of wilderness closed to ORV use as required by wilderness designation.
Protection	350	P01, P04 P07 P19, P22	3	Restrict use of bulldozers to extreme conditions and only upon approval of the Regional Forester or his designated acting. Restrict use of helicopters and portable power tools to established according to Cibola Supplement No. 2, FSM 2326.11.
Fire Management	050 360	P12 B02, B03	3	Utilize prescribed fire with natural ignition to achieve wilderness objectives. Implement natural fire prescriptions by 1995. If national policy is modified to permit prescribed fire with planned ignition, its use will be considered where appropriate.
Insect and Disease Control	050	P34	3	Monitor and report insect and disease conditions on a continuous basis. Chemical or biological control of epidemic populations will only be implemented if a thorough analysis shows that wilderness values are directly threatened or if resource values adjacent to wilderness will be severely impacted.
Lands and Minerals	050 270 280	B01 G02, G03	3	Oil and gas leasing is prohibited within the designated wildernesses.
Wildlife	080	C12	3	Cooperate with New Mexico Game and Fish in stabilizing the Rocky Mountain Bighorn sheep population to goals established in the New Mexico Game and Fish Department Comprehensive Plan. Bighorn sheep occur only in portions of analysis area located in Manzano Mountains.



MANAGEMENT AREA 5.1

PURPOSE - This goal will emphasize management of Congressionally designated wilderness. Land and resource conditions will provide opportunities for wilderness recreation and research in primitive surroundings where motorized use is not permitted and will provide habitat for common loons, pine martens, and other native species sensitive to human activity and requiring older forests.

DESIRED CONDITION OF THE LAND - Shape and size of forest stands and clearings will be irregular and depend on natural forces and site conditions. Forest stands will include spruce, pine, balsam fir, and birch. Permanent forest openings will be marshes, lowland brushy areas, and rock outcrops.

Areas managed for this goal have no formally established trails, portages, or campsites. There will be no human-made structures in this area.

Very few people will use this area and their use is mostly along lakeshores. They rarely encounter others.

TYPICAL MANAGEMENT PRACTICES - Management practices will be limited to restoring resource damage caused by people. Management practices will be done manually, using nonmotorized methods.

STANDARDS AND GUIDELINES1900 LAND AND RESOURCE MANAGEMENT PLANNING

VEGETATION MANAGEMENT - Manage vegetation only to protect wilderness values or to protect adjacent property from fire or pests. Vegetative management objectives are:

- Preservation of the natural ecosystem, including the protection of rare, endangered, and threatened plants.
- Restoration of natural vegetation to areas where concentrated use or removal of inappropriate structures has destroyed it.
- Reintroduction of extirpated plant species when feasible.
- Preserve the natural ecosystem through use of natural fire burning under prescription.
- Vegetation may be cut for construction and maintenance of campsites, trails, and portages, for fire suppression, and for visitor safety.

2100 ENVIRONMENTAL MANAGEMENT

AIR QUALITY - Air Quality Related Values (AQRVs) of the BWCA Wilderness are those values which may be affected by changes in air quality, including those assets whose significance or integrity are dependent upon the air environment. They can include biotic or abiotic components.

The anticipated effects of air pollutants on AQRVs are the basis for the National Forest Managers' recommendations on whether or not to allow new air pollutants emission sources near the BWCA. The Federal Clean Air Act requires the Forest Managers to comment favorably or unfavorably about any proposed emission sources that could affect air quality of the BWCA. Permit denial or mitigation of effects will be recommended to the Minnesota Pollution Control Agency (the permit authority) when unacceptable impacts on AQRVs are projected in permit applications.

AQRVs are presented in two categories: Primary and secondary. Primary AQRVs are those that could be directly impacted by degraded air quality. Secondary AQRVs are values that could be indirectly affected as a result of changed conditions of one or more of the primary AQRVs.

Following is a tentative listing:

PRIMARY AQRVs:

- A. Lakes and streams free of (or low in) human-caused pollutants.
- B. Soil in its natural state.
- C. Fish produced by natural forces.
- D. Vegetation produced by natural forces.
- E. Wildlife produced by natural forces.

- F. Air free of unnatural odor. (Smoke from fire is recognized as a natural odor of the BWCA.)
- G. Visibility not limited by human-caused impairment (except for effects of prescribed fire).
- H. Historic and prehistoric resources.

SECONDARY AQRVs:

- I. Opportunity for scientific research in natural ecosystems.
- J. Natural scenery.

For each AQRV, the biophysical change indicators such as pH, growth, metals concentration, coloration, mortality, etc., will be identified to be used to determine limits of acceptable change (adverse impact) to wilderness resources.

For each change indicator, change standards will be established to measure quantitative or qualitative changes. Standards should be set which indicate limits of acceptable change (Limits of change relate to wilderness purposes (PL 68-577) and resources present in area).

Recommendations will be made to the Regional Forester against proposed developments which would result in exceeding the limits of acceptable change for one or more wilderness AQRVs.

A plan or schedule for monitoring base line and/or change indicators will be developed and appended following identification of indicators and standards.

A records system for Air Quality will record changes in air quality and AQRV conditions and change indicators.

PESTICIDE USE - Use pesticides in designated wilderness only when necessary to prevent the loss of significant aspects of the designated wilderness or to prevent significant losses to resource values on private or public lands bordering the wilderness. Biological or mechanical means of control will be given first consideration. Obtain Regional Forester approval for all pesticide applications in wilderness.

2200 RANGE MANAGEMENT

Range management is not permitted.

2300 RECREATION MANAGEMENT

This area will be managed for the primitive recreation opportunity class.

Developed sites are not permitted in this management area.

There will be no formally established portages, trails, or campsites. Facilities at existing campsites will be removed.

Public use of motors is not permitted.

Management activities will meet a Visual Quality Objective of preservation.

VISITOR MANAGEMENT - The objective is to assist visitors in developing an understanding of the purpose, value, and appropriate use of wilderness lands and a functioning of natural ecosystems in wilderness.

Visitor use levels in any given Travel Zone must not produce changes beyond the acceptable limits of change (biological, physical, and social capacity). Appropriate use levels will be reviewed annually to determine daily number of permits for each entry point. A permit will not be issued for more than ten people.

A user fee, when legally feasible, may be charged.

Length of stay shall not be more than 14 days on any one campsite or location.

Nonburnable, disposable food and beverage containers are prohibited.

Use of pack or riding stock on trails and portages is prohibited.

Storage of boats or equipment not used on current visit is not allowed.

Use of excursion boats or watercraft designed or used as floating living quarters is prohibited.

Aircraft must maintain an altitude of more than 4000 feet above sea level over prohibited areas P-204, P-205, and P-206.

Dead trees may be cut for firewood.

ADMINISTRATIVE USE OF MOTORS - Conform as nearly as possible to the restrictions placed on the public. In cases of emergency the Forest Supervisor may authorize the use of motorboats, aircraft, or other motorized conveyances. For the control of wildfires, the use of aircraft, motorized pumps, chainsaws, generators, and other small power equipment is authorized. The use of bulldozers must be approved by the Regional Forester.

The Regional Forester may authorize the use of motorized tools and conveyances for law enforcement and other purposes. Except for law enforcement, the use of these tools and conveyances when approved, will be scheduled for times when they will be least disruptive to other users of the wilderness.

The long range goal is to develop a common understanding among all involved agencies, both U.S. and Canadian, to standardize their use of aircraft, snowmobiles, motorboats, and motor powered equipment.

Dorothy Molter, a Forest Service Volunteer, will continue her residency within the BWCA Wilderness and is authorized to use a motorboat and snowmobile.

Owners of private land within the BWCA will be allowed specific motorized access on a case-by-case basis.

CULTURAL RESOURCES - Each cultural resource site will be evaluated for National Register significance. After the evaluation is completed a decision will be made as to the disposition of the site.

On-site cultural resource interpretation is not provided.

2400 TIMBER MANAGEMENT

Timber management is not permitted.

2500 WATER AND SOIL RESOURCE MANAGEMENT

Water quality and human-caused soil erosion will be monitored for changes that may be approaching unacceptable limits.

Where watershed improvement projects are undertaken, unobtrusive treatment will be prescribed. Treatment techniques must in all cases be visually and ecologically less obtrusive on the wilderness than the original problem. Only natural materials (rocks, logs, and native plants) will be used in restoration work.

Watershed improvement projects will be limited to correcting person-caused resource damage or resource damage from natural disasters which threaten downstream health and safety.

Highest priority areas for restoration will be resource damage at user developed sites or along trails adjacent to water bodies.

2600 WILDLIFE MANAGEMENT

Cooperate with the State of Minnesota on a fisheries management program. Discourage introduction of exotic species. Aerial stocking of fish may be appropriate in those waters where this was an established practice prior to the area being classified a wilderness, or where other practical means are not available (requires Regional Forester approval).

Fisheries management of easily accessible waters should be given preference over remote locations.

Cooperate with the State and the US Fish and Wildlife Service in developing and implementing special programs for protection of threatened and endangered species.

Cooperate with DNR in reintroducing extirpated species where this can be done without adversely affecting other wilderness elements. All reintroduction or supplemental transplants of terrestrial wildlife species by a State agency will have prior written approval from the Forest Supervisor.

Use "people management" techniques to protect sensitive species during critical periods.

Control of problem animals may be permissible based upon a case by case evaluation and within the limits of State and Federal laws.

2700 LAND USES

Special uses are generally unacceptable.

2800 MINERALS

Exploration and development of non-Federal mineral is allowed, but occupancy and use must be consistent with Section II(b)(1) of the BWCA Legislation (92 Stat. 1655).

No permit or lease will be issued for exploration or development of Federally-owned minerals.

GRAVEL - Gravel pits are not permitted.

Administrative use of gravel is permitted.

4000 RESEARCH

Only research which is compatible with wilderness management will be allowed. Research must be approved by the Forest Supervisor.

5100 FIRE MANAGEMENT

SUPPRESSION - The priority for suppression is lower than nonwilderness lands. Use of heavy equipment is generally unsuitable but may be used with Regional Forester's approval. Chemical retardants may be used when deemed necessary by the fire boss. Fires will be suppressed when burning outside of prescription. Fire intensities, health, safety, and property will be major considerations.

5400 LAND OWNERSHIP ADJUSTMENT

Less than total ownership or interest is acceptable if non-owned lands are not being used in conflict with wilderness management objectives.

Acquisition of certain lands within the BWCA will continue as specified in P.L. 95-495 and the Plan to Implement the BWCA Act.

This Management Area has the following priorities for land adjustment:

- a) Acquisition - Priority 1
- b) Disposal - None Permitted
- c) Donation - Priority 1

Additional guidelines are provided in Section 5400 of the Forest-wide Standards and Guidelines.

7300 BUILDINGS AND OTHER STRUCTURES

Buildings, signs, or any other structure are not permitted.

7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES

Solid waste disposal sites are not permitted.

7500 WATER STORAGE AND TRANSMISSION

Construction or maintenance of dams is not permitted.

7700 TRANSPORTATION SYSTEM

Roads will not be constructed or maintained.

EXAMPLES OF ROS(SEMI PRIMITIVE NON MOTORIZED) STANDARDS AND GUIDELINES

AMS BENCHMARK PRESCRIPTION NO. DR-3

EMPHASIS: Dispersed Recreation

INTENSITY: Semiprimitive Nonmotorized

This management intensity provides the opportunity for users to experience a high degree of isolation from the sights and sounds of human activity, establish a sense of independence and closeness to nature, and develop some feelings of tranquility and self-reliance. These experiences are provided through the applications of outdoor skills in an environment that offers challenge and risk.

The setting for this class of recreation is characterized by an environment where the natural landscape has been subtly modified and where alterations, though noticeable, would not draw the attention of the most users. In addition, the area is managed to minimize the presence of on-site controls and use restrictions. The area provided for the semiprimitive non-motorized recreation opportunity is moderate to large in size. There is often evidence of other users, but interaction between users is low.

Recreation activities associated with this intensity are exclusively non-motorized and non-mechanical in nature. Specific activities are oriented toward both consumptive and nonconsumptive use of the land and water resources of the area, including hunting, fishing, hiking, camping, nature study, mountain climbing, and cross-country skiing, etc.

PRACTICES	STANDARDS	GUIDELINES	RPA MIX CODES
TIMBER MANAGEMENT			
1. Silvicultural System	1a. See Gen. Management Standards Sec. 8, Timber Management 1 and 2.	1a. See guidelines for TIA-T2. Uneven-aged management where appropriate would generally be accomplished through group selection.	
	1b. Harvest area stands at an average rate of 5 percent of the area/decade. This standard may be exceeded for initial entry to ensure economic and operational feasibility of access and harvest methods.	1b(1). Some variation is permitted in this standard based upon differences in rotation length due to site or species-dependent growth rates.	
		1b(2). Limit created openings along roads, trails, and streams and around lakes and dispersed sites to an average of 5 percent of the frontage area of each feature type in any 10 year period.	
	1c. Maintain unit sizes of 3-5 acres throughout the general area and 1-acre units within a zone at least 200 feet wide along each side of all trails and streams and around lakes and dispersed sites.	1c(1). Shape and blend harvest units in a manner that is moderately natural appearing and will not draw the attention of users.	
		1c(2). Some variation in unit sizes may be permitted as required to better meet the purposes of this management intensity.	
2. Logging System	1d. A created opening exists until the regenerated stand is 8-10 feet in height.	1d. Except in high elevation lodgepole pine where the R-6 standard of 4½ feet applies.	
	1e. The maximum area disturbed shall not exceed 2 times the decade harvest rate. This standard may be exceeded for initial entry as per 1b above. However, subsequent entries will conform to the standard.	1e. This standard applies only if timber harvest has occurred within the area.	
	2. All available aerial logging systems may be used.	2. Flush cut stumps in trailside and streamside zones, around lakes and dispersed sites and key interest areas.	

PRACTICES	STANDARDS	GUIDELINES	RPA MH CODES
3. Transportation System	3. Road development is not permitted. Any existing roads are closed to motorized use and access.		
4. Wood Residue Treatment			
a. Disposal	4a. See Gen. Mgt. Stds. Sec. 8, Fuel Management 1 and 2.	4a. See guidelines for T1-A and T2, except 4a(2). Preferred methods include: chip/disperse, chip/remove, truckload/remove, hand pile/burn.	
b. Utilization		4b. See guidelines for T1-A and T2.	
5. Cultural Treatments			
a. Site Preparation		5a. See guidelines for T1-A and T2.	
b. Regeneration	5b. See Standards for T1-A and T2.	5b. See guidelines for T1-A and T2.	
c. Pest Management	5c. See Gen. Mgt. Stds. Sec. 8. Vegetation Control and Integrated Pest Management 2, 3, and 4.	5c. See guidelines for T1-A and T2.	
d. Vegetation	5d. See Gen. Mgt. Stds. Sec. 8. Vegetation Control and Integrated Pest Management 1, 3, and 4.	5d. See guidelines for T1-A and T2. Utilize hand treatment methods in road and trailside areas.	
e. Precommercial Stocking Level Control		5e. See guidelines for T1-A and T2.	
f. Fertilization	5f. None	5f. None	
g. Commercial Stocking Level Control	5g. None	5g. None	

RECREATION MANAGEMENT

- | | |
|-------------|--|
| 1. Area Use | <p>1. The area shall be made available for maximum use for a range of activities that are consistent with maintaining area conditions and providing Semiprimitive Nonmotorized Recreation Experiences.</p> <p>1a. Group sizes should not exceed more than 25 persons. Larger groups may be accommodated by permit.</p> <p>1b. Campsites: Dispersed camp area should be located to take advantage of topographic and vegetation screening and placed outside of foreground view (100 feet) from lakes, streams, trails, and key interest features.</p> <p>1c. Campfires: Open campfires may be limited to designated sites.</p> |
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PRACTICES	STANDARDS	GUIDELINES	RPA MTH CODES
		1d. Recreation stock should be held overnight outside the foreground areas of lakes, streams, camp areas, and trailsides.	
2. Visitor Contact	2. Visitor contact shall be for the purposes of:		
	2a. Informing users of area management goals and objectives.	2a-b. Provide information and educational material to prospective users through the media and at administrative headquarters.	
	2b. Encouraging user behavior that is respectful of area resources.		
	2c. Ensuring that visitor activities are in compliance with established management standards.	2c. Forest officers or resource technicians may visit on an average 50 percent of the dispersed sites annually.	
3. Structures and Improvements	3. Structures and improvements shall be provided to facilitate use, protect resource values, and for administration.	3a. Trail management should be consistent with the Semiprimitive Nonmotor ROS Class (II) requirements for construction and maintenance.	
		3b. Reconstruction, relocation, and maintenance of the Pacific Crest National Scenic Trail shall comply with the requirements of the National Trail System Act.	
		3c. Toilet facilities may be provided for the protection of area resources and for the purpose of health and safety.	
		3d. Bridges and culverts may be provided to enhance visitor use, protect resource values, and for user safety.	
		3e. Dimensional and non-native materials may be utilized but should remain subtle to area users.	
		3f. Soil compaction should not exceed established limits, except as necessary for the development of campsites, administrative facilities, trail treads, trail head facilities, and other recreation-related facilities.	
4. Motorized Use	4. The general area is closed to off-road vehicle use.	4. Area and trail closures should be based upon the mandatory and discretionary planning criteria listed in FSM 2355.12.	
5. Administrative Coordination		5. Where area management is shared by two or more administrative units, coordinating conferences should be held to ensure continuity of management decisions and actions.	
6. Search/ Rescue	6. The Forest Service will assist within its capacity and as requested by the County Sheriff in search and rescue and evacuation operations.		

PRACTICES

STANDARDS

GUIDELINES

RPA MIH CODES

VISUAL
MANAGEMENT

1. Area management practices shall be commensurate with the retention visual quality objective.

FIRE
MANAGEMENT

1. Give preference to those suppression methods resulting in the smallest practicable area burned and having the least effect on semiprimitive nonmotorized recreation values.

ALL DESIGN
AND IMPLEMENTATION
PRACTICES

1. See Gen. Mgt. Stds. Sec. 8 for:
 - 1a. Soil, Water, and Riparian, except 3b
 - 1b. Threatened and Endangered Species

L. SEMI-PRIMITIVE NON-MOTORIZED RECREATION

A. Objective

The purpose of this prescription is to provide for semi-primitive nonmotorized recreation opportunities in unroaded areas outside existing Wildernesses, while maintaining predominantly natural-appearing areas with only subtle modifications. Special recreational and visual values, wildlife, fisheries, and riparian resources are emphasized.

B. Management Practices

Emphasized/Compatible:

- Semi-Primitive Nonmotorized Recreation
- Coldwater Fishery Habitat Management (Rivers and Streams)
- Warmwater Fishery Habitat Management (Reservoirs)
- Trail Construction and Reconstruction
- Streamside and Wetlands Management
- Wildlife Habitat Management - Existing T&E Animals
- Wildlife Habitat Management - Sensitive Animals
- Wildlife Habitat Management - Harvest Species

Compatible:

- Cultural Resource Management - Native American Sacred Places
- Cultural Resource Management - Archaeological and Historical Sites
- Habitat Management - Sensitive Plants
- Livestock Grazing
- Soil and Water Improvement
- Vegetation Treatment by Burning
- Fire Management
- Integrated Pest Management
- Mining

C. Description of Areas Where Prescription L (Semi-Primitive Non-Motorized Recreation) Will Be Applied

These areas are at least one-half mile from roads or trails with motorized use, and generally 2,500 to 5,000 acres in size unless contiguous to wilderness. There is little evidence of roads, and the area is closed to motorized travel. The natural setting may have subtle modifications that would be noticed, but would not draw the attention of an observer in the area. Structures are rare and isolated. Relatively few parties per day would be encountered on trails, and even fewer parties would be visible at camp sites. On-site restrictions and controls are present, but subtle. Typical activities include hiking, cross-country skiing, horseback riding, rafting, canoeing, swimming, hunting, fishing, camping, and sightseeing.

This prescription also applies to designated Wild Rivers. These rivers, or sections of rivers, and adjacent areas are free of impoundments, and generally inaccessible except by trail.

D. Associated Standards and Guidelines

Recreation - A

1. Campsites and wildfire suppression camps should be primitive in nature. Onsite restrictions and controls can be present, but subtle.
2. All management activities will be compatible with Semi-Primitive Non-Motorized Recreation Opportunity Spectrum (ROS) guidelines. Manage to meet inventoried Visual Quality Objectives (VQOs) of retention. Manage to meet partial retention in all other areas within the prescription.
3. Use of mechanized equipment will be permitted for the following reasons:
 - a. Helicopter access to snow survey courses until such time as corollary courses are established outside of the Prescription I area;
 - b. Helicopter access to remove aircraft wreckage;
 - c. Motorized medical rescue equipment for search or evacuation of dead or severely injured persons or livestock;
 - d. Chainsaw, rock drill, and hand portable yarder as necessary to meet objectives of prescription;
 - e. Mineral activities as permitted by existing laws and regulations;
 - f. Aerial stocking of fish;
 - g. Motorized equipment, including aircraft, for firefighting and law enforcement;
 - h. Transportation of material, supplies, and personnel for range management activities, if such access has a history of prior use;
 - i. Management of insects, disease, and other pests interfering with the attainment of recreation and non-recreation values;
 - j. Enhancement of cliff faces for peregrine falcon nesting sites, if necessary.

Wildlife and Fish - C

4. Encourage fish stocking by the California Department of Fish and Game to assist in the management of recreation use.

Range - D

5. Existing livestock use that does not damage other resource values will continue in these areas and, if appropriate, additional grazing could occur or be developed.

Timber - E

6. No regulated or unregulated timber yields are scheduled.

Minerals - G

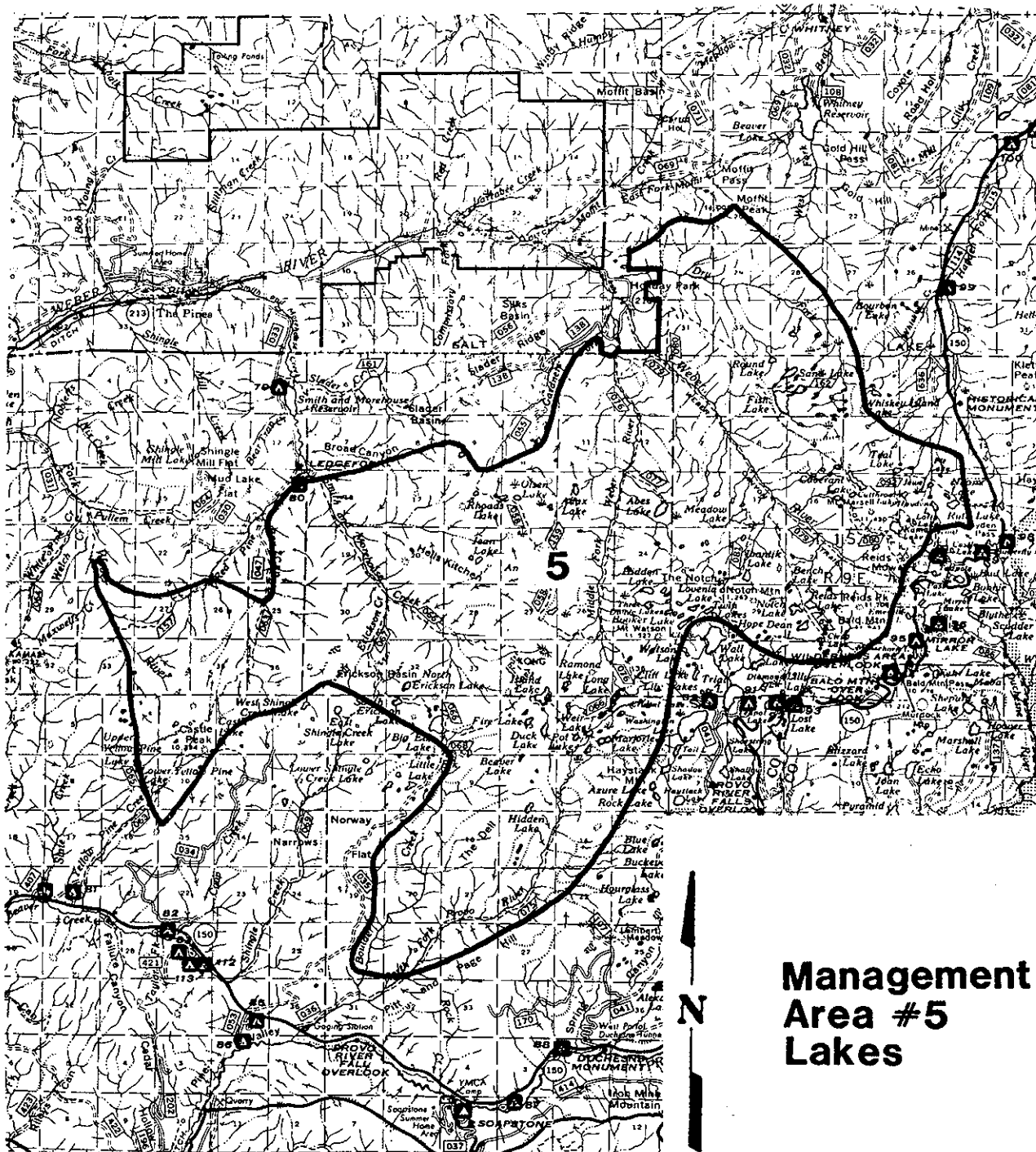
7. Significant surface disturbance by locatable mineral related activities will be mitigated based on an environmental assessment and stipulations to the authorized plan of operations.
8. Significant resource impacts will be mitigated for leaseable and saleable minerals based on an environmental assessment and stipulations to the lease or sale document.

Facilities - L

9. No new roads will be constructed.
10. Trails should be located, designed, constructed, and maintained so that they are suitable for foot and horseback travel. Trail density and use should be limited to insure low to moderate frequency of user contact.
11. Blasting may be used for trail construction and fish barrier removal.

Protection - P

12. Shaded fuel breaks may be used in areas adjacent to other areas of high fire risk. Pre-attack facilities are limited to safety zones and helispots.



**Management
Area #5
Lakes**

MANAGEMENT AREA 5
LAKES

58,903 ACRES

Description

The Lakes Country Management Area is located north and west of the Mirror Lake Highway, on the western end of the Uinta Mountains. It is the headwaters of both the Weber and Provo Rivers.

The scenery is characterized by high, rounded peaks towering over glacier-carved basin. In the basins are numerous alpine lakes some of which have been dammed to create reservoirs, meadows, and coniferous forest. The basins drain into cascading streams which flow through forested, U-shaped canyons. Many species of wildlife and fish inhabit this wild and scenic area.

The Lakes country is popular for dispersed recreation, including hiking, horse riding, hunting, fishing, cross country skiing, snowmobiling, and camping. Other uses of the area include the many reservoired lakes that provide irrigation water to downstream farms, permitted grazing of cattle, and one guide-outfitter operation.

There are no roads into the area, except for short spurs. Access is provided by trails. Elevations vary from 8,000 to 12,000 feet. Primary tree species are lodgepole pine, subalpine fir, Douglas-fir, and Engelmann spruce. Major named peaks are Bald Mountain, Reids Peak, Mount Watson, Notch Mountain, and Haystack Mountain.

Of the total 58,903 acres 31,889 are classified as unsuitable for the timber production. None of the area is available for timber harvesting.

Management Prescription

- | | |
|--------------------|--|
| Recreation: | Manage for semi-primitive recreation. Design and construct recreation facilities only for resource protection. Provide high quality dispersed recreational opportunities by constructing, reconstructing, and maintaining trails and trailheads. |
| Wildlife and Fish: | Improve the habitat for all species of wildlife and fish. Emphasize increasing the productivity of lake fisheries and big game habitat. |
| Range: | Keep livestock grazing at current use levels and within grazing capacities. Permit range improvements but design and construct so they do not detract from the semi-primitive character of the area. |
| Timber: | Harvest no commercial timber. This management area is withdrawn from timber production. The area is classed as "not available" and will not be included in calculating the Forest's allowable cut. |

Water and Soil:

Water quality will meet or exceed State standards. Protecting water quality and maintaining soil productivity will take precedence over other resources. Regulate resource activities to avoid soil loss which would cause unacceptable loss of productivity or lower water quality below acceptable standards. Protect recreation values during reservoir use and upon abandonment.

Minerals:

Oil and gas leases will be issued with stipulations to protect the semi-primitive character of the area. Mining activities will be allowed as permitted under mining laws.

Land:

Acquire access to allow public use, permittee activities, and administration. Protect National Forest Lands from trespass and illegal appropriation. Allow special uses of National Forest Land if the proponent demonstrates the Forest to be the best location and insures there will be no unacceptable impacts.

Protection:

Provide a level of fire protection, insect and disease control, and law enforcement that will preserve the area semiprimitive state. Protect and maintain the productive capability of forest and range lands.

Facilities:

Construct and maintain facilities to meet the administrative needs without detracting from the scenic qualities of the area.

Design and construct trails to accomodate non-motorized travel in the eastern portion and motorized travel in the western portion of the management area.

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	MIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
RECREATION ROS and VQO Management	A02	Manage for the Recreation Opportunity Spectrum (ROS) categories of Semi-primitive Motorized and Semi-primitive Non-motorized as mapped. Manage for the Visual Quality Objective (VQO) of Retention as mapped.	See Forest-wide Standards and Guidelines--ROS. See Forest-wide Standards and Guidelines--VQO. (S) Facilities such as tent frames, corrals, or structural improvements may be permitted but must be of rustic design, located in low use areas, not detract from the back-country character of the area, and meet visual quality objectives.
Cultural Resource Evaluation	A03	Complete an inventory of all areas identified as having a high or moderate potential for cultural resources by 1990. Begin the inventory by conducting a statistically sound sample for predictive modeling. Give priority to areas with the highest predicted chance of cultural resources.	(C) As new cultural resource sites are discovered, evaluate them for nomination to the National Register of Historic Places.
Cultural Resource Protection and Enhancement	A04	Protect cultural resources from land disturbing activities and public vandalism.	(S) Investigate sites where land disturbing projects are proposed for cultural resources prior to project initiation. (S) Resource developments impacting a known cultural resource site will provide for intensive evaluation prior to project execution. If needed, mitigation will be provided. (C) Once a survey has been performed for a project or activity the area need not be resurveyed for subsequent activities. (C) Where there is deterioration from natural processes or an actual or potential unauthorized disturbance of a cultural resource, implement measures to sign, fence, patrol, preserve, rehabilitate, or otherwise protect or restore the site.
Facility and Site Construction and Reconstruction	A05 A06	Provide trailheads necessary to facilitate use of the Lakes Area.	(S) Construct or reconstruct trailheads to development scale 3 at Crystal Lake and Holiday Park.
Facility and Site Management	A08	Continue to issue special use permits for dispersed activities for which a need exists during both winter and summer seasons. In administration of recreation special uses, give priority to protecting public health and safety and preventing resource damage. Insure that permittees meet at least minimum environmental and public service standards.	

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	MIN CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
RECREATION (Cont.)			
Use Administration	A08	Based on the carrying capacity of the area, implement limits on group size and numbers of pack animals if needed.	(S) Determine ecological and social carrying capacities by 1990.
		Permit no additional horse outfitter-guide use over the 1982 season (300 service days).	(G) Limit horse outfitter-guide operations to the one existing permittee. Upon termination of the permit, evaluate the need for this type of service. If a higher public need exists, do not reissue permit.
		Prevent damage to trails and vegetation by outfitter-guide livestock.	(S) Inspect areas used by outfitters before and after use to determine if soil, water, or vegetation have been damaged. (S) Restrict or eliminate outfitter use if such use is damaging soil, water, or vegetation. (S) Direct the current outfitter-guide operation away from areas used heavily by the general public.
		Establish limits of stay for camping in dispersed sites.	(G) Limit stay in dispersed areas to a maximum of 14 days. (G) Provide sanitation facilities at heavily used recreation areas such as Long, Island, and Wall lakes.
		Rehabilitate sites showing unacceptable deterioration due to overuse.	(G) Close the site to public use and rehabilitate.
		Provide opportunities for use of motorized vehicles where there will be no unacceptable impacts on Forest resources.	(S) In areas where it is anticipated that cross-country motorized travel will create unacceptable conflicts or cause damage, require motor vehicles to remain on travelways. (S) If there are conflicts between vehicles and other uses, identify how to resolve. (S) Close travel routes and areas to vehicles if there is unacceptable resource damage.
		Provide a variety of recreational opportunities in the Semi-primitive Motorized and Semi-primitive Non-motorized Recreation Opportunity Spectrum (ROS) categories.	(S) The following standards apply to both ROS areas: 1. Allow snowmobile use on an adequate snow base. 2. Permit motorized equipment for construction and maintenance of recreation facilities and trails. 3. Use of motorized equipment may be approved to maintain or construct water storage facilities.
		Manage area west of Big Elk Lake for semi-primitive non-motorized recreation as mapped.	(S) Allow two-wheel motorized vehicles only. Restrict vehicles to trails except to utilize undeveloped camp areas within 100 feet of trails.
		Manage area east of Big Elk Lake for semi-primitive non-motorized recreation as mapped.	(S) No motorized wheel vehicles.
Helicopter Skiing		Allow helicopter skiing by a qualified permittee.	(S) No motorized boats.

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	NIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
<u>RECREATION (Cont.)</u>			
Trail Construction and Reconstruction	A10 Construct and reconstruct trails as shown in the Forest Action Schedule. A11 Design new or relocated trails to take advantage of opportunities for interpreting natural features and viewing wildlife.		(S) Require resource development activities impacting system trails to restore or relocate affected trails.
Trail System Maintenance and Operation	A12 Maintain a 54 mile trail system to a standard adequate for administrators, permittees, and the public. Trail signing will be rustic in design.		(S) Maintain trails to Level 3. (S) Construct signs as follows: 1. Construct signs of wood with routed letters and leave unfinished. 2. Directional signs will not show mileage. 3. Mount signs on natural posts, snags, or rocks. 4. No more than three lines per sign. (S) Place signs as follows: 1. Directional signs at trailheads and system trail junctions only. 2. ORV signs at trailheads showing which trails are open and closed to vehicles. 3. Administrative signs as necessary for resource protection. 4. Interpretive signs on lakes and at other key locations. 5. No more than two signs per junction.
<u>WILDLIFE</u> Surveys, Planning, Prescriptions, Monitoring, Cooperation, Administration	C01 Protect and improve big game winter range and other critical habitats. Coordinate the development of range, oil and gas leasing, and other resources with the needs of wildlife.		(S) Where snowmobile use conflicts with winter big game habitat use, snowmobiles will be restricted from the range. (G) In riparian areas where livestock grazing is having a negative effect on the fishery, control or eliminate the grazing. (See Forest-wide Standards and Guidelines--Riparian.) (G) Habitat complexes comprised of moist habitats and adjacent security areas will be protected. (G) Design range improvements to meet the needs of wildlife as well as domestic livestock. (S) No explosive or seismic work will be permitted 10 days prior to and through big game hunting seasons. (G) Restrict oil and gas exploration and development on big game winter range from December through May.

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	MIN CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
Wildlife (Cont.)	C01	Provide habitat for sensitive species. Cooperate with the Utah Division of Wildlife Resources in managing game and non-game wildlife. Encourage reservoirs operated under special use permit be managed to provide for fish and recreation needs.	(C) Restrict oil and gas exploration and development in big game fawning and calving areas during May and June. (S) Permit no surface occupancy by oil and gas exploration and development in key big game habitats. (G) Require new special uses to mitigate any loss of wildlife habitat. (G) First priority is structural improvement work to improve habitat for Bonneville Cutthroat Trout. (C) Transplants of new species will be considered appropriate only where a vacant niche has been identified and conflicts with other resources are minimal. (G) Approve transplanting of mountain goats and big horn sheep. (G) Allow use of aircraft for inventorying, stocking, and transplanting wildlife. (G) Allow the DWR to treat lakes with chemicals to kill undesirable or over abundant fish populations. Restock treated lakes with desirable species. (G) Encourage reservoir operators to release flows adequate to maintain downstream fisheries. (G) Encourage permittees to retain conservation pools in reservoirs adequate for overwintering fish.
Habitat Improvement (Structural and Non-structural)	C02 C03	Maintain or improve lake and stream habitats. Improve the quantity and quality of terrestrial habitats.	(G) Maintain existing Biotic Condition Index (BCI) and Habitat Condition Index (HCI) of all streams except where they are below the minimum of the standards of BCI of 75 and HCI of 42. The BCI is a measure of the existing macroinvertebrate habitat compared to its potential. The HCI is a measure of the existing condition of the physical characteristics of a stream compared to a maximum potential. Present Forest-wide averages are estimated at 78 for BCI and 45 percent for HCI. (S) Develop an average of 0 structures and 2 acres annually between 1985 and 1990, and an average of 9.6 structures and 2 acres annually between 1990 and 2030. (S) Maintain the circulator at Little Elk Lake. (S) Develop an average of 0.6 structures annually between 1985 and 1990, and an average of .2 structures and 28.75 acres annually between 1990 and 2030.

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	NIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
<u>RANGE</u>			
Resource Planning and Inventory	D01	Place all allotments under quality management ^{1/}	(S) Manage according to the Forest Range Environmental Study (FRES) level proposed for each allotment (see Appendix).
	D02	by 1988 by completing range environmental studies, analyzing present management, and updating or preparing allotment plans.	(G) Allotments with unsatisfactory range conditions will be first priority for management attention needs.
		Close the vacant Dry Fork Allotment.	(G) Update Lakes area range analysis as needed.
Improvements	D03	Obtain optimum use of all suitable grazing	(S) Maintain natural vegetative composition of rangelands.
	D04	lands consistent with visual quality and	(G) Construct structural range improvements to adequately distribute livestock.
	D05	recreational objectives.	(G) Range improvements will be visually pleasing and/or rustic in design, located and constructed to allow public travel, and will blend with or be screened by the landscape.
	D06		(G) Retreatment and reconstruction of existing range improvements needed to sustain the current AUMs will be the highest priority for funds on allotments with approved management plans.
			(S) New range improvements (structural and non-structural) will be accomplished on allotments with approved management plans. Improving the condition of suitable ranges now in less than satisfactory condition is first priority. Second priority is to maintain suitable range presently in satisfactory condition.
Administration	D07	Administer grazing permits and allotment management plans in a timely and efficient manner to insure high quality range management and coordination with other resource needs.	(S) Incorporate standards and guidelines for proper riparian area management into new allotment management plans. See Forest-wide Standards and Guidelines--Riparian.
		Bring range into satisfactory condition using cost-efficient methods.	(S) Include utilization standards developed by an interdisciplinary team in each allotment management plan.

^{1/} Quality Management - Quality management means a level of management that will improve the condition of all range that is now in less than satisfactory ecological condition and maintain range in satisfactory condition.

^{2/} Satisfactory = $\frac{\text{vegetation } 50}{\text{soil } 50}$: This is a numerical rating of suitable range vegetation and soil, both in fair ecological condition with a stable or upward trend.

C. Proposed and Probable Management Practices for Management Areas

PRACTICES RANGE (Cont.)	MIH CODE D07	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
		Protect sensitive plant species.	(C) Give sensitive species special management to prevent them from being classified as threatened or endangered.
			(C) Protect habitats of sensitive species from adverse modification or destruction.
		Utilize grazing systems which provide for deferment or rest whenever possible.	(S) Allotment management plans and annual operating plans will provide grazing systems, utilization standards, and soil disturbance levels which will maintain sensitive plant species.
		Reduce recreation - livestock conflicts.	(G) Permit only temporary salt and bed grounds. Locate away from heavily used recreation areas and streams, springs, and lakes to prevent contaminating water.
			(G) Improvements will be maintained annually by permittees to standards adequate for public safety, access, control, and proper distribution of livestock. Maintenance will be completed before livestock are allowed on the allotment. Unneeded improvements will be removed.
		Coordinate predator control with the U.S. Fish and Wildlife Service and State agencies.	(S) Trapping and shooting of offending animals will be the only means of predator control. Poisoning, or shooting predators from aircraft <u>will not</u> be allowed.
			(S) Schedule no commercial timber harvest.
			(S) Slash created by trail and trailhead construction will be disposed of in a manner consistent with the Visual Quality Objective of Retention.
<u>TIMBER</u> Timber Harvesting, Regeneration, Intermediate Harvest and Other Changes	E01 E02	This management area is administratively reserved and is not available for timber harvest. The area is classed as unsuitable.	
<u>WATERSHED</u> Improvement	F03	Water yield increasing projects will meet State and Federal water quality standards.	
		Allow cloud seeding only if it will not generate runoff damaging to stream channel stability.	
		Comply with State water quality standards during land management activities.	(G) Secure minimum instream flows for perennial streams below new dams or diversions.
		Complete inventoried watershed restoration projects by the year 2000.	(S) Complete 4 acres of watershed restoration by year 2000.

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LAKES

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	MIN CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
<u>WATERSHED</u> (Cont.)	F03	Design and implement practices that will reestablish acceptable soil, hydrologic, and vegetative conditions sufficient to secure and maintain favorable water flows.	
		Encourage reservoir operators to regulate discharges to prevent downstream flooding and stream channel damage.	
Administration/ Management	F04	Identify and adopt soil and water conservation measures applicable to the Forest and monitor effects on soil erosion and water quality in accordance with P.L. 92-500.	(G) Allow no resource development activities where damage cannot be mitigated to meet Federal, State, and local water quality standards.
		Coordinate with the Bureau of Reclamation on proposed water projects if an environmental analysis shows that the Forest is the best location and if unacceptable environmental impacts can be avoided or mitigated.	(S) Where soil has been severely disturbed by management activity and the reestablishment of vegetation is needed to minimize erosion, the soil will be prepared, fertilized, and seeded.
		Give priority to problem areas in high value watersheds and where accelerated erosion exists or is rapidly increasing.	(S) Avoid soil disturbing activities on steep, erosive, or unstable slopes, and in wetlands, floodplains, and meadows.
		Manage riparian areas according to the Forest-wide Standards and Guidelines.	
		Protect or improve riparian dependent resources during management activities within or affecting riparian areas.	
Water Rights and Use	F07	Apply for State water rights to meet Forest needs when not covered by reservation doctrines.	
<u>MINERALS</u>			
General Technical	G01	Grant no common variety mineral material permits.	
Analysis of Proposed Activities	G03	Review mineral cases and make decisions within one year.	
	G04		
	G05	An environmental assessment will be developed by the Bureau of Land Management (BLM) for each application for permit to drill (APD). The Forest Service will develop requirements and constraints necessary to protect the surface resource. These requirements and constraints will be made supplemental stipulations to the conditions of the approval for notice to drill.	(S) Evaluate locatable mineral claim operations on a case-by-case basis and document decisions through the environmental analysis process.

C. Proposed and Probable Management Practices for Management Areas

MINERALS (Cont.)	MIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
	G03		
	G04	An environmental assessment will be developed	(S) Access and development of private minerals will receive interdisciplinary analysis. Appropriate mitigation measures will be incorporated into the special use permits.
	G05	by the Forest Service where private minerals lie under National Forest lands. The requirements and constraints developed from the environmental assessment will be made part of the special use permit.	(S) Issue leases for "no surface occupancy" only.
			(G) Require seismic exploration be done in an environmentally sound manner and protect the semi-primitive environment.
	G06	Administer active mining claims under current laws and regulations.	(G) Respond to proposed operating plans within 30 days of receipt.
			(G) Request validity examinations under the following conditions to determine if claims are being properly held and occupied:
			1. Land upon which claim is located was withdrawn from minerals entry prior to location. Have BLM declare null and void.
			2. Claim is illegally occupied or used (trespass).
			3. Claim occupies land needed for administrative or public purposes.
			4. Claim assessment work is causing unacceptable surface disturbance with little prospect of a valid discovery. (Evaluate use - 36 CFR 228)
			(S) Issue no leases for other minerals.
			(S) Evaluate access to and development of private minerals with an interdisciplinary analysis. Incorporate appropriate mitigation measures into the special use permit.
			(G) Require use of state-of-the-art technology to rehabilitate sites disturbed during mineral exploration and extraction. This technology will be used with consideration for the overall economics of the operation.
			(S) Issue oil and gas leases with stipulations to protect the semi-primitive environment.
			(G) Restrict disruptive activities during periods of concentrated public use such as holidays and hunting seasons.
			(S) Determine proper safety requirements for seismic operations or other surface disturbing activities.
			(G) Inspect mineral activities for compliance with approved operating plans and conditions of the permit.
			(G) Require warning signs for public safety.
Processing and Administrating Mineral Activities	G03	Allow mineral exploration, but protect	
	G04	scenic, recreation, water, primitive	
	G05	values, and other resources.	
	G06		
	G08		

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LAKES

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	MIN CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
<u>MINERALS</u> (Cont.)	G03 G04 G05 G06 G08		(G) Require mineral development activities to comply with visual quality objectives. (S) Do not locate landing zones or other support services in areas of concentrated recreational use.
<u>LANDS</u> Special Use Permits (Existing) (Non-Recreation)	J01	Administer permits to protect health and safety and prevent resource damage. Combine or eliminate permits as opportunities become available.	(S) Process applications for amendments and transfers of existing permits within 3 months. (S) Inspect all permits according to the Forest Service established schedule. (G) Use of motorized wheel equipment may be approved to maintain or construct water storage improvements. (G) Give priority to permits needed to protect public health and safety, and provide community service. (S) The optimum level for stabilizing reservoirs for fishery and recreation purposes is as follows: 1. Retain the dam. Install a drop outlet at the desired water level: Fire Lake Duck Lake Marjorie Lake Long Lake - needs emergency outlet gate 2. Breach the Dam. Install channel at desired water level: Crystal Lake Pot Lake Abes Lake - stabilize 2 feet above drawdown level Kamas Lake - stabilize 1 foot above drawdown at natural lake level 3. Retain the dam. (The dam may not be adequate to maintain the desired water level): Weir Lake 4. Retain the dam with the existing spillway at the desired water level: Island Lake Notch Lake - final water level 10 feet above drawdown Sand Lake - final water level 3 feet above drawdown Anchor Lake - final water level 5 feet above drawdown Fish Lake - final water level 10 feet above drawdown Ibantik Lake - final water level 5 feet above drawdown Meadow Lake - final water level 5 feet above drawdown

High Mountain Reservoirs - If special use permittees plan to end their use of high mountain reservoirs, require that mitigation measures be completed prior to termination of the permit. Where cost effective, require that the dam be stabilized to retain the water level for recreation and fishery use.

LAKES

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	MIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
<u>LANDS (Cont.)</u>			
Special Use	J01	Issue new permits only for uses that cannot be	(S) Grant new permits only when:
Permits (New,	J02	met outside the management area. Stipulate that	1. Use is appropriate for National Forest land.
Non-Recreation	A08	the semi-primitive environment must be protected.	2. National Forest resources and programs will not be damaged or impaired.
and Recreation)			3. Private land is not available to accomodate the use.
			4. National Forest land is the most logical location for the use.
			5. Private land utilization would be significantly reduced without a permit, such as when private land use is contingent upon the permit.
			6. Semi-primitive values can be maintained.
			7. The use or area is not needed by the general public. Public needs are first priority.
			(G) Process new special use requests and make decisions within one year.
	J01	Water Projects - Dams and Diversions - Require the proponent to demonstrate through the environmental analysis process that the best location is on the National Forest. If so, make National Forest land available for use, subject to standards.	(S) Requirements for new water projects:
			1. Favorable benefit/cost ratio.
			2. Replacement, enhancement, or mitigation of impacted resources.
			3. Minimum flow requirements to protect downstream fisheries.
			4. Conservation pool for fisheries with the exception found in FSM 2729.12.
			5. Permittee construction or financing of construction of recreation facilities necessary for users of the new water body.
			6. Utility corridors will not be permitted.
			7. Cost reimbursement may be required for major Forest Service involvement in application, evaluation, and/or construction phases.
			8. Evaluate new applications with an interdisciplinary field analysis on a case-by-case basis.
			9. Require all activities to comply with visual quality objectives.
Property	J06	Locate and mark National Forest ownership	(S) Place unauthorized uses under permit only when it can be demonstrated the public interest is not compromised, use is appropriate for National Forest land, and trespass was unintentional.
Boundaries	J07	lines. Develop and implement a monitoring	
	J10	system to identify occupancy trespass by 1985.	(G) Evaluate and take appropriate action on trespasses within one year.

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LAKES

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	NIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES																																																	
<u>LANDS (Cont.)</u>																																																				
Land Exchange, Acquisition, or Transfer	J11	Maintain the present landownership.																																																		
Rights-of-way Acquisition	J18	Provide public access.	(S) Obtain trail access into the Lakes Area across private land in Holiday Park (Dry Fork, Main Fork, and Middle Fork of the Weber River) by 1990.																																																	
Road Operation	L19	Allow no new road construction except for trailhead facilities located on the perimeter of the area. Evaluate existing roads, and determine appropriate road densities needed for public use and resource protection and management.	(S) Evaluate roads as follows: <table><tr><th colspan="2">Road Management Unit</th><th colspan="2">Range of Road Density (Mi./Sq.Mi.)</th><th colspan="3">Disposition of Forest Roads (Miles)</th></tr><tr><th>No.</th><th>Name</th><th>High*</th><th>Low</th><th>Open</th><th>To Be Eval-uated</th><th>To Be Restrict-ed</th></tr><tr><td>333</td><td>Smith Morehouse</td><td>0.6</td><td>0.4</td><td>15.7</td><td>7.1</td><td>0</td></tr><tr><td>334</td><td>Hidden Lake</td><td>1.5</td><td>0.5</td><td>22.8</td><td>51.2</td><td>0</td></tr><tr><td>335</td><td>Provo River</td><td>3.7</td><td>1.6</td><td>67.1</td><td>85.7</td><td>0</td></tr><tr><td>336</td><td>Weber River</td><td>0.3</td><td>0.1</td><td>6.1</td><td>6.2</td><td>0</td></tr><tr><td>437</td><td>Whitney</td><td>1.6</td><td>1.2</td><td>44.1</td><td>12.3</td><td>0</td></tr></table> * High Road Density Level Equals Existing Road Density.	Road Management Unit		Range of Road Density (Mi./Sq.Mi.)		Disposition of Forest Roads (Miles)			No.	Name	High*	Low	Open	To Be Eval-uated	To Be Restrict-ed	333	Smith Morehouse	0.6	0.4	15.7	7.1	0	334	Hidden Lake	1.5	0.5	22.8	51.2	0	335	Provo River	3.7	1.6	67.1	85.7	0	336	Weber River	0.3	0.1	6.1	6.2	0	437	Whitney	1.6	1.2	44.1	12.3	0
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437	Whitney	1.6	1.2	44.1	12.3	0																																														
<u>PROTECTION</u>																																																				
Fire Prevention	P02	Develop a fire prevention program directed toward heavily used dispersed recreation sites.	(G) Concentrate prevention efforts on elimination of unattended campfires. (G) Concentrate efforts in areas with highest recreation, scenic, and wildlife values. (S) Continue to prohibit the use of fireworks on the Forest. (S) Require spark arrestors on chainsaws, motorbikes, and industrial equipment during the critical fire season: condition classes 3, 4, and 5. (G) Investigate person-caused fires when there is reasonable expectation of finding the person responsible or when resource damage and suppression costs are high. (G) Implement fire restrictions or closures during critical fire conditions when there is a high probability of person-caused ignitions.																																																	

IV-78b

LAKES

C. Proposed and Probable Management Practices for Management Areas

PRACTICES	MIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
<u>PROTECTION (Cont.)</u>			
Fire Suppression	P04	Provide fire suppression capabilities adequate	(S) Include fire suppression stipulations in permits and use
	P05	to preserve backcountry values.	authorizations.
	P06		
	P07	Rehabilitate fire sites and protect the	(S) Base suppression actions primarily on reducing suppression
	P08	resources from additional deterioration.	costs.
	P09	Plan to suppress wildfires at less than 100 acres	(S) Dozers will not be used for fire suppression.
		except in condition classes 4 and 5).	(S) Prompt and aggressive suppression actions will be taken to
			to contain, confine, or control all fires.
			(S) If the wildfire escapes initial attack the suppression
			decision will be based on an escaped fire situation analysis.
			(S) An interdisciplinary analysis shall be made following all
			project fires to determine if site rehabilitation is needed.
			(S) All damage from fire suppression activities will be repaired
			or stabilized by the fire fighting force as part of the
			suppression action before personnel and equipment are taken
			off the fire lines.
Forest Pest	P34	Pest suppression and prevention will be	
Management	P35	integrated into other resource goals and	
	P39	objectives.	
<u>PUBLIC INFORMATION</u>	A07	Increase service to the public.	(G) Use volunteers as backcountry rangers, trailhead hosts, and in
			the office to supplement the Forest information program and
			improve visitor contacts.
			(G) Maintain full contact with all government and special interest
			groups and general public.

Use public information to resolve management problems.

EXAMPLES OF ROS(SEMI PRIMITIVE MOTORIZED) STANDARDS AND GUIDELINES

MANAGEMENT AREA DIRECTION

027 MIDDLE YUBA

6,323 GROSS ACRES 3,389 NATIONAL FOREST SYSTEM ACRES

I. DESCRIPTION

This management area (MA) was identified as a RARE I area but did not meet the RARE II criteria. It encompasses portions of the Downieville, and Sierraville Ranger Districts, extending from German Bar east to just west of Milton Reservoir.

The lower canyon slopes are very steep. Vegetation within the management area is mixed conifer and large open brush fields. There are 37 acres of wetlands. There are 1,352 acres of sensitive soils, including 639 acres on slopes steeper than 70 percent. There are _____ acres of unsuitable timber land.

Selected wildlife indicator species are mule deer, bald eagle, goshawk, bear, mountain quail, spotted owl, and brown and rainbow trout. Some of the highest quality fishing on the TNF is in this area.

A portion of the American Hill Cattle Allotment is within this MA.

Over half the area is in private ownership. Much of the private and some of the National Forest land on the upper slopes is accessed and has been logged. Several cost-share road agreements with the Southern Pacific Land Company have been executed.

The area has a history of considerable mining activity. Most current mining is suction dredging along the Yuba River Gorge.

II. SUMMARY OF ISSUES, CONCERNS, AND OPPORTUNITIES

Some users would prefer to limit further roading to maintain the roadless character, solitude, and the quality fishing experience in the Yuba River Gorge.

Intensive management on sensitive soils could cause accelerated soil erosion.

III. RESOURCE MANAGEMENT EMPHASIS

The major resource emphasis is regulated intensive even-age timber management. Emphasize range management on the transitory range opportunities created by timber harvesting.

Emphasize wildlife and watershed values when managing sensitive soils, in streamside management zones, spotted owl management areas, and where threatened and endangered species' habitats occur.

Practice unregulated timber management on lands unsuited for timber production such as existing recreation development sites, special-use permit areas, etc.

Manage the Middle Yuba Gorge for dispersed recreation, with an emphasis to maintain the fishery quality.

Mining activity must be limited to that which is consistent with maintaining the remote character of the Canyon Gorge.

The desired future condition for lands intensively managed for timber production is plantations through small sawlog-size stands of the mixed conifer type. Manage these stands on a short rotation schedule of 50 to 120 years. The desired future condition in red fir, lodgepole pine, and high elevation (generally above 5,500 feet), mixed conifer stands where true firs are the major species is even-aged plantations through large sawtimber size trees. Rotation ages for these stands is 150+ years. The remaining land within the management area will be similar to the present condition.

IV. MANAGEMENT AREA STANDARDS & GUIDELINES 1/

A. Recreation Opportunity Spectrum - Semi-Primitive Motorized

B. Visual Quality Objective - Partial Retention

C. Transportation Management Policy - Forest-wide Standards and Guidelines apply.

D. Off-Road Vehicle Restrictions - Restricted to Designated Routes only summer. Open to over-the-snow travel.

E. Forest-wide Standards & Guidelines - All Apply

V. MANAGEMENT AREA PRESCRIPTION 2/

AD1b Nordic Cross-Country Skiing

AD2a Open ORV

AF1b Recreation Management (Private & Other Public Sector)

CF1a Stream Fisheries - Nonstructural Improvement and Maintenance

CF1b Stream Fisheries - Structural Improvement and Maintenance

CH1a Direct Habitat Improvement

CH2a Early Succession Vegetation Management

CH3a Midsuccession Vegetation Management

CH4a Old Growth Vegetation Management

CH5a Hardwood Management

CR1a Riparian and Meadow Vegetation Management

CS1a Structural Habitat Improvement and Maintenance

1/ Refer to Resource Support Element Maps and Forest-wide Standards and Guidelines.

2/ Refer to complete Descriptions of Management Practices in Chapter V.

DR1b Range Management - Permanent Range Type (Extensive Management)
 DR2b Range Management - Transitory Range Type(Extensive Management)
 DR3a Range Improvement - Nonstructural (Permanent and Transitory)
 DR3b Range Improvement - Structural (Permanent and Transitory)

EC1c Clearcut Cutting Method
 EC2s Seed Step Cutting Method
 EC3o Overstory Removal Cutting Method
 EC4i Intermediate Cutting - Existing Stands
 EC6b Commercial Thinning - 20-Year Cutting Cycle
 EC7w Special Cutting - Streamside Management Zone
 EC7s Special Cutting - Sensitive Soil Areas
 ER1a Artificial Stand Reestablishment
 ER3n Natural Stand Reestablishment
 ET1r Release and Weeding
 ET3p Precommercial Thinning

GL1a Minerals Management - Locatables
 GL1b Minerals Management - Locatable Withdrawals
 GL2a Minerals Management - Leasables
 GL2b Minerals Management - Leasable Withdrawals
 GS3a Minerals Management - Saleables

JA1b Land Adjustments - Limited

K11a Soils Resource Improvement

LD1a Timber Access Road Development - Road Construction/Reconstruction
 LD1b Multiresource Road Access Development - Road Construction/
 Reconstruction

LD2a Trail Construction/Reconstruction - Foot Traffic Only
 LD2b Trail Construction/Reconstruction - Foot & Equestrian Traffic
 Only

LD2c Trail Construction/Reconstruction - Foot, Equestrian and
 Trailbike

LD2d Trail Construction/Reconstruction - Special Uses

LM1a Transportation Management, Roads - Open

LM1b Transportation Management, Roads - Regulated Use

LM1c Transportation Management, Roads - Closed

LM1d Transportation Management, Roads - Obliterated

LM2a Transportation Management, Trails - Open

LM2b Transportation Management, Trails - Restricted Use

PC4a Fire Protection - Continuous Fuels

VI. PROPOSED RESOLUTION OF ISSUES AND CONCERNS

The accessible upper slopes within the area are suitable for timber harvests.

The Canyon Gorge itself will remain largely unaccessed and will be managed for dispersed recreation and maintenance of the quality fishery experience.

Sensitive soil areas will receive special treatment or less intensive management to prevent accelerated soil erosion.

VII. SPECIFIC MONITORING AND EVALUATION

None.

MANAGEMENT AREA 4 (36,410 acres)

Description

This management area contains six tracts of rugged high-elevation land on the Chattahoochee National Forest. They are:

Blood Mountain - 1,758 acres (03, 04)
Chattahoochee River - 5,404 acres (04, 06)
Overflow - 3,951 acres (05)
Rich Mountain - 15,826 acres (02)
Rabun Bald - 1,050 acres (05)
Patterson Gap - 6,000 acres (05)

All acres are classified as "Not Appropriate for Timber Production - Other Objectives Cannot be Met."

Management Goals

Provide an area of old growth timber where recreationists can experience a degree of solitude not generally found in the general Forest area. The appearance of an essentially natural environment would prevail.

Management Direction

Management area 4 provides semi-primitive recreation opportunities. Consequently, the area is to be maintained as a low intensity management area where timber cutting activities are permitted only to achieve recreational or wildlife objectives. Timber cutting may also be used for diseased or damaged trees. This area provides a variety of hunting opportunities--primarily deer, turkey, squirrel, grouse, and bear. Quality rather than quantity of hunting will be the goal, however. The area will be accessed primarily by foot or horse trails, except where roads are needed for administrative purposes, resource treatments, or to disperse recreation use.

Management Area 4 - (cont.)

Recreation

Recreation Management

1. Semi-primitive motorized and non-motorized recreation opportunities will be featured in this area.
2. Developed recreation use activities will be limited to rustic camping and picnicking facilities needed to disperse use. Appropriate sanitary facilities will be provided.
3. ORV use is prohibited.

Trails Management

1. A highly developed hiking trails network will be provided with accompanying trail head parking facilities and area trail maps.
2. Sign trails thoroughly. Feature 1-day loop trails and short interpretive trails.
3. As the need develops, consider constructing and designating horse trails.

Visual Quality

1. These lands have a VQO of retention.

Wildlife
and Fish

Wildlife Habitat

1. Favor late successional management indicator species such as bear, squirrel, turkey, pileated woodpecker, dusky salamander, and yellow lady slipper.
2. No put-and-take trout stocking allowed. Periodic stocking to maintain breeding stock will be permitted.
3. Wildlife habitat improvements may be created and maintained.
4. Prescribed burning is permitted for wildlife purposes.
5. Timber cutting for wildlife will be allowed to provide at least 5 percent of the area in the 0 to 10 year age class.

Management Area 4 - (cont.)

Timber

Timber Harvest

1. Timber cutting will be done to enhance recreation, wildlife and scenic values. Some cutting of timber may occur in the construction of trails and for safety of users. Timber volumes removed will be reported as non-chargeable timber yield.
2. Maximum size of openings is 5-8 acres. Group selection is the preferred method of timber harvest.
3. No conversion of hardwood to pine.
4. No pesticide use, except where needed for insect and disease control.
5. Fuelwood supply reduced in this management area since fuelwood gathering only permitted within areas cutover for timber.

Water

Watershed Management

1. See Forest-wide Standards and Guidelines.

Minerals and Energy

Exploration and Development

1. New mineral and energy leases will require special stipulations which may preclude surface occupancy.
2. Operating plans relevant to mineral exploration or development will provide the maximum degree of surface protection.

Protection

All

1. See Forest-wide Standards and Guidelines.

Lands

Special Use Management

1. Special uses will be allowed to the extent that they are compatible with the objective of the area.

Soils

Improvements and Maintenance

1. See Forest-wide Standards and Guidelines.

Management Area 4 - (cont.)

Facilities

Roads and Structures

1. Existing system roads will be closed unless needed to disperse recreational use.
2. No new system roads will be built unless specifically needed to disperse recreation users. Any additional roads needed for logging will be temporary.

EXAMPLES OF ROS (ROADED NATURAL) STANDARDS AND GUIDELINES

II. ROADED NATURAL RECREATION

A. Objective

The purpose of this prescription is to provide for a naturally appearing area where there are moderate evidences of the sights and sounds of humans. Modifications are evident and may appear moderate to observers in the area, but from sensitive travel routes alterations would be unnoticed or visually subordinate. It emphasizes recreational opportunities associated with developed road systems, as well as compatible fish and wildlife management which supports the recreational use of wildlife harvest species (hunting and fishing). Timber harvesting is modified in recognition of recreation values and soil and water improvements.

B. Management Practices

Emphasized/Compatible:

- Semi-Primitive Motorized Recreation
- Roaded Natural Recreation
- Wildlife Habitat Management - Harvest Species
- Warmwater Fishery Habitat Management (Reservoirs)
- Reduced Yield Even-aged Timber Management
- Soil and Water Improvement
- Trail Construction and Reconstruction
- Fuels Reduction and Management
- Vegetation Treatment by Burning
- Coldwater Fishery Habitat Management (Rivers and Streams)

Compatible:

- Cultural Resource Development - Native American Sacred Places
- Cultural Resource Development - Archaeological and Historical Sites
- Wildlife Habitat Management - Existing T&E Animals
- Wildlife Habitat Management - Sensitive Animals
- Habitat Management - Sensitive Plants
- Uneven-Aged Timber Management and Salvage
- Livestock Grazing
- Streamside and Wetland Management
- Road Construction and Reconstruction
- Fire Management
- Integrated Pest Management
- Most Mining Operations

C. Description of Areas Where Prescription II. (Roaded Natural Recreation) Will Be Applied

These areas are one-half mile or less from railroads, roads and trails open to motorized vehicles, and key travel corridors. Resource activities and modifications of the natural environment are evident, but harmonize with the natural setting. Moderate to high frequency user contact occurs on roads, and low to moderate frequency user contact occurs on trails and away from roads. On-site user controls are

noticeable, but harmonize with the natural environment. Typical activities include, but are not limited to: hiking, cross-country skiing, downhill skiing, power boating, snowmobiling, touring, resort-supported recreation, trailer camping, hunting, and fishing.

This prescription may include designated wildlife management areas for black bear, deer, band-tailed pigeon, and gray squirrel. Black bear and deer habitat management will generally receive a higher level of emphasis in this prescription than in other areas of the Forests.

This prescription also applies to designated Recreation segments of Wild and Scenic Rivers. Areas adjacent to these rivers or sections of rivers that are readily accessible by road or railroad, and may have undergone some development in the past are also included. It is also the primary prescription for the Shasta and Trinity Units of the National Recreation Area (NRA).

D. Associated Standards and Guidelines

Recreation - A

1. Provide information and interpretation services to direct visitors to their recreation destinations and to acquaint them with the significant historical and cultural features, plants, wildlife, and current management programs located on the Forests.
2. Designate highly suitable trails and areas for Off-Road Vehicle (ORV) use. Such use should be located and scheduled to minimize conflicts with other recreation use and deer winter range. Refer to the ORV Management Plan Map for specific use areas.
3. Plan, design, and implement management activities to be compatible with Roaded Natural Recreation Opportunity Spectrum (ROS) guidelines.
4. Manage to meet inventoried Visual Quality Objectives (VQOs) in all areas.
5. Manage inventoried VQOs as adopted VQOs in foreground and middleground areas seen from developed recreation sites. Refer to Appendix F for a list of developed recreation sites.
6. Locate cross-country skiing developments where terrain and snow conditions are highly suitable.
7. Through hazardous tree evaluation and control, provide an acceptable level of public safety with the least damage and impact to the environment.

Wildlife and Fish - C

General:

8. Habitats for black bear, black-tailed and mule deer, gray squirrel, band-tailed pigeon, and mountain quail should be mapped, recorded, and managed using the habitat capability models shown in Appendix G of this Plan.
9. Identify the three following habitat capability classes, each with a discrete set of management directions for each of the Harvest Management Indicator Species.
 - a. High capability habitats,
 - b. Moderate capability habitats,
 - c. Low capability habitats,

Specific areas, usually highly capable habitats, may be designated for special management needs of black bear and deer.

10. The following priorities shall be applied when more than one highly capable habitat occurs on a given piece of land: 1) black bear, 2) deer, 3), band-tailed pigeons, mountain quail, and gray squirrels (shared equally).
11. Use cost-effective or least expensive habitat improvement projects as a means of raising habitat capabilities from low to moderate and/or high capabilities within the various Management Indicator Species habitats.
12. Where possible, maintain 300-500 cubic feet of down woody material per acre, measuring greater than 24 inches in diameter, and equal to or greater than 10 feet in length.

Moderately and Highly Capable Black Bear Habitats:

13. Emphasize maintenance and avoid degradation of components and attributes of black bear habitats during planning and implementation of management activities.
14. Maintain a minimum of 10 square feet of hardwood basal area per acre. Where less than 10 square feet of basal area per acre exists naturally, maintain the currently existing hardwood basal area and manage where possible, to make up the deficit over time. These trees may be retained in groups or as singles, in riparian areas, on steep slopes, and in other ecosystems best suited to meet wildlife habitat needs.

Moderately and Highly Capable Deer Habitats:

15. Emphasize maintenance and avoid degradation of components and attributes which constitute moderately capable deer habitats during planning and implementation of management activities.
16. Maintain a minimum of 10 square feet of hardwood basal area per acre. Where less than 10 square feet of basal area per acre exists naturally, maintain the currently existing hardwood basal area, and manage towards making up the deficit over time. The above trees may be retained in groups or as singles, in riparian areas, on steep slopes, and in other ecosystems best suited to meet deer habitat management needs.

Moderately and Highly Capable Gray Squirrel Habitat:

17. Maintain a minimum of 15 square feet of basal area per acre of hardwood forest in mature to overmature condition (i.e., greater than 80 years old). Species should include madrone, white and black oaks.
18. Where possible, maintain 250-300 cubic feet of down woody material per acre, measuring from 14 to 24 inches in diameter, and equal to or greater than 10 feet in length.

Moderately and Highly Capable Mountain Quail Habitats:

19. Maintain 20 percent of the habitat in units containing a mix of hardwoods and/or brushfields and open grass forb areas within one-half mile of available water.

Moderately and Highly Capable Band-tailed Pigeon Habitats:

20. Where possible, maintain 20 percent of the habitat in units containing a 50:50 mix of hardwood and conifer trees within one-half mile of available water.

Range - D

21. Proper utilization standards and ratios will be established between livestock and wildlife. On key and/or highly capable management indicator species areas, priority will go to these species but livestock grazing may occur. On all other lands priorities will be established on a site-by-site basis as appropriate, e.g., McCloud Flats has several areas of bitterbrush which have been identified for special management for both livestock and wildlife.

Additional management direction for pine-bitterbrush ranges is listed as supplemental management direction for Management Areas 1, 2, 4, 9, and 23.

Timber - E

22. Manage timber to be compatible with recreation opportunities and wildlife habitat by maintaining a variety of species and size classes.
23. Regulate all timber yields except within the Shasta Unit of the National Recreation Area (NRA), where yields will be unregulated.
24. Timber yields will be less than the biological potential due primarily to longer rotation lengths, which will average about 120-140 years.
25. Reduced yield even-age management, with clearcutting, will be the most commonly used system, except within the Shasta Unit of the NRA, where salvage cutting will be the most commonly used method.
26. Disperse harvest units, which will normally average 5-20 acres in size, through the area.
27. Use established site preparation and vegetation management practices when appropriate to achieve recreation and timber management goals.

Minerals - G

28. Significant surface disturbance by locatable mineral related activities will be mitigated based on an environmental assessment and stipulations to the authorized plan of operations. For leasable and salable minerals, significant resource impacts will be mitigated based on an environmental assessment by means of stipulations to the lease or sale document.

Facilities - L

29. Roads and trails should be located, designed, constructed and maintained to be compatible with Roaded Natural Recreation Opportunity Spectrum (ROS) recreational activities, such as hiking, auto touring, Off-road Vehicle (ORV) touring, cross-country skiing, snowmobiling, and horseback riding.
30. Provide roads and trails which emphasize or take advantage of natural features, unusual environments, scenic views, and unique features.

Protection - P

31. Pre-attack facilities should be located in areas of minimum conflict with the prescribed recreation activities.
32. Through hazardous tree evaluation and control provide an acceptable level of public safety with the least damage and impact to the environment.

MANAGEMENT AREA 2B
ROADED NATURAL RECREATION

Characteristics

This management area consists of travel corridors along major traveled routes across the Forest or to specific recreational attractions on the Forest.

Desired Future Condition

This area is characterized by a modified natural environment. Resource modification and utilization practices usually harmonize with the natural environment. In some of the more modified zones within this area utilization practices enhance recreation activities, maintain vegetative cover, and soil. The opportunity to have a high degree of interaction with the natural environment and to face challenges associated with more primitive forms of recreation will not be important. Both motorized and non-motorized forms of recreation are possible in this area. The natural features of the landscape will dominate.

Size

This management area contains 131,700 acres. One hundred twenty four thousand two hundred seventy eight acres are unsuitable for timber harvest.

Management Area Direction

Management emphasis is for rural and roaded-natural recreation opportunities. Motorized and nonmotorized recreation activities such as driving for pleasure, viewing scenery, picnicing, fishing, snowmobiling, and cross-country skiing are possible. Conventional use of highway-type vehicles is provided for in design and construction of facilities. Motorized travel may be prohibited or restricted to designated routes, to protect physical and biological resources.

Visual resources are managed so that management activities maintain or improve the quality of recreation opportunities. Management activities are not evident, remain visually subordinate, or may be dominant, but harmonize and blend with the natural setting. Landscape rehabilitation is used to restore landscapes to a desirable visual quality. Enhancement aimed at increasing positive elements of the landscape to improve visual variety is also used.

The harvest method by Forest cover type is clearcutting in aspen, shelterwood in ponderosa pine, mixed conifer and Englemann spruce-subalpine fir.

PRACTICES/MIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES																																			
MANAGEMENT PRESCRIPTION 2B - EMPHASIZE RURAL AND ROADED NATURAL RECREATIONAL OPPORTUNITIES																																					
Visual Resource Management (A04)	1. Design and implement management activities to provide a visually appealing landscape. Enhance or provide more viewing opportunities and increase vegetation diversity in selected areas.	A. Do not go below an adopted Visual Quality Objective (VQO) of partial retention. B. Maintain or establish a minimum of 30 percent of the forested area within a unit to provide horizontal diversity.																																			
Dispersed Recreation Management (A14 and 15)	1. Provide roaded natural or rural recreation opportunities along Forest arterial, collector and local roads which are open to public motorized travel. Manage recreation use to provide moderate to high incidence of contact with other groups and individuals. Where arterial, collector or local roads or areas are closed to public motorized recreation travel, provide for dispersed non-motorized recreation with a moderate to high incidence of contact with other groups and individuals in a roaded natural or rural setting.	A. Maximum use and capacity levels are: -Trail and camp encounters during peak use day may exceed 30 other parties per day. -Trail and area-wide use capacities: <table><tr><th colspan="5">ROS CLASS - ROADED NATURAL</th></tr><tr><th>USE LEVEL</th><th>VERY LOW</th><th>LOW</th><th>MOD.</th><th>HIGH</th></tr><tr><td>On Trails PAOT/Mile</td><td>--</td><td>--</td><td>--</td><td>--</td></tr><tr><td>Area-Wide PAOT/Acre</td><td>.04</td><td>.08</td><td>1.2</td><td>2.5</td></tr></table> <table><tr><th colspan="5">ROS CLASS - RURAL</th></tr><tr><td>On Trails PAOT/Mile</td><td>--</td><td>--</td><td>--</td><td>--</td></tr><tr><td>Area-Wide PAOT/Acre</td><td>.5</td><td>.8</td><td>5.0</td><td>7.5</td></tr></table> Reduce the above use level co-efficients as necessary to reflect usable acres, patterns of use, and general attractiveness of the specific management area type as described in the ROS User's Guide, Chapter 25. Reduce the above use levels where unacceptable changes to the biophysical resources will occur.	ROS CLASS - ROADED NATURAL					USE LEVEL	VERY LOW	LOW	MOD.	HIGH	On Trails PAOT/Mile	--	--	--	--	Area-Wide PAOT/Acre	.04	.08	1.2	2.5	ROS CLASS - RURAL					On Trails PAOT/Mile	--	--	--	--	Area-Wide PAOT/Acre	.5	.8	5.0	7.5
ROS CLASS - ROADED NATURAL																																					
USE LEVEL	VERY LOW	LOW	MOD.	HIGH																																	
On Trails PAOT/Mile	--	--	--	--																																	
Area-Wide PAOT/Acre	.04	.08	1.2	2.5																																	
ROS CLASS - RURAL																																					
On Trails PAOT/Mile	--	--	--	--																																	
Area-Wide PAOT/Acre	.5	.8	5.0	7.5																																	

PRACTICES/MIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES
Recreation Management (Private and Other Public Sector) (A16)	2. Permit undesignated sites in Frissell Condition Class 1 through 3 where unrestricted camping is permitted. 3. Manage site use and occupancy to maintain sites within Frissell Condition Class 3 except for designated sites which may be Class 4. Close and restore Class 5 sites. 4. Facilities provided include development level 1 and 2 campgrounds, trails suitable for motorized trailbike use, local roads with primitive surface and parking lots at trailheads. Provide signing compatible with intended use.	B. Close local roads to public use. Designate routes and areas which can be periodically opened to: -Gathering firewood. -Operating oversnow vehicles.
Range Resource Management (D07)	5. Prohibit motorized vehicle use off Forest System roads and trails (except snowmobiles operating on snow) in subalpine, and other ecosystems, where needed to protect soils, vegetation, or special wildlife habitat.	A. Specify off-road vehicle restrictions based on ORV use management (FSM 2355) B. See FSM 2331, FSM 7732, FSH 7709.12 (Trails Handbook), FSH 7109.11A and 11B (Sign Handbook)
Silvicultural Prescriptions (E03,05, 06 and 07)	6. Close roads and trails to motorized travel when the surface would be damaged to the degree that resulting runoff into adjacent water bodies would exceed sediment yield threshold limits. 1. Encourage development of private sector recreation oriented support services. 1. Manage livestock distribution and stocking rates to be compatible with recreation use. Locate structural improvements to meet Visual Quality Objectives. 1. Manage tree stands using both commercial or noncommercial methods. Enhance visual quality, diversity and insect and disease control.	A. Specify off-road vehicle restrictions based on ORV use management (FSM 2355).

PRACTICES/MIH CODE

MANAGEMENT DIRECTION

STANDARDS AND GUIDELINES

2. Manage forest cover types using the following harvest methods:
 - Clearcut in aspen
 - Shelterwood in ponderosa pine, mixed conifer and Engelmann spruce-subalpine fir
 - Selection/group selection in any forest type except aspen
 - Clearcut (patch) in dwarf mistletoe infected ponderosa pine and Douglas-fir.
 - Or as specified by the silvicultural prescription.
3. Apply intermediate treatments to maintain growing stock level standards as specified in the silvicultural prescription.
4. Utilize firewood material using both commercial and non-commercial methods.
5. For management purposes, a cutover area is considered an opening until such time as:
 - Forage and/or browse production drops below 40 percent of potential production;
 - Deer and elk hiding cover reaches 60 percent of potential;
 - Minimum stocking standards by forest cover type and site productivity are met; and
 - The area appears as a young forest rather than a restocked opening, and takes on the appearance of the adjoining characteristic landscape.

A. When the Visual Quality Objective of an area is partial retention, the regenerated stand shall meet or exceed all of the following characteristics before a cutover area is no longer considered an opening:

FOREST COVER TYPE	MINIMUM STOCKING LEVEL (TREES/ACRE)	TREE STAND HEIGHT
Ponderosa Pine	150 2/	25
Mixed Conifers	150 2/	25
Engelmann Spruce- Subalpine Fir	150 2/	25
Aspen	300	25
FOREST COVER TYPE	CROWN CLOSURE (PERCENT)	DISTRIBUTION 3/
Ponderosa Pine	30	60%

PRACTICES/MIH CODE	MANAGEMENT DIRECTION	STANDARDS AND GUIDELINES	
Special Use Management (Non-Recreation) (J01)	1. Permit special uses which are complimentary and compatible with the kind and development level of the associated Forest Service facilities within the area.	Mixed Conifers	30 60%
Transportation System Management (L01 and 20)	1. Manage public use of roads with techniques such as, seasonal closure, time of day closures, etc.	Engelmann Spruce- Subalpine Fir	30 60%
Trail System Management (L23)	1. Maintain existing motorized routes or construct new routes needed as part of the transportation system. Develop loop routes and coordinate them to compliment semi-primitive motorized opportunities in adjacent semi-primitive motorized ROS class areas.	Aspen	30 75%
		1/ Applies to trees specified at minimum stocking level 2/ Or as otherwise specified in the Silvicultural Prescription 3/ Percent of plots or transects that are stocked.	
		A. Reference the ROS User's Guide.	
		A. On all nonforested areas, motorized trail and local road density is not to exceed 4 miles/square mile.	

Management Area 7
(69,001 acres)

Description:

Management Area 7 consists of lands composed of productive timber lands within caribou habitat that are in the Cedar Hemlock series or Subalpine for series on greater than 40 percent slopes.

Management Goals:

- Manage to maintain or enhance caribou habitat requirements, while achieving low to moderate levels of investment in timber management.
- Provides for other resource management objectives where compatible with caribou habitat and timber management objectives.

Standards:

The Forest-wide management direction included in Chapter III of this plan applies to this management area.

Resource
Element

Management
Practice (MIH)

Standards and Guidelines

TIMBER

Timber Harvesting

Even-aged and uneven-aged regeneration systems will be used. Uneven-aged regeneration systems are recommended in Subalpine Fir series to maintain a continuous forest cover. Use intermediate harvest commensurate with the level of investment, and as necessary to stimulate old-growth ecosystems.

Unsuitable Lands

This management area contains 910 acres of nonforest and noncommercial forest land.

Approximately 830 acres of custodial management is included in the management area because it is currently uneconomical or environmentally unsuited under current budget trends.

Reforestation

Planting as needed to meet silvicultural objectives as prescribed in the Stand Silvicultural Prescription. Reforest with species compatible with caribou habitat needs. Reforestation of currently nonstocked lands commensurate with cost efficiency is permitted. Rehabilitation of cull stands and stagnated stands commensurate with cost efficiency is permitted.

Timber Stand
Improvement

Maintain stocking control commensurate with the level of management intensity and wildlife needs.

RECREATION

Dispersed Recreation
Management

Manage for roaded natural and where possible toward semi-primitive motorized and non-motorized recreation.

Restrict motorized use when needed for caribou protection.

Visual Management

Within this area 2,640 acres will be managed as retention and 14,920 acres will be managed as partial retention. Remaining area will be managed for modification and maximum modification. Rehabilitation of existing areas that do not meet adopted VQO is permitted.

<u>Resource Element</u>	<u>Management Practice (MIH)</u>	<u>Standards and Guidelines</u>									
WILDLIFE AND FISH	Habitat Improvement	Manage to achieve 2/3 of second order drainages remaining on mature and old-growth stands that have at least 40 percent crown closure. Strive for 1/3 old-growth, 1/3 mature sawtimber within Management Area. To achieve the above mentioned goal, regeneration harvest per decade should be limited to the following area: <table> <tr> <th><u>Series</u></th><th><u>Old-Growth Mature</u></th><th><u>Immature</u></th></tr> <tr> <td>Cedar/Hemlock</td><td>6%</td><td>5%</td></tr> <tr> <td>Subalpine Fir</td><td>3%</td><td>3%</td></tr> </table> (Manage for 70 percent crown closure in cedar-hemlock) Retain and manage established travel corridors of mature timber. No harvest or road construction should occur within 1/4 acre of lakes, bogs, or fens over 1/4 mile in size.	<u>Series</u>	<u>Old-Growth Mature</u>	<u>Immature</u>	Cedar/Hemlock	6%	5%	Subalpine Fir	3%	3%
<u>Series</u>	<u>Old-Growth Mature</u>	<u>Immature</u>									
Cedar/Hemlock	6%	5%									
Subalpine Fir	3%	3%									
	Road Operations	Collector and local roads generally closed through physical barriers and law enforcement. Arterial roads may be closed. Seasonal closures as needed.									
RANGE	Range Management	Utilize available forage for livestock commensurate with the demand, cost efficiency, and wildlife needs. No new allotments.									
WATER	Soil and Water Protection	Refer to IPNF Best Management Practices.									
LAND	Land Adjustment	Consider land acquisition and retention for caribou habitat management.									
MINERALS	Minerals Management	Operating plans and permits will emphasize public road closures and caribou habitat mitigation needs.									

<u>Resource Element</u>	<u>Management Practice (MIR)</u>	<u>Standards and Guidelines</u>
FACILITIES	Road Construction & Reconstruction	Road construction through lightly stocked mature stands should be limited to those instances in which no other access to close-canopied stands is available. Snow roads are encouraged where possible.
PROTECTION	Initial Attack	Rapid and aggressive fire suppression to minimize wildfire.
	Fire Protection	Control, contain or confine fires to prevent loss of coniferous species in all size classes.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter IV that are applicable to the management area are: A1, B1, B2, B3, C1, E1, E2, E3, E4, F1, F2, F3, F4, F7, F9, F10, F11, G1, G2, I1, I3, J7, J8, J9, J12, J14, and K1. The procedures outlined in Chapter IV will be followed to evaluate the data gathered during monitoring.

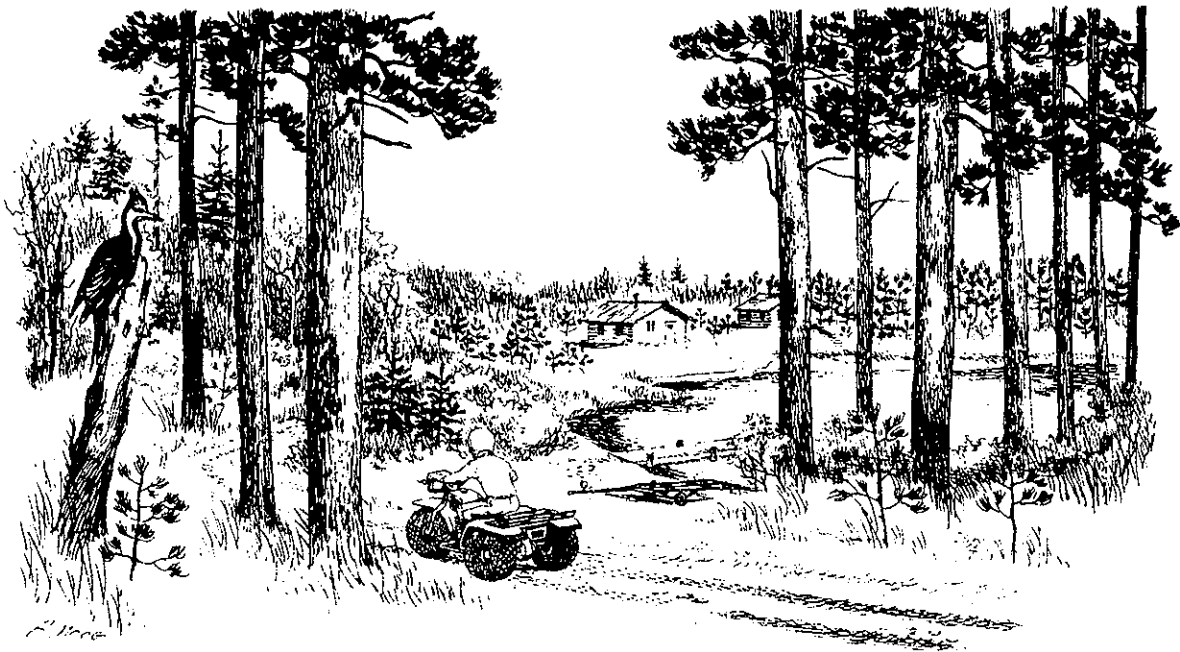
Schedule of Management Practices:*

Management Practice:

<u>Proposal Program (First Decade)</u>	<u>Acres</u>	<u>Volume MMBF</u>	<u>Miles</u>
Timber Sales			
Clearcut	119	2.9	
Shelterwood-Seed Cut			
Shelterwood-Removal Cut			
Selection			
Total	119	2.9	
Reforestation	1,338		
Timber Stand Improvement			
Road Const/Reconst			16
Wildlife/Tim Habitat Improvement			
Prescribe Burn			
Other	25		

<u>Probable Program (Second Decade)</u>	<u>Acres</u>	<u>Volume MMBF</u>	<u>Miles</u>
Timber Sales			
Clearcut	119	3.3	
Shelterwood-Seed Cut			
Shelterwood-Removal Cut			
Selection			
Total	119	3.3	
Reforestation	119		
Timber Stand Improvement			
Road Const/Reconst			12
Wildlife/Tim Habitat Improvement			
Prescribe Burn			
Other	125		

* Based on current budget trends.



MANAGEMENT AREA 4.1

PURPOSE - This area will emphasize land and resource conditions that will provide softwood and hardwood timber for large-sized lumber, poles, and pilings; provide habitat for red squirrels, pileated woodpeckers, and other native species requiring older forests; and that will provide recreational opportunities in natural settings which may have modifications which are easily noticed.

Forest stands will be mostly red pine and white spruce mixed with stands of white and jack pine, black spruce, tamarack, cedar, aspen, birch, and maple. Stands will be about 40 acres, irregular in shape, and look natural. Size of trees will range from seedlings to trees about 20 inches in diameter and 100 feet tall. Permanent forest clearings will be marshes, lowland brushy areas, and openings for wildlife.

The area will contain trails for hiking, cross-country skiing, portaging, and motorized off-road vehicles, and also campgrounds, boat landings, picnic sites, and swimming beaches. There may be occasional resorts, utility corridors, towers, dams, and similar structures. Roads and bridges will range from one lane surfaced with soil or aggregate to two lanes and paved.

Many people may use this area, mostly along lakes, roads, and trails. It is common to encounter others engaged in a wide variety of activities.

TYPICAL MANAGEMENT PRACTICES - Management practices will include harvesting, thinning, and regenerating timber; controlling insects and diseases; controlling vegetation for visual quality and wildlife habitat; and building and maintaining roads, bridges, trails, and other structures. These practices will be done by hand, chemical, or mechanical methods.

MANAGEMENT AREA NUMBER 4.1 (F1)

Total	National Forest	Federal
Area: 0 Acres	Land: 0 Acres	Ownership: 0%
Area Suitable For Timber Production: 0 Acres (0%)		

Management Emphasis: (F50)	
Hardwood Fiber - 0 Acres	Hardwood Sawtimber - 0 Acres
Softwood Fiber - 0 Acres	Softwood Sawtimber - 0 Acres
Ruffed Grouse - 0 Acres	Protection - 0 Acres

SCHEDULED MANAGEMENT PRACTICES

Management Practices		1981-1990			
PC = Productivity	Unit of	Regular	BWCA	Total	1991-
Class	Measure	Program	Program	Planned	2000
No Activities Scheduled (F49)					

STANDARDS AND GUIDELINES2100 ENVIRONMENTAL MANAGEMENT

PESTICIDE USE - Pesticides may be used to control vegetation, insects, and diseases for the purpose of timber, wildlife, and range management, for roadside vegetation control, and for public health and safety.

NEPA PROCESS - A decision to implement any proposed action affecting resources, land uses and environmental quality shall be preceded by an environmental analysis. The responsible official will use the results of the analysis to determine if any documentation is required based on the National Environmental Policy Act.

2200 RANGE MANAGEMENT

Favor use of forage species that are suitable for both grazing and quality hay production, and which require minimum fertilization.

The amount of forage to be utilized annually for livestock will not exceed the total available forage less the annual forage needs of wildlife.

LIVESTOCK GRAZING - Forage utilization will be managed to use no more than 60 percent of the current year's forage production.

Cool season forage will be managed to maintain a 75/25 grass/legume component ratio.

Warm season grass species should be encouraged.

Where forage exists in conifer types, livestock grazing will be considered to accomplish silviculture objectives.

HAY PRODUCTION - A soil pH of 6-6.5 is preferred for optimal forage production.

Eradicate noxious weeds.

2300 RECREATION MANAGEMENT

RECREATION OPPORTUNITY CLASS - A roaded natural recreation opportunity class (ROC) will be emphasized. Incidental amounts of less developed ROC's may be present but not specifically identified.

DEVELOPED SITES - The following developed sites can be provided in this management area:

Campgrounds
Picnic grounds

Boat landings
Observations sites

Trailheads
Swimming areas

Site modification will be moderate. Facilities will be constructed that protect the environment and provide comfort for users. Contemporary/rustic design of improvements is based on use of native materials. Traffic signs will usually be

provided. Roads and trails may be hard surfaced. Development density is about three family units per acre. Primary access may be over high standard roads. Interpretive services are informal, but generally direct. This corresponds to development scale 3.

Operate and maintain existing recreation facilities, phasing out or shortening the use season on low use or high cost developed sites until the capacity of available facilities corresponds to expected consumption levels.

Prescribed fires may be conducted in or immediately adjacent to developed campgrounds.

Hazardous trees will be removed. Dead or dying trees not posing a hazard to people or facilities should be retained to provide wildlife habitat.

The needs of persons with disabilities will be considered in the construction and rehabilitation of developed recreation sites.

Developed sites will not be constructed over private minerals having high potential for mineral development.

Tree removal will be limited to that needed to maintain or improve recreation values. Commercial timber harvest may be used.

DISPERSED SITES - The following dispersed sites can be provided in this management area:

Campsites	Cross-Country ski trails
Day hiking trails	Horseback trails
Backpacking trails	Nature/Interpretive trails
Canoe/portage trails	Snowmobile trails
Bicycling trails	Off-road vehicle trails

Trail density will normally not exceed 10 miles per 1000 acres. Trails will generally be maintained at maintenance level 3 or 4.

Dispersed campsites will normally be located a minimum of 100 feet from the edge of lakes and streams to protect these resources. Toilet facilities at dispersed campsites will be located a minimum of 100 feet from trails.

VISUAL QUALITY OBJECTIVE (VQO) - Management activities will meet, as a minimum, a VQO of modification. For sensitivity level 1, 2, or 3 travel routes, water bodies, and use areas, a VQO of retention or partial retention will be assigned, depending upon variety class.

OFF-ROAD VEHICLES (ORVs) - ORV signing and management policies will be coordinated with the Chippewa National Forest and adjacent state lands, to the extent possible.

Manage ORV use to provide for resource protection and public health and safety, and to minimize user conflict. Designated areas, roads, and trails may be limited to specific kinds of use, or may be closed to ORV use.

Off-road vehicle use is permitted on roads and trails where use is not expressly prohibited.

CULTURAL RESOURCES - Surface disturbing activities are not permitted within 66 feet of the established boundary of a cultural resource site. Cultural resource sites established for interpretation will be managed as a developed recreation site and may have roads or trails.

Fire will be suppressed when threatening developed interpreted sites. Surface disturbing activities (such as certain line construction) will not occur on known cultural resource sites. Fires with an intensity below 100 BTU/Sec /foot (4 - foot flame lengths) are permissible over buried sites, but will be suppressed on surface sites.

2400 TIMBER MANAGEMENT

Even-aged management will be the featured silvicultural system. Clearcutting is the optimum method to meet the management area objectives.

TEMPORARY OPENINGS CREATED BY EVEN-AGED SILVICULTURE - A temporary opening will no longer be considered as such when the regenerated trees in the area reach the height of the open growth shrub communities typically found in the surrounding landscape. At this time a natural appearing situation will have been reached and additional activities may take place. Timber adjacent to temporary openings will not be clearcut.

Harvest cuts will be separated by a stand of at least the minimum stand size.

Minimum stand size for timber production will normally be 10 acres.

Maximum size of final harvest cuts is 40 acres except:

- a) On an individual sale basis after 60 days public notice and review by the Regional Forester.
- b) As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Timber will be harvested to leave irregularly shaped openings to provide a maximum amount of edge to benefit wildlife habitat.

After timber harvest, retain 6-12 snags per acre to meet requirements of indicator species and to maintain viable vertebrate populations. This requirement does not apply in the following special areas: Ruffed grouse habitat areas, areas with special consideration for fire hazards, areas with safety problems (hazard to travelers, visitors, or timber operators), and visually sensitive areas.

MANAGEMENT INTENSITY UTILIZATION - For the purpose of determining harvest levels, the utilization standards in Chapter 3, Forest-wide Standards and Guidelines, Section 2400 will apply.

The following are rotation ages and thinning cycles for forest stands managed for timber products:

Timber Type	Site Class	Management/Product	Thinning Cycle	First Thin	Final Harvest Age
Aspen	All	Fiber	NA	NA	40-70
Aspen	I	Sawtimber (with thinning)	Precommercial Thinning	30	60-80
Birch-					
Northern					
Lowland					
Hardwood	All	Fiber	NA	NA	40-80
Northern					
Lowland					
Hardwood	I	Sawtimber (no thinnings)	NA	NA	90-120
Northern					
Lowland					
Hardwood	I	Sawtimber (with thinnings)	20	70-89	100-120
Balsam Fir-					
Lowland					
Conifer	All	Fiber	NA	NA	40-80
Black Spruce-					
Tamarack	All	Fiber	NA	NA	50-100
Red & White					
Pine	All	Sawtimber (no thinnings)	NA	NA	80-120
Red & White					
Pine	I	Sawtimber (with thinnings)	20	40-59	60-140
Red & White					
Pine	II	Sawtimber (with thinnings)	30	40-59	60-140
White Spruce	All	Sawtimber (no thinnings)	NA	NA	60-120
White Spruce	All	Sawtimber (with thinnings)	20	50-69	70-120
Jack Pine	All	Sawtimber (no thinnings)	NA	NA	80-90
Jack Pine	I	Sawtimber (with thinnings)	One Thin	50-60	80-110

Wood residues (except snags reserved for wildlife purposes) resulting from harvest and related operations should be made available as fuelwood prior to other disposal applications.

Silvicultural standards will incorporate genetic improvement principles and practices.

Fertilization of stands is limited to research and demonstration areas.

The management practices needed to obtain the desired conditions for each major timber type are found in Section 2400 of the Forest-wide Standards and Guidelines.

These management practices are limited according to the measures specified in Section 2500 of the Forest-wide Standards and Guidelines.

2600 WILDLIFE HABITAT MANAGEMENT

Species requiring older forests are featured. Grouse management may occur in these areas.

GROUSE HABITAT AREAS - Minimum size of a habitat area is 160 acres. Aspen rotation age is 40 years. Ideal habitat is achieved with four adjacent age classes; 0-10 years, 10-20 years, 20-30 years, and 30-40 years.

Size of harvest areas for optimum ruffed grouse habitat is 10-20 acres.

Snags may need to be removed, if avian predators become a problem. Residual conifer component should be less than 20 percent of the habitat ones.

When the harvest area is greater than 20 acres and mature aspen is not within 10 chains (660 feet) of the periphery of the stand, one clone of mature male aspen should be left standing.

Certain trails in areas managed for grouse will be closed to all motorized traffic except snowmobiles to protect surface seeded to game food.

BEAVER MANAGEMENT - Beaver habitat management is suitable except along State designated trout streams. Management will be conducted in accordance with FSH 2609.23, SNF Supplement #26.

FISHERIES - Timber management practices near lakes and streams will be coordinated with fisheries management to prevent adverse effects on fish habitat.

Stream crossings will be selected where construction will disrupt a minimum amount of the natural stream channel. Crossings will be constructed so that they do not impede migration of fish.

Lake and stream access management activities shall be in cooperation with Area Fisheries Manager of the Minnesota Department of Natural Resources (MNDNR).

Streamside vegetation will be managed to maintain desirable water temperatures along designated trout streams.

Timber harvest will be managed in a manner that will reduce the chance of blowdown along streams.

Practices which increase water retention will be utilized in designated trout stream areas and headwaters to reduce flooding and to maintain flows during periods of low precipitation.

Logging debris will be kept out of streams and lakes.

2700 SPECIAL USES MANAGEMENT

Most special uses can be accommodated in this area. Examples of appropriate uses include roads, summer homes, and powerlines. Uses not appropriate include golf courses and race tracks.

Provide for utility transmission corridors. Emphasize use of corridors when granting appropriate rights-of-way.

Approval of application for distribution systems crossing National Forest lands (such as utility, rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines for this management goal.

2800 MINERALS AND GEOLOGY

GRAVEL - All types of gravel pits are provided. However, gravel pits are not permitted in deer yarding or concentration areas smaller than 80 acres. Small administrative pits are permitted immediately adjacent to these areas.

EXPLORATION - All types of mineral exploration are permitted.

5100 FIRE MANAGEMENT

PRESUPPRESSION - Continuous areas of conifer larger than 600 acres should be protected by a change in fuel type or by fuelbreaks.

SUPPRESSION - Resource outputs are high and planned actions should be based on an analysis after considering fire intensities, potential net value change, and risk to health and safety. If a fire escapes initial attack, suppression efforts will be consistent with the Escaped Fire Situation Analysis decision. Heavy equipment may be used to suppress fire if needed.

Fires will be controlled within the management prescription for the area. Operations under permit will be required to provide adequate fire protection. Protection of lives and property will have priority during all suppression efforts.

Structural fires are either State or local responsibility. Hazard reduction around structures is the responsibility of the owner. Every reasonable attempt will be made to avert loss of structures through the control of approaching wildfire.

PRESCRIBED FIRE - Prescribed fire may be used to establish, maintain, or improve vegetative conditions (wildlife openings, underburning, type conversion, visual, range land, campgrounds, etc.). Natural or activity fuel accumulations may be treated by prescribed fire as well as site preparation for timber activities.

FUEL MANAGEMENT - When activity fuels will be created an activity fuel management plan will be completed.

Construction and timber harvest activity fuels which constitute a fire hazard may be offered as fuelwood before other disposal methods are considered.

Fuel break construction will be in accordance with management prescription. Location and size will be determined by expected fire locations, intensities, and value at risk.

5400 LAND ADJUSTMENT

This management area has the following priorities for land adjustment:

- a) Acquisition - Priority 3
- b) Disposal - Priority 3
- c) Donations - Priority 3

Additional guidelines are provided in Section 5400 of the Forest-wide Standards and Guidelines.

7300 BUILDINGS AND STRUCTURES

Buildings and structures may be provided to support resource management objectives. Any construction must be appropriate to the goal of the management area.

7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES

Sewage systems are appropriate and may range from water carried systems to vault toilets for developed sites and pit latrines for dispersed campsites.

Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure quality.

The sanitary landfill method will be used for waste disposal on National Forest lands.

Large, efficient disposal systems operated and managed by municipalities or county governments will be encouraged. Waste disposal facilities that serve only Forest Service operations will be avoided.

Exchange of solid waste disposal sites with other government units is preferred to minimize Forest Service involvement in waste disposal operations. Prior to any exchange, the site must be approved by the Forest Service and the Minnesota Pollution Control Agency for solid waste disposal.

7500 WATER STORAGE AND TRANSMISSION

Dams and impoundments are appropriate.

7700 TRANSPORTATION SYSTEM

National Forest roads will be the minimum number required to meet safety, user, and resource needs. All system roads will be constructed in conformance with approved environmental assessments to mitigate damage to the adjacent resources during and after completion of construction.

Transportation system plans will include network of local, collector, and arterial system roads to manage forest resources and provide access for the public to Forest lands. Typically, the road density in this management area will not exceed 2.4 miles/square mile. This density may be exceeded in some areas to provide access to rural residences, cabins, and other private lands.

Whenever roads are proposed for construction into an area of the Forest that is essentially unroaded (i.e., less than one-tenth of a mile per square mile), an assessment will be made of the effects of the proposed road network on existing and potential timber wolf populations. Adverse effects will be minimized by regulating public traffic, alternative locations, or other suitable measures.

Arterial roads (including forest highways) will be, as a minimum, designed and constructed for transporting forest products and accommodating planned motorized recreation use, open and maintained at maintenance level III or higher.

Collector and local roads will be designed and constructed to be suitable for transporting forest products and accommodating administrative use and planned motorized recreation use.

Roads that receive use greater than an average of 400 vehicles per day will be two-lane, gravel-surfaced or paved. (20-30 percent of total)

Low traffic volume roads will be single lane soil or aggregate surfaced. (70-80 percent of total)

Road signing will conform with National standards for safety and regulation of traffic. Signs will be erected to designate forest facilities.

ROAD MAINTENANCE - Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

All temporary and short term roads will be revegetated. Revegetation will be accomplished in a reasonable period of time, not to exceed 10 years after the termination of the contract, lease, or permit.

Restrictions on use of forest roads under certain circumstances are required. These restrictions are:

1. Restricted use or closure where the cost of maintenance exceeds the value of the benefits derived.
2. Seasonal - Closure during spring in conjunction with State and county weight restrictions when vehicle travel may cause damage to the road.
3. Closure to protect road investment from damage by users.
4. Restricted use or closure for the safety of the forest user during construction and maintenance activities.
5. Gates to restrict use or close roads may be installed on roads where only administrative or emergency use is allowed.

6. Forest roads may be designated for special uses such as snowmobiles, ORV's, motorcycles, 4-wheel drives, challenge, etc. on a case-by-case basis.
7. To protect threatened and endangered species during critical periods.

CORRIDORS - Corridors of up to one-half mile in width will be identified for each arterial or collector road to be constructed or reconstructed.

EXAMPLES OF ROS (RURAL) STANDARDS AND GUIDELINES

UNIFORM FOREST
MANAGEMENT PRESCRIPTION 2B

(Emphasis is on rural and roaded-natural recreation opportunities.)

A. MANAGEMENT PRESCRIPTION SUMMARY

General Direction and Goals:

Management emphasis is for rural and roaded-natural recreation opportunities. Motorized and nonmotorized recreation activities such as driving for pleasure, viewing scenery, picnicking, fishing, snowmobiling, and cross-country skiing are possible. Conventional use of highway-type vehicles is provided for in design and construction of facilities. Motorized travel may be prohibited or restricted to designated routes, to protect physical and biological resources. Visual resources are managed so that management activities maintain or improve the quality of recreation opportunities. Management activities are not evident, remain visually subordinate, or may be dominant, but harmonize and blend with the natural setting. Landscape rehabilitation is used to restore landscapes to a desirable visual quality. Enhancement aimed at increasing positive elements of the landscape to improve visual variety is also used. The harvest method by forest cover type is clearcutting in aspen and lodgepole pine, shelterwood in interior ponderosa pine, mixed conifer and Englemann spruce-subalpine fir.

B. MANAGEMENT REQUIREMENTS

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Visual Resource Management (A04)	01 Design and implement management activities to provide a visually appealing landscape. Enhance or provide more viewing opportunities and increase vegetation diversity in selected areas.	a. Do not exceed an Adopted Visual Quality Objective (VQO) of Partial Retention. b. Arterial and collector roads and trails are Sensitivity Level 1. c. Manage visual resources using the above standards in accordance with FSM 2380 and FSM 2309.16 through FSM 2309.25.
Dispersed Recreation Management (A14 and 15)	01 Provide roaded natural or rural recreation opportunities along Forest arterial, collector and local roads which are open to public motorized travel. Manage recreation use to provide moderate to high incidence of contact with other groups and individuals. Where arterial, collector or local roads or areas are closed to public motorized recreation travel, provide for dispersed non-motorized recreation with a moderate to high incidence of contact with other groups and individuals in a roaded natural or rural setting. 02 Permit undesignated sites in Frissell condition class 1 through 3 where unrestricted camping is permitted. 03 Facilities provided include development level 1 and 2 campgrounds, trails suitable for motorized trailbike use, local roads with primitive surface and parking lots at trail heads. Provide signing compatible with intended use.	a. Trail and camp encounters during peak use days may exceed 30 other parties per day. b. Specify off-road vehicle restrictions based on ORV use management (FSM 2355, R2 Supp. 88). c. See FSM 2331, FSM 7732, FSM 7709.12 (Trails Handbook), FSM 7109.11a and 11b (Sign Handbook).

**MANAGEMENT
ACTIVITIES**

**GENERAL
DIRECTION**

**STANDARDS &
GUIDELINES**

CONTINUATION OF:
Dispersed
Recreation
Management
(A14 and 15)

04 Close roads and trails to motorized travel when the surface would be damaged to the degree that resulting runoff into adjacent water bodies would exceed sediment yield threshold limits.

a. Specify off-road vehicle restrictions based on ORV use management (FSM 2355, R2 Supp. 88).

05 Prohibit motorized vehicle use (including snowmobiles) off Forest System roads and trails in alpine shrub and Krummholz ecosystems. Prohibit motorized vehicle use off Forest System roads and trails (except snowmobiles operating on snow) in other alpine, and other ecosystems, where needed to protect soils, vegetation, or special wild-life habitat.

Recreation
Management
(Private and
Other Public
Sector)
(A16)

01 Encourage development of private sector recreation oriented support services.

Range Resource
Management
(D02)

01 Manage livestock distribution and stocking rates to be compatible with recreation use. Locate structural improvements to meet visual quality objectives.

Silvicultural
Prescriptions
(EO3, 06 & 07)

01 Manage tree stands using both commercial or noncommercial methods. Enhance visual quality, diversity and insect and disease control.

02 Manage forest cover types using the following harvest methods:
-clearcut and shelterwood in lodgepole pine
-clearcut in aspen
-shelterwood in interior ponderosa pine, mixed conifer and engelmann spruce-subalpine fir

a. Apply harvest treatments to forest cover types as specified below on at least 80 % of the forest cover type. Up to 20 percent of the type may be treated using other harvest methods specified in Forest Direction.

MANAGEMENT
ACTIVITIES

GENERAL
DIRECTION

STANDARDS &
GUIDELINES

CONTINUATION OF:
Silvicultural
Prescriptions
(E03, 06 & 07)

b. Silvicultural Standards by
Harvest Method.
(These standards do not apply on
areas managed for old growth.
Standards may not totally apply
until full regulation is
achieved).

1. Clearcut:

Forest Cover Type	Rotation Age	Growing Stock Level (basal area)	Thinning Cycle
Lodgepole Pine	90 to 180 yrs.	80 to 120	20 to 70 yrs.
Spruce/ Fir	100 to 240 yrs.	90 to 120	20 to 70 yrs.
Aspen	80 to 120 yrs.	N. A.	N. A.
Other	70 or more yrs.	70 to 120	20 to 70 yrs.

2. Two-step shelterwood:

Forest Cover Type	Rotation Age	Growing Stock Level (basal area)	Thinning Cycle
PP, Mixed Conifer, and S/F.	100 to 240 yrs	90 to 120	20 to 70 yrs
Lodgepole Pine	90 to 180 yrs	90 to 120	20 to 70 yrs

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Silvicultural
Prescriptions
(E03, 06 & 07)

Other 80 or 70 to 20 to
more yrs 120 70 yrs

First Cut (seed cut):
Remove 15 to 50 percent of the
Basal area or cut to Basal
area (BA)
BA 60-100 for Ponderosa Pine
Mixed Conifer, and
Spruce-Fir.
BA 50-80 for Lodgepole Pine
BA 30-80 for other forest
cover types.

Second Cut (removal cut):
Remove all overstory when
regenerated stand meets
minimum stocking standards.

3. Three-step shelterwood:

Forest Cover Type	Rotation Age	Growing Stock Level (basal area)	Thinning Cycle
PP, Mixed Conifer, and S/F.	100 to 240 yrs	90 to 120	20 to 70 yrs
Lodgepole Pine	90 to 180 yrs	90 to 120	20 to 70 yrs
Other	80 or more yrs	70 to 120	20 to 70 yrs

First Cut (preparatory cut):
Remove 10 to 30 percent of the
Basal Area (BA) or cut to
Basal Area (BA)
BA 100-120 for Ponderosa Pine
Mixed Conifers,
Spruce-Fir, and

MANAGEMENT
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CONTINUATION OF:
Silvicultural
Prescriptions
(E03, 06 & 07)

Lodgepole Pine.
BA 100-120 for other forest
cover types.

Second Cut (seed cut):
Remove 15 to 50 percent of the
remaining basal area or cut to
Basal Area (BA)

BA 60-100 10 to 30 years
after preparatory
cut for Ponderosa
Pine, Mixed
Conifers, and
Spruce-Fir;

BA 50-80 10 to 30 years
after preparatory
cut for Lodgepole
Pine;

BA 50-80 10 to 30 years
after preparatory
cut for other
species.

Third Cut (removal cut):
Remove all overstory when
regenerated stand meets
minimum stocking standards.

4. Selection:

Forest Cover Type	Residual Basal Area	Cutting Cycle
Spruce/Fir and Mixed Conifer	90 to 120	20 to 30 yrs
Other	90 to 120	20 to 30 yrs

MANAGEMENT
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STANDARDS &
GUIDELINES

CONTINUATION OF:
Silvicultural
Prescriptions
(E03, 06 & 07)

03 Apply intermediate treatments to maintain growing stock level standards.

04 Utilize firewood material using both commercial and noncommercial methods.

05 For management purposes, a cut-over area is considered an opening until such time as:

- Increased water yield drops below 50 percent of the potential increase;
- Forage and/or browse production drops below 40 percent of potential production;
- Deer and elk hiding cover reaches 60 percent of potential;
- Minimum stocking standards by forest cover type and site productivity are met; and
- The area appears as a young forest rather than a restocked opening, and takes on the appearance of the adjoining characteristic landscape.

a. When the Visual Quality Objective of an area is partial retention, the re-generated stand shall meet or exceed all of the following characteristics before a cut-over area is no longer considered an opening:

Forest Cover Type	Minimum Stocking Level (Trees/ acre)	Tree Height 1/ (% of the adjacent mature stand height)
Inland Ponderosa Pine	190	25
Mixed Conifers	190	25
Lodgepole Pine	150	25
Engelmann Spruce - Sub- alpine fir	150	25
Aspen	300	25
Forest Cover Type	Crown Closure (Percent)	Distri- bution 2/

MANAGEMENT
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GENERAL
DIRECTION

STANDARDS &
GUIDELINES

CONTINUATION OF:
Silvicultural
Prescriptions
(E03, 06 & 07)

Inland Ponderosa Pine	30	70%
Mixed Conifers	30	75%
Lodgepole Pine	30	75%
Engelmann Spruce- Subalpine fir	30	75%
Aspen	30	75%

- 1/ Applies to trees specified as minimum stocking level.
- 2/ Percent of plots or transects that are stocked.

Special Use
Management (Non-
Recreation)
(J01)

01 Permit special uses which are complementary and compatible with the kind and development level of the associated Forest Service facilities within the area.

- a. Reference the ROS Users Guide.

Transportation
System
Management
(L01 & 20)

01 Manage public use of roads with techniques such as, seasonal closure, time of day closures, etc.

Trail
System
Management
(L23)

01 Maintain existing motorized routes or construct new routes needed as part of the transportation system. Develop loop routes and coordinate them to compliment semi-primitive motorized opportunities in adjacent semi-primitive motorized ROS class areas.

- a. On all nonforested areas, motorized trail and local road density is not to exceed 4 miles per square mile.

MANAGEMENT AREA DIRECTION

026 GALLOWAY

23 GROSS ACRES 23 NATIONAL FOREST SYSTEM ACRES

I. DESCRIPTION

This management area (MA) is located atop an unnamed peak 2 miles south of Downieville. Elevation is 5,457 feet. Pacific Telephone & Telegraph has proposed this site for installation of a microwave repeater. Access development is required. Electrical power is available on site, and an electronic site plan is under review. Vegetation is low growing brush. Wetland acreage is insignificant. There are _____ acres of unsuitable timber land.

There are no selected indicator species.

II. SUMMARY OF ISSUES, CONCERNS, AND OPPORTUNITIES

There is an opportunity to concentrate compatible electronic uses of National Forest System land at this and other approved electronic sites.

III. RESOURCE MANAGEMENT EMPHASIS

The resource management emphasis is use as an electronic site. Require permits to minimize visual impacts of the facilities. Consider compatibility of uses when evaluating applications for special-use permits. Prohibit incompatible electronic uses on the site; give preference to existing uses. The MA is unsuited for regulated timber production.

IV. MANAGEMENT AREA STANDARDS & GUIDELINES 1/

- A. Recreation Opportunity Spectrum - RURAL
- B. Visual Quality Objective - Modification. This VQO allows management activities to dominate the characteristic landscape; however, structures and roads should remain visually subordinate when viewed in background. To meet these requirements will, in some cases, require significant efforts at visual mitigation and project-level involvement of the Forest Landscape Architect. Some areas, however, might require very little mitigation to satisfy the Modification objective. Where proposed installations in this latter category are in a visually prominent location, maximum practical mitigation will still be implemented even if the resultant visual quality will exceed the objective. In other words, the Modification VQO will be applied as the base level or minimum acceptable visual quality.

C. Transportation Management Policy - Forest-wide Standards and Guidelines apply

D. Off-Road Vehicle Restrictions - Closed

E. Forestwide Standards & Guidelines - All Apply

F. Develop Electronic Site Plan - Galloway Electronic Site Plan

V. MANAGEMENT AREA PRESCRIPTION 2/

AD2b Restricted ORV

EU1u Unregulated Timber Management and Harvest

GL1a Minerals Management - Locatables

GL2a Minerals Management - Leasables

JA1b Land Adjustments - Limited

LM1b Transportation Management, Roads - Regulated Use

PI5a Fire Protection - Improvements

VI. PROPOSED RESOLUTION OF ISSUES AND CONCERNS

The electronic site plan provides guidelines and direction for management and use of the area. Revise and update this plan for new development as needed. Evaluate all new applications on compatibility by the Federal Communications Commission and the Forest Service radio technician. Incompatible frequencies will be denied.

VII. SPECIFIC MONITORING AND EVALUATION NEEDS

None.

III. RURAL RECREATION

A. Objective

The purpose of this prescription is to manage developed recreation facilities and other high-density dispersed areas characterized by a substantially modified natural environment. This prescription is directed toward management of recreation opportunities in campgrounds, picnic grounds, day-use areas, marinas, downhill ski areas, high-density snow play areas, and trail or road-head facilities, while maintaining visual and water quality. Habitat management of the fishery resources will be accomplished to enhance angling opportunities.

B. Management Practices

Emphasized/Compatible:

- Rural Recreation
- Developed Recreation
- Warmwater Fishery Habitat Management (Reservoirs)
- Trail Construction and Reconstruction
- Coldwater Fishery Habitat Management (Rivers and Streams)

Compatible:

- Cultural Resource Management - Archaeological and Historical Sites
- Wildlife Habitat Management - Harvest Species
- Livestock Grazing
- Uneven-Aged Timber Management and Salvage
- Soil and Water Improvement
- Streamside and Wetland Management
- Fuels Reduction and Management
- Integrated Pest Management
- Road Construction and Reconstruction

C. Description of Areas Where Prescription III (Rural Recreation) Will Be Applied

The natural environment is substantially modified to the point that developments are clearly obvious to travelers in and around these visually sensitive areas. Structures are readily evident, and may be widely scattered or occur in small dominant clusters. Pedestrian or other slow moving observers are constantly within view of culturally changed landscapes. The social setting encourages moderate to high visitor contact. Controls, regulations, and law enforcement are obvious. Typical activities or facilities include, but are not limited to, camping, fishing, information centers, aerial tramways, convenience stores, resorts, marinas, downhill ski areas, and picnicking sites.

D. Associated Standards and Guidelines

Recreation - A

1. Trails and areas rated highly suitable should be designated for Off-road Vehicle (ORV) use. Use should be located and scheduled to minimize recreation use conflicts. Refer to the ORV Management Plan Map for specific use areas.
2. Management activities should be accomplished in accordance with Rural Recreation Opportunity Spectrum (ROS) guidelines.
3. Manage to meet Inventoried Visual Quality Objectives (VQOs) in foreground and middleground areas seen from developed recreation sites. Refer to Appendix F for a list of sites.

Range - D

4. Standard range management practices (herding, fencing) will be applied to keep livestock out of developed sites when conflicts between recreation and grazing occur.

Timber - E

5. Manage timber to support recreation opportunities by maintaining healthy, vigorous stands containing a variety of species and size classes. All timber yields will be considered as a part of the unregulated component.

Minerals - G

6. Significant surface disturbance by locatable mineral related activities will be mitigated based on an environmental assessment and stipulations to the authorized plan of operations. For leasable and salable minerals, significant resource impacts will be mitigated based on an environmental assessment by means of stipulations to the lease or sales document.

Facilities - I

7. Roads and trails should be located, designed, constructed, and maintained to standards which complement Rural Recreation Opportunity Spectrum (ROS) activities. In some areas these may be single lane roads serving semi-primitive camp sites, and fishing and hunting areas. In other areas they may be double lane paved scenic roads, or provide access to major developed sites. New trails or roads within the Rural ROS class will generally be for the purpose of accessing a recreation activity such as a fishing trail, or providing a necessary link to a primary trail or road system.

V PRACTICAL APPLICATION

PRACTICAL APPLICATIONS

THE RECREATION OPPORTUNITY SPECTRUM HAS BEEN WIDELY USED IN THE LAND MANAGEMENT PLANNING PROCESS. HOWEVER, IT HAS PRACTICAL APPLICATIONS IN OTHER FIELDS AS WELL, AS A WAY OF SHOWING FOREST USERS THE WIDE VARIETY OF OPPORTUNITIES AVAILABLE WITHIN THE NATIONAL FORESTS.

REGION 6 HAS UTILIZED ROS IN BOTH THEIR FOREST RECREATION MAPS AND IN THEIR RECREATION OPPORTUNITY GUIDES. IN THESE EXAMPLES, FOREST VISITORS CAN USE THE ROS TO MATCH THEIR RECREATION PREFERENCES WITH THE AREA OF THE FOREST THAT WILL PROVIDE THE KIND OF EXPERIENCE THEY DESIRE.

REGION 1 HAS DEVELOPED A METHOD OF ANALYSING FOREST ACCESS ROUTES TO ACCOMPLISH RESOURCE OBJECTIVES. WHILE NOT SPECIFIC TO ROS, TRAVEL MANAGEMENT IS KEY TO PLANNING TO ATTAIN DESIRED RECREATION OPPORTUNITIES.

REGION 3 DEVELOPED THE MAINTENANCE PORTION OF THE PECOS WILDERNESS TRAIL MANAGEMENT PLAN BY TIEING MAINTENANCE TO THE DESIRED ROS CLASS OF DIFFERENT PARTS OF THE TRAIL.

REGION 6 HAS USED A SERIES OF COMPARATIVE PHOTOS SHOWING DIFFERENT TYPES OF FACILITIES THAT ARE REPRESENTATIVE OF DIFFERENT ROS CLASSES. THESE COMPARISONS CAN GRAPHICALLY ILLUSTRATE THE VARIETY OF EXPERIENCE LEVELS AVAILABLE WITHIN THE NATIONAL FORESTS.

RECREATION OPPORTUNITY GUIDE

Trails vary by difficulty and the degree of isolation you experience. This information is displayed for each trail by a diagram. You can determine difficulty by the change in elevation over distance from the diagram and the degree of isolation or solitude from the accompanying legend. See Introduction for a chart that explains the legend for the spectrum of experiences each trail offers.

If you seek a physically challenging trail offering a chance for isolation from others look for trails with the "primitive" legend. However, if you prefer a family hike of moderate risk and challenge to enjoy the out-of-doors choose trails with the "roaded natural" legend.

	PRIMITIVE	SEMI-PRIMITIVE NONMOTORIZED	SEMI-PRIMITIVE MOTORIZED	ROADED NATURAL	RURAL	URBAN
Experience Opportunity	Isolation from sights and sounds of humans. High degree challenge and risk.	Isolation from sights and sounds of humans. Independence. Moderate to high degree of challenge and risk.	Moderate isolation from sights and sounds of humans. Independence, self-reliance. Moderate degree of challenge and risk.	About equal opportunity to experience social contact or to experience isolation. Opportunity to test and practice outdoor skills in area of moderate risk and challenge.	High probability for social interaction. Outdoor skills generally not needed.	Continuous opportunity for social interaction, competitive setting.
Setting	Large area of unmodified natural environment. Few human induced restrictions.	Moderate to large sized natural or naturally appearing area. Minimum of restrictions.	Predominately natural appearing moderate to large size area. Motorized use permitted.	Predominately natural appearing environment. Resource modifications harmonize with environment.	Predominately modified environment. Resource modifications obvious.	Sights and sounds of man dominate environment.
Remoteness	Usually 3 miles from transportation corridor with motorized use.	1/2 mile from roads, trails, etc., with motorized use.	1/2 mile from gravel or single-lane paved roads.	1/2 mile from double-lane paved roads and railroads.	None	None
Evidence of Humans	Evidence of humans unnoticed by traveler. Structures very rare.	Modifications don't draw attention. Structures rare.	Modifications don't draw attention of motorized visitor. Other roads and trails obvious. Structures rare.	Modifications easily noticed. Other roads, trails, obvious. Structures scattered.	Modifications often dominate. Strong evidence of roads, parking lots. Structures readily apparent.	Structures dominated. Strong evidence of roads, parking lots, etc.
Social Setting	Less than 6 parties per day encountered on trails. Less than 3 parties visible from campsite.	6-15 parties per day encountered on trails. 6 or less parties visible at campsite.	15-30 parties per day contacted on trails. 10 or less parties at campsites.	30 + parties per day contacted on trails. More than 10 parties visible from campsites.	Frequent to continuous contact with other parties.	Continuous contact with other parties common.
Managerial Setting	Controls primarily off-site.	On-site controls and regimentation subtle.	On-site controls and regimentation subtle.	On-site controls and regimentation obvious.	Regimentation and controls obvious and numerous.	Regimentation and controls obvious and numerous.
Trail Standard Grade Sustained Maximum Pitch	20% no limit	20% 30%	15% 25%	15% 20%	12% 15%	10% 15%
Clearing Height Width	8' 36"	8' 36"-48"	8' 36"-48"	8' 36"-48"	8' 48"+	8' 48"+
Tread Width	12"	12"-18"	18"	18"	18"-24"+	24"+
Surface	Natural, many rocks, downed logs.	Natural, spot gravel. Some rocks, downed logs.	Mostly natural. Sections of gravel surface. Roots, imbedded rocks in place.	Gravel, chips, surfacing, when necessary.	Gravel, chips, or paved.	Paved
Recreation Opportunity Guide Legend						

United States
Department of
Agriculture
Forest Service



Recreation Opportunity Guide



United States
Department of
Agriculture



Mt. Hood National Forest
Zigzag Ranger District
Zigzag, Oregon 97049
224-5243 or 622-3191



There are approximately 190 miles of walking and hiking trails on the Zigzag District. The terrain experienced from these trails varies from lush meadow and dense forest to high barren ridges, rock and ice. Trails follow several streams and lakes.

To help you find the experience you are expecting when you hike the trails, we have described the forestlands in terms of the Recreation Opportunity Spectrum. The six opportunity classes describe the recreation experience levels in terms of the physical, biological and social setting, and in terms of remoteness from the influences or evidence of man. The six classes are described on page in the Guide introduction.

Near the bottom of each trail description there is a recreation opportunity spectrum scale that corresponds to the trail elevation profile diagram. This scale identifies the classification of the land areas each trail passes through. Trails typically begin in the "roaded natural" appearing areas and pass into "semi-primitive" areas as one leaves the roads and travels into more isolated areas. Several trails are located in highly developed and highly visited areas as described in the "rural" and "urban" classes.

The following guidelines are suggested to help you enhance the forest while enjoying all the natural beauty it has to offer.

1. Please obtain a wilderness permit at the trail registration boxes when entering the wilderness. The information we receive when you fill out this permit is very valuable in our management of these areas.
2. Please use a backpacking stove for your cooking needs particularly at higher elevations and in popular camping areas. Firewood is becoming scarce in these areas. If you find a fire necessary, build it in a safe area and keep it small. Pack out all non-burnable material. When your fire is no longer needed, drown it with water and stir until the ashes are cool. Then bury the ashes and return the area to its natural state.
3. Leave no trace of your camp. Human waste should be buried 8 inches deep in a location away from camp, trails or water. When washing, use biodegradable soap and dispose of waste water at least 100 feet from any water source.
4. Open water sources are easily contaminated by animal or human waste. All water should be boiled for 5 minutes before drinking.
5. Stay on the trail and avoid shortcuts on the switchbacks. This will help reduce soil erosion and trail maintenance costs.

6. Leave your pets at home. If you must have pets along, please keep them on a leash.

7. Trails on the Zigzag District receive heavier use on weekends. When preparing for your forest experience, planning weekday trips will offer opportunities for avoiding crowds, and will help avoid the environmental impacts of overcrowding.

8. Theft at parking areas is an increasing problem. Camera gear, wallets, checkbooks and prescription drugs are prime targets. Leave all valuables at home that you can not carry with you. Items left in the trunk of your car are not safe. If you are a victim of "car clouting", report it to the nearest ranger station or call the County Sheriff's Office.

HIKING SECTION: TABLE OF CONTENTS

The trails are listed by Recreation Opportunity Spectrum Class.
Refer to pg. for the description of the spectrum classes.

PRIMITIVE:

There are no land areas on the Zigzag District in the Primitive Class.

SEMI-PRIMITIVE NON-MOTORIZED

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RECREATION OPPORTUNITY GUIDE

United States
Department of
Agriculture



Mt. Hood National Forest
Zigzag Ranger District
Zigzag, Oregon 97049
224-5243 or 622-3191



SALMON BUTTE TRAIL # 791 Length: 7.3 KM (4.5 miles)

TRAIL BEGINS: 642 Meters (2120 Feet) elevation
South of Road S-38, 100 yards up a logging
spur in a timber harvest unit.

USE: Light

DIFFICULTY: Moderate

TRAIL ENDS: 1333 Meters (4400 Feet) elevation
Top of Salmon Butte at the junction with an
unmaintained four-wheel drive road.

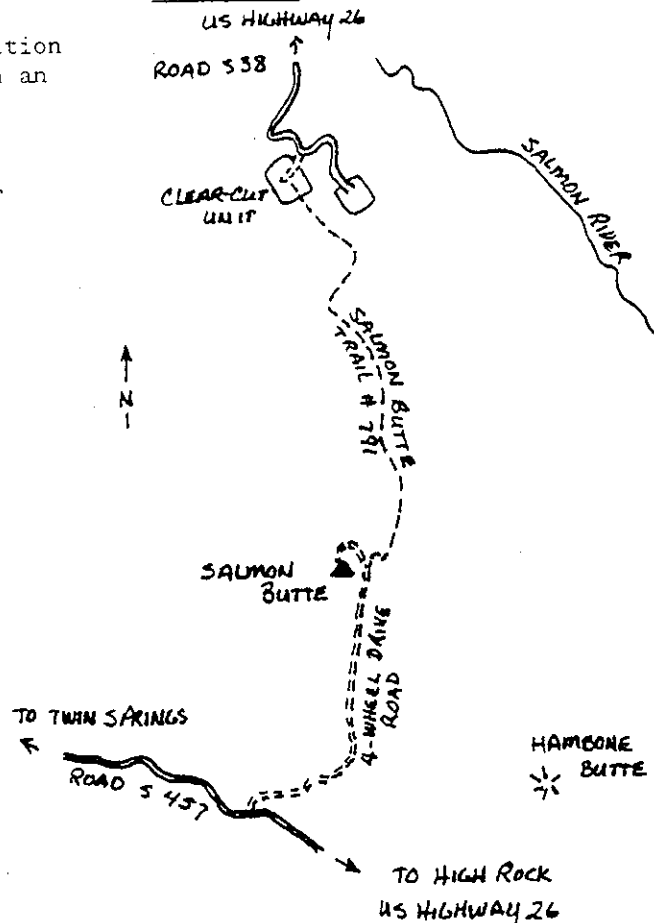
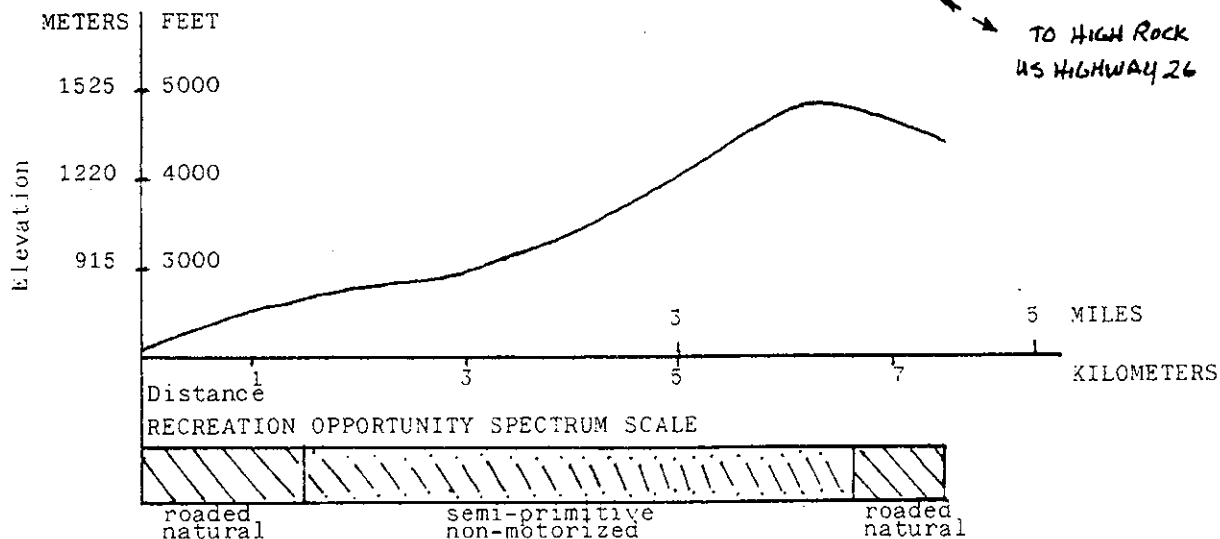
ACCESS #1: Follow US Highway 26 17.9 mi.
east of Sandy. Turn south on Salmon River
Road, following it 6.7 miles past two
bridges to a logging spur on the right.

ATTRactions AND CONSIDERATIONS:

Salmon Butte Trail climbs gently and
steadily through the forest to the
4,877 foot bald summit of the butte.
On a clear day, 360° views include
Hood, Adams, Rainer, St. Helens, and
Jefferson as well as the nearby ridge
and river valley systems. Wildflowers
including rhododendron, paintbrush,
beargrass, lark spur and stone crop
bloom along the trail and on the top
of the butte.

RECOMMENDED SEASON

SPRING	SUMMER	FALL	WINTER



NARRATIVE: SALMON BUTTE TRAIL # 791

The overall grade of this trail and the view from the top, make Salmon Butte Trail one of the most scenic and enjoyable hikes on the Zigzag Ranger District.

Walk approximately 100 yards up the logging spur and from the middle of the clear cut look to your left for the signs and gray trail markers which indicate the trail through the harvest unit. Usually in mid-July wild blackberries can be found here.

From the upper southern edge of the unit, the trail travels through a second growth Douglas Fir forest for 3.5 miles. At 1.1 miles, the trail junctions with the abandoned South Fork Ridge Trail, which the observant "path-finder" could follow to Mack Hall Creek. Small streams cross the trail at 1.7, 2.5 and 3.9 miles.

The last .3 miles of the trail follow the abandoned road to the top of the butte, an old lookout site.

The abandoned road to Salmon Butte can also be accessed via Road S-457 which can be reached from the west by taking State Highway 224 south from Estacada to S-403, then S-469 or from the east by traveling on US 26 to Road S-42.

The Salmon Butte trail is also used by equestrians. Forest regulations prohibit the use of motorized vehicles on this trail to provide a safer, more desirable foot trail for hikers and horseback riders.

HIKING

Recreation Opportunity Guide

USDA



Mt. Hood National Forest
Columbia Gorge Ranger District
Rt. 3, Box 44A
Troutdale, OR 97060
(503) 695-2276



LARCH MT. TRAIL #441

TRAIL BEGINNING: 60 km (110 ft.) elev.
At Multnomah Falls Lodge

LENGTH: 11 km (6.8 mi.)

RECOMMENDED SEASON

Spring Summer Fall Winter

TRAIL ENDING: 1216m (4056 ft.) elev.
At Larch Mt. Picnic Area

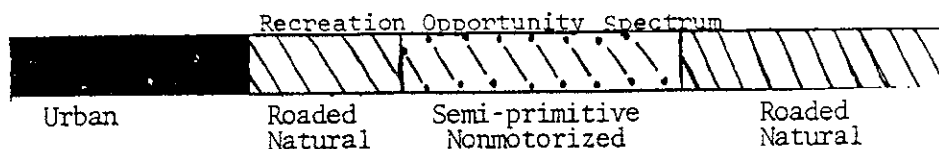
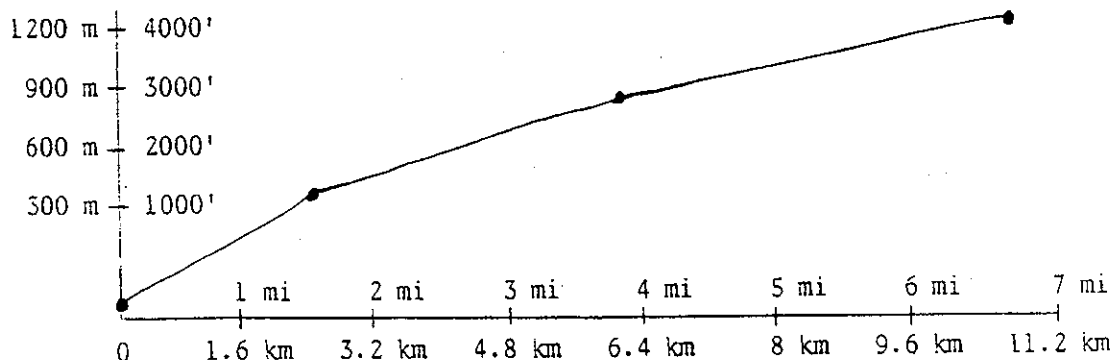
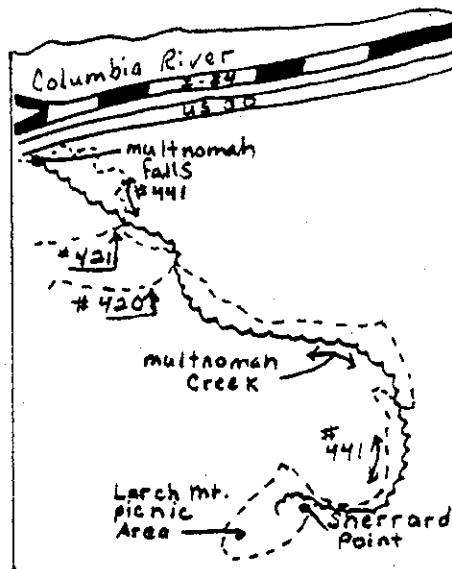
USE: Medium

DIFFICULTY: Moderate

ACCESS #1 I84 Eastbound, take Bridal Veil Exit #28 51 km (32 mi.) east to Multnomah Falls. Trail begins there or stay on I84 East or Westbound and take Multnomah Falls parking exit. To reach Multnomah Falls and trail, go through pedestrian underpass.

ACCESS #2 From I84 take Corbett exit #22. Climb Corbett Hill, turn left on Scenic Hwy., continue approximately .4 km (5 mi.) to Larch Mt. Road turnoff on right. Follow Larch Mt. road 22 km (14 mi.) to Larch Mt. picnic ground where the upper trailhead of Larch Mt. trail departs.

ATTRACTIONS AND CONSIDERATIONS: Hikers may begin their hike from either end of Larch Mt. Trail. From the Larch Mt. Picnic Area, one can continue .4 km (1/4 mi.) up to Sherrard Point where on a clear day, a great view can be seen of Mt. St. Helens, Mt. Hood, Mt. Adams, Mt. Rainier, and Mt. Jefferson. Drinking faucets and toilets are available at Larch Mt. Picnic Ground. (continued on back).



ATTRACTIONS: (Continued)

Mushrooms and huckleberries can be found along the trail and at the top of Larch Mt. in appropriate seasons.

Loop trips can easily be arranged with Wahkeena Trail, Perdicion Trail, Oneonta Trail, Franklin Ridge Trail or Multnomah Creek Way Trail.

NARRATIVE: Larch Mt. Trail #441

Hikers may begin their hike from either end of Larch Mt. Trail depending on their desirability of hiking uphill or downhill. Beginning at Multnomah Falls, the first mile is paved to the viewpoint of the falls and is generally heavily used. From that point, the trail leaves the pavement and begins the climb through the forest, passing several waterfalls and following Multnomah Creek to 6 km (3.7 mi.). Several campsites are found along the trail. The upper portion of the trail is rocky as one climbs to Larch Mt. Picnic Ground. From there, it is a short .4 km (1/4 mi.) hike up to Sherrard Point which offers a panoramic view of Mt. St. Helens Mt. Hood, Mt. Jefferson, Mt. Adams, Mt. Rainier, the Columbia River and Portland. Larch Mountain is the remanent of a shield volcano.

In rainy seasons, creeks may be difficult to cross. Sturdy boots should be worn as there are several rocky portions and a rock slide to cross. Watch for water ouzels diving in Multnomah Creek, pale green frogs in the moss at the rockslide, chipmunks and ravens.

In the upper portion of Larch Mt. Picnic Ground, the site of an old lookout tower is still visable. The original tower was built in 1914 around two tall trees. Due to dry rot, a metal tower was erected in 1923. The metal tower stood until 1941 when a free standing wood tower was built. By 1966 aerial observance was being utilized for forest fire detection. It was during this year that the tower was dismantled.

HISTORY:

On January 28, 1915, Samuel C. Lancaster, engineer of the Columbia River Highway (U.S. 30), which would be completed on July 6 of that year, gave a speech and stereo-optic picture show of the beauties traversed by the new highway to the progressive Business Men's Club of Portland. In his presentation, he recommended that a trail be built from the base of Multnomah Falls to the top of Larch Mt. The members of the club became so enthused that they immediately set to raising funds for the proposed Larch Mountain Trail. The trail was built with donations from the Business Men's Club, a local lumberman, Simon Benson, and National Forest appropriated money.

On October 3, 1915, the trail was dedicated at the lookout on top of Larch Mountain. Twenty six hikers in three groups made the 11 km (6.8 mi) hike the rainy night before. At sunrise, an American flag was unfurled from the 85 foot high lookout. Those present at the ceremony decided they would form the Trails Club of Oregon, dedicated to the building and enjoyment of trails in Oregon, and elected Samuel Lancaster their first president.

Because hikers' use of this trail is high, forest regulations prohibit the use of horses and motorized vehicles.

HIKING

Recreation Opportunity Guide

USDA



Mt. Hood National Forest
Columbia Gorge Ranger District
Rt. 3, Box 44A
Troutdale, OR 97060
(503) 695-2276



HORSETAIL - ONEONTA LOOP (#438 & 424)

LENGTH: 4 km. (2.7 mi.)

TRAIL BEGINNING, 48 m (160 ft.) elev.
Horsetail Falls Viewpoint on US 30

RECOMMENDED USE SEASON

Spring	Summer	Fall	Winter
←	→	→	→

TRAIL ENDING, 16 m (55 ft) elev.
Junction Oneonta Trailhead and US 30

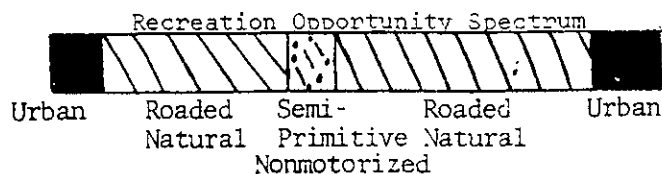
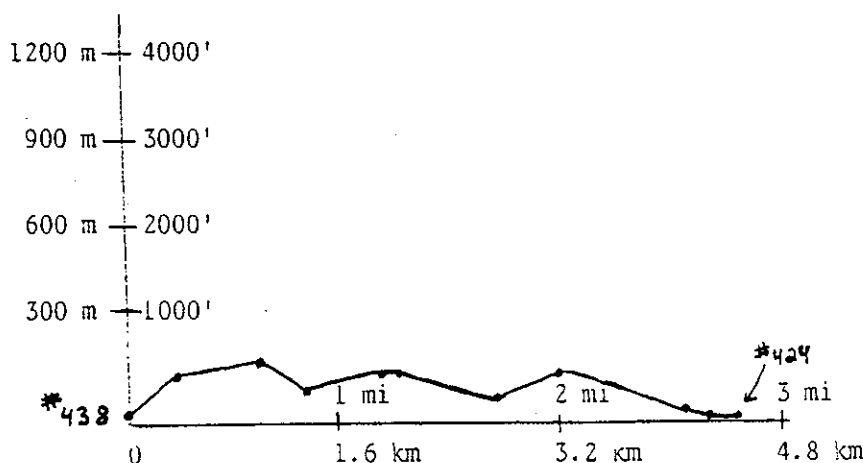
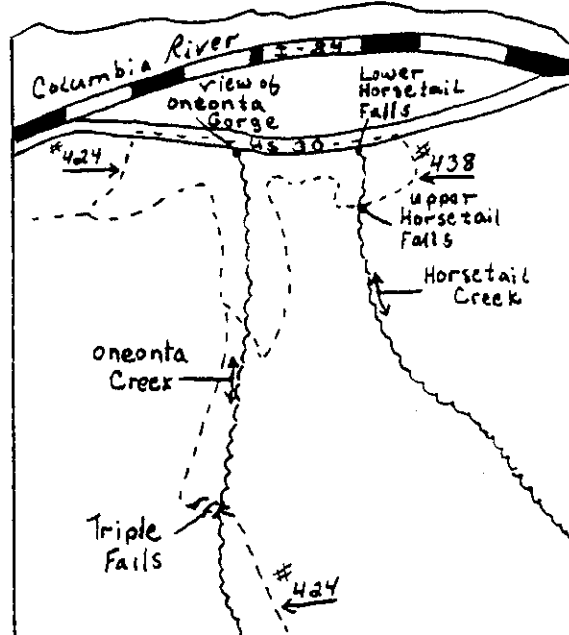
USE: Medium

DIFFICULTY: Easy

ACCESS #1: I 84 Eastbound, take Bridal Veil exit #28 on to US 30 for approximately 9 km (6 mi.) Trailhead at Horsetail Falls on south side of highway.

ACCESS #2: I 84 Westbound, take Ainsworth Park exit #35 on to US 30. Take US 30 for 3 km (2 mi.) west. Trailhead is on south side of US 30.

ATTRACTIONS: This loop trip is a moderately easy trail to hike year around. Several falls are in this short 4 km (2.7 mi.) hike and a highlight is a walk behind Upper Horsetail Falls (frequently called Pony Tail Falls) which cascades from a moss-covered volcanic cliff to a pool below the trail. There is also an excellent view from above Oneonta Gorge before crossing Oneonta Creek.



NARRATIVE Horsetail - Oneonta Loop (#438 & 424)

Horsetail - Oneonta Loop begins at the trailhead where the 55 m (176 ft.) Horsetail Falls cascades into a pool directly south of US 30. 6 km (4 mi.) up the trail is the Upper Horsetail Falls (often called Ponytail Falls) where the trail passes behind the falls under a volcanic cliff overhang. Hikers get a spectacular view of Oneonta Gorge before dropping down and crossing Oneonta Creek. The trail then junctions with Oneonta Trail #424 offering hikers a choice of heading up trail 1.6 km (1 mi.) to Triple Falls or north 1.6 km (1 mi.) to Oneonta Trailhead and US 30. To complete the loop, hike along US 30 east, stopping to explore Oneonta Gorge at creek level. During mid-summer when Oneonta Creek is low, an enjoyable scramble is to pick ones way up the cool shadowed gorge to view the falls at the south end of the Gorge. Woodland plants and trees are typical of the lower Columbia Gorge forest and a few species of plants are found only in the Columbia Gorge. Oneonta Gorge was designated a Botanical Area in 1978. Cliff swallows, juncos, towhees and pikas can be seen.

Because hikers' use of this trail is high, forest regulations prohibit the use of horses and motorized vehicles.



United States
Department of
Agriculture

Forest
Service

R-1

REPLY TO: 1920 Land and Resource Management Planning Date: 9/20/85
7720 Development
(IO)
SUBJECT: Planning Issues

TO: Forest Supervisors; Staff Directors; N&MR Specialists;
Director, MEDC; and Civil Rights Assistant

The Forest review of the enclosed document, "Forest Access," has been completed and is now transmitted to provide direction for access in the Northern Region and the procedures for implementing it. An important part of this effort is to answer the questions:

1. What are the resource values and objectives?
2. Why is the facility needed?
3. How will it be used?

These questions are being asked by many people representing a wide variety of interests. Answers such as "This facility is in our long-range plans" are not sufficient. It leaves the door open to a wide array of assumed reasons for access and erroneous perceptions of our access program.

This direction emphasizes providing the minimum transportation facilities necessary to accomplish resource management objectives. It is important we assess involved social and economic conditions and projections and recognize all the values in the lands and how they differ between areas. It will be necessary to use this information to prepare and periodically review access prescriptions to insure they continue to meet resource management objectives.

Finally, I want to emphasize line officers responsibility for:

1. Preparing access prescriptions through interdisciplinary involvement that are adequate to permit the design of minimum facilities needed to accomplish resource management objectives.
2. Insuring access prescriptions include public participation.
3. Insuring access prescriptions are current and accurate and priorities for construction are in order.
4. Insuring subsequent facilities constructed meet the prescription provided.


TOM COSTON
Regional Forester

Enclosure

After evaluation of these considerations for each unit of land, an access prescription shall be determined for National Forest System lands. The access prescriptions shall specify the level, density and standards of development, along with the planned management direction and use for the facilities. The following is a list of access prescriptions but is not meant to be all-inclusive:

A. ACCESS PRESCRIPTION #1 -- NO DEVELOPED FACILITIES FOR ACCESS

Would be used for management areas or portions of a Forest where the objective is to keep public use low, such as for critical grizzly bear habitat, or to ensure that parts of the wilderness remain pristine. Generally used where the recreation resource is the primary value and the Recreation Opportunity Spectrum (ROS) management objective is primitive.

B. ACCESS PRESCRIPTION #2 -- ACCESS BY TRAILS ONLY - NON MOTORIZED

For application where resource management objectives indicate that public use, generally nonmotorized, needs encouragement or dispersal, and where even low-standard roads are inappropriate or illegal. May also be used to meet primitive and semiprimitive management objectives outside of wilderness areas.

C. ACCESS PRESCRIPTION #3 -- ACCESS VIA INTERMITTENT SERVICE ROADS

(Traffic Service Levels C and D)

Would provide for low-density, Traffic Service Levels C and D roads that are closed or restricted to motorized use for extended periods of time. Roads may be short-term facilities that are obliterated after use, or may be permanent, long-term facilities that are closed to all vehicular traffic, revegetated and put to bed until needed again for future management,

or where vehicular traffic is restricted to specific uses and time periods. This access prescription is appropriate for management of elk habitat security where timber is harvested. Access may be active but facilities would lie "lightly on the land" and generally provides the semiprimitive, nonmotorized use ROS access setting. Snowmobile use may be permitted if there are no conflicts with wildlife or recreation uses. Vehicular traffic on closed roads is discouraged and prevented by the use of earth mounds, debris blockage, and revegetation rather than by traffic control devices.

D. ACCESS PRESCRIPTION #4 -- ACCESS VIA CONTROLLED USE ROADS (Traffic Service Levels C and D) AND TRAILS

As in Access Prescription #3, these roads would be low density, Traffic Service Level C or D, the difference being that these roads would be physically closed or restricted by traffic devices and enforced. Roads would be available for firefighting, timber harvesting, tree planting, habitat improvement, and possible occasional public use during nonsensitive time periods.

This access prescription would be appropriate where wildlife is negatively impacted by vehicular traffic. Limited motorized use would generally be the ROS roaded natural access setting. Traffic control devices would be used to limit, prohibit or control traffic. (See "Guide for Traffic Control Devices on Forest Development Roads" booklet.)

Motorized use on trails may be restricted or prohibited to specific vehicle types or seasons of use based on the Forest Travel Plans and closure orders. ROS setting for trails would be semiprimitive motorized.

FOREST ACCESS

Provide the minimum transportation facilities necessary to accomplish the resource management objectives for the area or land unit by establishing access prescriptions.

Forest "Access" is defined as the utilization of existing and planned transportation facilities.

"Access prescription" is defined as the level, density, timing use and management of the transportation systems to meet multi-resource management objectives for a given unit of land. Access prescriptions are required and shall be used to set the framework for transportation systems planning.

Careful evaluation of the public's needs and resource management objectives for an area must be made through an interdisciplinary process prior to developing access prescriptions. Line officers must establish access prescriptions to ensure that management flexibility in terms of level, density, and standards for development of facilities is available to them. Line officers will periodically evaluate existing and planned facilities to ensure that they continue to meet an area's management objectives.

Examples of resource management objectives to be considered when establishing access prescriptions are:

A. Recreation objectives: (1) type, (2) carrying capacity, (3) seasonal restrictions, (4) level of future use, (5) type of use, (6) Recreation Opportunity Spectrum (ROS).

B. Wildlife and Fisheries habitat conditions and objectives

1. Species diversity
2. Management indicator species
3. Elk security cover
4. Wildlife and fish habitat potential
5. Spawning habitat condition
6. Blue ribbon trout streams unique values
7. Anadromous fishing values
8. Threatened, endangered, and sensitive species use of an area

C. T&E species use of area

D. Timber productivity

E. Soil sensitivity

F. Water quality and use

1. Fishing
2. Municipal watershed
3. Irrigation

G. Visual quality objectives

H. Insect and disease situation

I. Minerals

J. Fire

K. Economics

L. Etc.

E. ACCESS PRESCRIPTION #5 -- ACCESS VIA OPEN ROADS AND TRAILS (Traffic Service Level C and D)

Access for facilities would be low-density, Traffic Service Levels C and D roads, but open to the general public's high clearance vehicles. Roaded natural, motorized use would be the access setting. Facilities would provide access to remote settings.

F. ACCESS PRESCRIPTION #6 -- ACCESS VIA FULLY DEVELOPED FACILITIES

This prescription provides for generally unrestricted access. Traffic Service levels A and B roads are usually appropriate. A network of roads provides access to areas where moderate-to-heavy vehicular traffic does not create a resource management conflict. This access prescription is appropriate for a Roaded Natural, Rural, or Urban ROS management objective. Some roads may be closed, generally for economic, public safety, or resource protection reasons.

Where a combination of access prescriptions is required to describe an area's transportation needs generally the least restrictive is going to be the public's perceived prescription. For example, if 1/2 of an area is projected to be Access Prescription #3 and the other half #6, the area would likely be perceived by the public as being fully roaded.

PECOS WILDERNESS TRAIL MANAGEMENT PLAN

Purpose and Need

Dwindling funds and widespread damages to the existing Pecos Wilderness trail system has been recognized in the Santa Fe Land Management Plan. There is a need for a dynamic and flexible management tool to systematically analyze annual trail operation and maintenance plans, reconstruction, and capital investment proposals. In recognition of this need, Forest Supervisor James L. Perry, in a letter dated 10/14/82, directed that a task force be established to prepare within the guidelines of the Santa Fe Land Management Plan, (1) a Pecos Wilderness Trail System Implementation Map, (2) a method for prioritizing work through annual operation and maintenance plans, and (3) capital investment proposals, (copy in appendix). The resulting documents are intended to provide the coordination necessary to maximize efficiency in the management of a wilderness trail system divided between five Ranger Districts on two National Forests.

This plan is intended to implement L20/21 of Prescription 10 of the Santa Fe Land Management Plan which states, "Plan, construct, and maintain a trail system to a standard that meets the needs of management and acceptable use."

Analysis of the Situation

The Pecos Wilderness was formally classified by Congress as Wilderness in 1964. It had been managed as wilderness since 1955 and before that, as a primitive area. Many of the trails that existed then were the results of sheep and cattle permittees and large hunting parties that used the area. Some of the trails may have been established by the Indian tribes surrounding the Pecos.

In 1972, Regional Forester William D. Hurst approved the Pecos Wilderness Management Plan. It was recognized that most of the 427 miles of trails serving as interior and exterior access failed to meet current standards. Many of the trails were improperly located and the resulting erosion and resource damage is continuing unchecked to this day. In addition, it was anticipated that 47 miles of new trails were needed.

In 1972, our inventories indicated that out of 427 miles of trail, 100 miles were in substandard condition. Our latest inventories indicate this figure has become 300 out of 427 miles due to lack of maintenance. Fifteen thousand log waterbars need to be installed or replaced to minimize further damage. Tread has long disappeared on many trail sections or they have become arroyos due to poor location, soils, steepness of terrain and cattle use. Some trails, such as the Maestas trail, and portions of trail 264 below Trailriders Wall, have been abandoned due to the blowdown that has occurred. Many culverts have become ineffective or are in need of installation to lessen the large bogs some trail sections have become.

The trail system serving the Pecos Wilderness provides access to an area administered by five District Rangers on two National Forests. Past direction has been that all trails would be cleared of blowdown each year. The magnitude of this task coupled with the small annual allocation of trail maintenance dollars has resulted in most trails sadly needing heavy maintenance. Coordination of

trail maintenance between Districts in the past has been on an informal basis. There is a lack of long range planning to determine the most desirable trail system and maintenance levels that will best meet the social and resource protection needs of the Pecos Wilderness.

Cattle permittees who are operating in the Pecos Wilderness have been notified that the Forest Service will no longer be able to clear blowdown from many of the trails due to lack of funds. Local outfitter guides operating in the Pecos, such as Sonny Shoemaker and the Ley brothers have also been notified and their assistance solicited. There is little if any help these permittees can provide due to the size of their operations and limited seasons.

Recently, through the use of volunteers, some minor maintenance has been accomplished. Volunteers for the Outdoors, based in Albuquerque, has indicated they are willing to expand their operations in the Pecos area and thus some higher levels of maintenance should be achieved through greater volunteer participation.

The Analysis Process for the Implementation Plan

Before beginning trail maintenance planning, it is important to review the relationship of trails in wilderness and the wilderness philosophy in Region 3. Trails are a permissible, but not a mandatory facility which provide for the use and enjoyment of wilderness by a greater number of people. Although they are not considered an essential part of the natural physical environment of the wilderness, their presence does contribute significantly to the social settings within the wilderness.

The process utilized during the analysis consisted of gathering available data to produce maps and overlays. This task was driven by the desire to maximize resource and visitor protection, management efficiency, and wilderness experiences through a variety of ROS settings. Specialists for soils, transportation planning, the landscape architect, district recreation and lands staff officers, and responsible line officers were utilized.

A trail use inventory was determined to be essential for the planning effort. Use figures, derived from the wilderness permit system were modified to provide for day use, outfitter guides, permittees and non-permitted overnight use. From this, an overlay was produced showing use corridors segregated into high, moderate, and low use categories. Type of use was found to be of little value in determining maintenance priorities due to the fact that almost all trails are used by hikers and horseback groups alike.

A soils map was used to analyze in what types of soils the trails were located. An overlay showing problem trail condition areas was produced and, for the most part, existing trails were located on suitable soils. It was found that trails constructed on any type of soil over 40% would erode, regardless of the soil type. Where trails have been built under contract in the past, little damage has occurred because they were constructed with proper grades and drainage facilities.

Pecos Wilderness Implementation Plan Analysis

As a result of reviewing the use figures and the soil type on which trails were located, it became apparent that a "core trail system" should be established. This trail system is defined as a network that not only serves as the primary visitor access to the main attractors (lakes, vistas, streams), but also meets management needs and protects the various wilderness resources. This core system utilizes transportation planning efforts by classifying existing trails as an arterial, collector, or local trail (see appendix).

These core trails classifications, and the development of maintenance levels, based on known or potential use, enables the manager to set trail maintenance priorities. For example, an arterial trail in a low use corridor would receive a lower level of maintenance, Level II, than it would if located in a medium or high use corridor. Likewise, the trail dropping into Santa Fe Lake should be maintained to Level III, based on high potential use, should the Santa Fe Watershed be opened to the public.

This classification process was applied to the entire Wilderness and it became evident that the existing system was more than sufficient to meet access needs. Many of the existing trails are in place because of known popular attractors or they are located in the only practical way through an area, such as a very narrow ridgeline. Those areas that are not accessed by trails will be managed in a primitive setting to offer that opportunity to those who seek it. During the analysis phase of construction and reconstruction projects, close examination of the area will be made to take advantage of any recreational, scientific, educational, conservation or historical opportunities that may be present. No substantial new construction is planned in the immediate future except for minor rerouting of small sections to minimize resource damages.

Maintenance, or minor relocation and resultant closure of trail sections are routine, of limited magnitude and therefore are categorical exclusions as provided for in Section 1951 of NEPA regulations. Relocation of major sections of trails or construction projects will require further analysis.

Pecos Wilderness Implementation Map

During the analysis process various maps were produced which included: soils, visitor use intensities, and a transportation classification system. These maps were then used to develop a Pecos Wilderness Implementation Map which will be used as a tool in determining trail maintenance schedules. This implementation map shows ROS use zones based on high, moderate, and low levels of visitor use (see appendix).

The implementation map also indicates three levels of trail maintenance which could be performed within each ROS use zone. By referring to the implementation map and the ROS use zone/Trail Maintenance Matrix (see appendix), a priority list of trail maintenance projects can be formulated before each field season. These projects should be entered on the Pecos Wilderness Trail Maintenance Plan worksheets for each site specific yearly project.

The map can also be used by receptionists during the issuance of wilderness permits. A variety of recreation opportunities, based on ROS use zones and trail maintenance levels, can be provided to visitors. Those visitors that desire a high level of contact with other visitors on a well signed and defined trail may find that experience in high use zones. Visitors desiring more solitude on primitive trails may be directed to low use zones.

Pecos Wilderness Trail Maintenance Implementation Plan

The Pecos Wilderness Trail Maintenance Implementation Plan is a prioritization matrix to be used in conjunction with the Implementation Map, (described in above section) and worksheets to systematically analyze each trail. Using the suggested selection criteria, proposals can be prioritized for each use zone taking into account such variables as public safety, steepness of grade and slope, amount/intensity of use, existing trail tread condition, labor resources available, time of year, job location proximity and prior investment work. The line officer still has the flexibility through the matrix to apply a higher priority on those trail sections that may have existing or potential losses that must be treated. Options to take advantage of contract, force account or volunteer labor are still available. As worksheets for each use zone are developed, the manager will be able to match changing financial and labor situations to project proposals with sound rationale.

Each unit's annual operation and maintenance plans can be developed from this system, using the worksheets to prepare corresponding 1900-4's.

Capital Investment Proposals

The Capital Investment Proposals, Table 4, of the Santa Fe Land Management Plan, listed for the Pecos Wilderness were then matched against the Implementation Plan. The first three proposals, Pecos Baldy Trail, Rito Padre Trail and the Skyline Trail fall within high to moderate use zones and should remain as displayed. Five years after the Santa Fe Land Management Plan is implemented, the list should be reviewed to meet changing conditions that may exist at that time. Priorities for Capital Investment Proposals may be determined utilizing the same process for maintenance priorities described in the following "Trail Operation and Maintenance Plan" section.

A list of capital investment proposals submitted by the Carson National Forest are as follows:

<u>Priority</u>	<u>Trail Name & Number</u>	<u>Type of Work</u>	<u>Estimated Cost</u>
1	West Fork - 25	Reroute short stretch	\$2,000
2	Middle Fork - 24	Correct swampy situations as much as possible	\$10,000 - \$15,000
3	Indian Creek - 27	Realignment to lessen grade	\$5,000
4	East Fork - 26	Correct swampy areas as much as possible	\$5,000
5	Serpent Lake - 19	Realignment & drainage	\$5,000

Coordination Between Forests/Districts

An annual meeting between all five Districts should be scheduled to occur on or about February 1 of each year. This will serve to coordinate O & M plans and Capital Investment Proposals to take advantage of opportunities to pool resources and maximize efficiency. This timing will enable input into the annual program planning and budgeting process that must be submitted to the Regional Forester by March 15 of each year. The Pecos District Ranger will coordinate the time and place of this meeting. Accomplishments from the previous field season can be shared to aid in planning for the coming summer months.

PECOS WILDERNESS TRAIL

MAINTENANCE
IMPLEMENTATION PLAN

OPERATION AND MAINTENANCE PRIORITIZATION MATRIX

SELECTION CRITERIA

1. STEEPNESS OF GRADE AND SLOPE
2. AMOUNT/INTENSITY OF USE (HORSEBACK, HIKER, ETC.)
3. EXISTING TREND CONDITION (DEGREE OF DAMAGE)
4. SOIL SENSITIVITY EROSION FACTOR
5. MANAGEMENT EFFICIENCY
 - a. Resource Availability-Volunteers/Basic Facility/etc.
 - b. Time of Season (Climatic Conditions)
 - c. Accessibility and Accessibility
6. OTHER FACTORS

WILDERNESS ZONES

A. HIGH USE ZONE (see map)

RECREATION OPPORTUNITY SPECTRUM
ROS-SPNM/P ZONE-High Social Contact
Managerial Control

Priority 1.

- A. HIGH-MOD. USE: 1500-7500 visit/sea.
- B. PRIOR INVESTMENT WORK: Contracts
- C. HIGH POTENTIAL FOR, OR EXISTING
IRRETRIEVABLE LOSSES

Priority 2.

- A. MOD. USE: 300-1500 visit/season
- B. PRIOR INVESTMENT WORK: Contracts
- C. HIGH POTENTIAL FOR, OR EXISTING
IRRETRIEVABLE LOSSES

B. MODERATE USE ZONE

RECREATION OPPORTUNITY SPECTRUM
ROS-SPNM/P ZONE-Mod/Low Social
Low Managerial

Priority 3.

- A. MOD/LOW USE: 1500 or less visit/sea.
- B. PRIOR INVESTMENT WORK: Contracts
- C. HIGH POTENTIAL FOR, OR EXISTING
IRRETRIEVABLE LOSSES

C. LOW USE ZONE (see map)

RECREATION OPPORTUNITY SPECTRUM
ROS-PRIMITIVE ZONE-low use, or trailless

Priority 4.

- A. LOWEST USE: less than 300 visit/sea.
- B. KEY ARTERIAL TRAIL CONNECTORS
- C. HIGH POTENTIAL FOR, OR EXISTING
IRRETRIEVABLE LOSSES

WORKSHEET A.

OPERATION AND
MAINTENANCE
TRAIL PRIORITIES

1. (see sample)
2. _____
3. _____
4. _____
5. _____

INVESTMENT
PRIORITY (FLMP,
Volunteer, Force
Acct., etc.)

1. (see sample)
2. _____
3. _____
4. _____

JOB TASK

O&M LEVEL TRAIL
STANDARD
LEVEL III
LEVEL II
LEVEL I
(see definitions)

C.I.P. INVESTMENT
MANAGERIAL
OPTIONS
Irreversible Trail
Conditions Needing
Correction/Reconst.
Contract
Force Account
Volunteer

WORKSHEET B.

OPERATION AND
MAINTENANCE
TRAIL PRIORITIES

1. (Mainly Level I & II)
2. (see worksheet A)

INVESTMENT
PRIORITY (FLMP,
Volunteer, Force
Acct., etc.)
MAINLY IRREVERSIBLE
RESOURCE DAMAGE

1. _____

WORKSHEET C.

OPERATION AND
MAINTENANCE
TRAIL PRIORITIES

1. (Mainly Level I)
2. (see worksheet A)
3. _____

Recreation

P
Primitive

SPNM
Semi-Primitive
Non-Motorized

SPM
Semi-Primitive
Motorized



Experiences

Physical
Setting

Social
Setting

Managerial
Setting

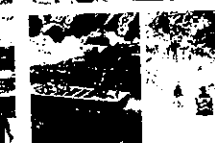
Access

Mode of
Travel

Vegetative
Alterations

Harvest
Access &
Pattern

SETTING



V-28

Opportunity Spectrum

RM Roaded Modified • Opportunity to get away from others but with easy access. Some self-reliance in building own camp site and use of motorized equipment. Feeling of independence and freedom. Little challenge and risk. • Substantially modified natural environment except for campsite. Roads, landings, slash and debris may be strongly dominant from within yet remain subordinate from distant sensitive roads and highways. • Moderate evidence of other users on roads. Little evidence of others or interaction at camp sites. • Little on site controls of users except for some gated roads. • Conventional motorized access including sedan and trailers, RVs, ORVs and motor bikes. • Shade and blend vegetative alterations. Maintain campsite and immediate foregrounds to site in natural appearing state.	RN Roaded Natural • Opportunity to affiliate with other users in developed sites but with some chance for privacy. Self-reliance on outdoor skills of only moderate importance. Little challenge and risk. • Mostly natural appearing environment as viewed from sensitive roads and trails. • Interaction between users at camp sites is of moderate importance. • Some obvious on site control of users. • Access and travel is conventional: motorized including sedan and trailers, RVs and some motor homes. • Vegetative alterations done to maintain desired visual and recreation characteristics.	R Rural • Opportunity to observe and affiliate with other users is important as is convenience of facilities. Self-reliance on outdoor skills of little importance. Little challenge and risk except for activities such as downhill skiing. • Natural environment is culturally modified yet attractive (i.e. pastoral farmlands). Backdrop may range from alterations not obvious to dominant. • Interaction between users may be high as is evidence of other users. • Obvious and prevalent on site controls. • Access and travel facilities are for individual intensified motorized use.	U Urban • Opportunity to observe and affiliate with others is very important as is convenience of facilities and recreation opportunities. Outdoor skills, risk and challenge are unimportant except in competitive sports. • Urbanized environment with dominant structures, traffic lights and paved streets. May have natural appearing backdrop. Recreation spaces may be city parks and large regions. • Interaction between large numbers of users is high. • Intensive on-site controls are numerous. • Access and travel facilities are highly intense, motorized and often with mass transit supplements. • Vegetation is planted and maintained.
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FACILITIES

Camp Sites

Eating Facilities

Cooking Fire

Water Supply

Sanitation

Solid Waste

Signing

Water Crossing

Interpretive



P

- No facilities
- No site modification for facilities
- Interpretation through self discovery. No on site facilities

SPNM

- No facilities except limited signing, sanitary and safety needs in native-like rustic materials
- Minimal to no site modification
- Interpretation through self discovery. Some use of maps, brochures and guide books. No on site facilities

SPM

- Limited facilities for signing, sanitary and safety needs in native-like rustic materials
- Minimal site modification for facilities
- Interpretation through very limited on site facilities. Use of maps, brochures and guide books



Pacific Northwest Region
USDA • Forest Service



RM

- No on site facilities except signing at major road junctions. Occasional sanitary facilities for user health protection
- Site modification by users only
- Interpretation by simple wayside signs of native-like rustic materials

RN

- Moderate amount and complexity of facilities for comfort and convenience of user. Use native materials but with more refinement in design
- Moderate site modification for facilities
- Interpretation through simple wayside exhibits. Use native-like materials with some refinement in design. Some casual interpretation from forest staff

R

- Highly complex and numerous facilities with some synthetic but harmonious materials. Design is more refined. Many convenience facilities such as flush toilets, lighting, piped in water etc
- Moderate to heavy site modification
- Interpretation through more complex wayside exhibits including small lighted structures. Interpretive facilities such as kiosks and portals may be staffed part time

U

- Numerous very highly complex and dominant facilities, mostly synthetic materials and very refined design. Convenience facilities are dominant
- Heavy site modification for facilities
- Interpretation through very sophisticated exhibits in staffed visitor centers, wayside exhibits etc

USES OF THE ROS

The ROS has a variety of uses that aid recreation managers as they strive to provide opportunities for the public and to integrate recreation with other land uses. The following identifies and describes some of these uses.

1. A WAY TO THINK ABOUT RECREATION PLANNING AND MANAGEMENT

Possibly one of the most important roles of the ROS is in providing managers and planners a framework within which they can consider the role of recreation within a complex human and resource system. It can facilitate purposeful thinking about the kinds of recreation provided, the location and relationship of these opportunities, and the kinds of complementarities and conflicts that exist among different opportunities as well as with different resource uses. The ROS also helps focus our attention on the fact that recreation is concerned primarily with producing experiences for people.

2. ALLOCATING AND PLANNING RECREATION

The ROS helps planners identify different allocations of recreation, specifying where and what types of recreational opportunities might be offered and the implications and consequences associated with these different allocations. Because the ROS requires explicit definitions of different recreation opportunities, it facilitates comparisons between different alternatives. It also helps identify what specific actions might be needed in order to achieve certain allocations in the future.

3. EVALUATING CONFLICTS

The explicit nature of the ROS assists managers in identifying and, hopefully, mitigating conflict. Because the ROS identifies appropriate uses within different recreation opportunities, it is possible to separate potentially incompatible uses. It also helps separate those uses that yield experiences that might conflict, such as solitude and socialization. The explicit nature of the ROS helps pinpoint where conflicts might occur and their specific nature.

The ROS also helps identify potential conflicts between recreation and non-recreation resource uses. It does this in several ways. First, it can specify the overall compatibility between a given recreation opportunity and other resource management activities. Second, it can suggest how the activities, setting quality, or likely experiences might be impacted by other

¹ We have compiled this list of uses from our experience during the last several years in numerous ROS workshops in this and other countries. Your suggestions for expanding the list would be appreciated. Please send your suggestions to either Perry Brown, Roger Clark or George Stankey.

non-recreation activities. Third, it can indicate how future land use changes might impact the present pattern of recreation opportunity provision.

4. LINKING USER DESIRES WITH RECREATIONAL OPPORTUNITIES

The ROS conceives of recreational engagements as being comprised of people participating in selected activities in preferred settings in order to realize desired recreational experiences. In this framework, the activities in which people participate plus the places where they do these activities are seen as combining to produce experiences or outcomes. Thus, it is possible for managers to more easily link the desires that people express--for activities, for places, or for experiences--to available opportunities, because both user desires and recreational opportunities are defined in similar terms.

Moreover, the ROS allows managers to gain a more sophisticated notion of some of the subtle differences in demands for an apparently similar activity (e.g., camping) that is, in fact, composed of a range of complex differences in the style with which it is pursued. Many people enjoy camping and express this preference verbally. But when we look at their behavior we find a wide variety of settings involved, ranging from backpack camping to camping in well-developed, convenience campgrounds. By better understanding exactly what the visitor demands (i.e., beyond the fact they want to camp), we are better able to match their specific preferences for settings and experiences with places that will likely fulfill these preferences.

5. GUIDING AND EVALUATING MANAGEMENT OPTIONS AND ACTIONS

In point 1 above, we discussed how the ROS serves as a useful framework for managers and planner to think about recreation. One specific area this is particularly useful is when we begin to consider what specific actions we should undertake. Another is when we attempt to evaluate how well these actions have accomplished their purpose. By providing explicit, objective measures of what conditions--bio-physical, social, and managerial--are appropriate in a given recreational opportunity setting, we are in a much better position to make such determinations. And because these conditions are explicit, it is possible to evaluate whether or not our judgments of appropriate conditions are sound and, if they should be changed, in what way. It also means that we can judge what effects a change in the criteria and standards that define a recreational opportunity setting will have, not only with regard to supply, but to demand as well.

6. CONDUCTING RESEARCH STUDIES

The ROS is founded upon a base of research that has been underway for a number of years. This research foundation has helped shape much of the structure of ROS as well as its basic rationale. However, many questions still remain and although it is important to remember that the ROS is a state-of-art judgmental process, it is also true that an improved understanding of the relationship among activities, settings, and experiences will greatly improve application of the ROS. For example, an improved understanding of the linkage between setting conditions and certain experiences would be of great value.

Also, the ROS helps direct research toward those questions that are of major importance to management, thereby increasing the relevance of that research.

7. INVENTORYING RECREATIONAL RESOURCES

A basic application of the ROS is providing planners with a baseline of current conditions, showing the amount and distribution of present recreational opportunities. Because these settings are defined by measurable, objective standards, it is readily possible to conduct such inventories. The key point to be understood here is that the inventory provides only a measure of what is, not what might be or should be provided.

8. SENSITIZING US TO PERSONAL AND ORGANIZATIONAL BIASES

All of us are influenced by biases and perceptions of the world that are shaped by our personal backgrounds as well as by the views of the organizations for which we work. The ROS does not rid us of these biases, but it does help surface them and force us to acknowledge them. It does this primarily because it requires that our assumptions and judgments be made explicit and thus subject to the review and questioning of others. By reviewing these assumptions and judgments, these biases can be test against other factors related to supply and demand to evaluate their validity.

9. DEFINING RECREATIONAL PRODUCTS

A long-term problem in recreation management has been the definition and measurement of the outputs of such programs. Frequently, the focus has been on such measures as the number of visitors using an area or the number of facilities provided. However, these are invalid measures of the output of recreation management. Increasingly we have come to realize that the real measure of recreation management effectiveness are the experiences that people realize. In the ROS system, these outcomes are clearly seen as critical and although it is not possible to state categorically that certain outcomes are predictably the result to certain activities undertaken in certain settings, it is likely that many experiences are the probable consequence of participation in certain settings

10. PUBLIC PARTICIPATION

The ROS provides a helpful structure for interacting with the public. Again, the basic reason for this is the explicit nature of the ROS and the capacity it has for showing how recreation will be provided and how recreation might be affected by other forest uses. Experience has shown that the general structure and logic of the ROS is readily understood by the public. In particular, the ROS provides the public with a ready ability to see how both recreation management decisions as well as other forest uses will affect their favorite places and preferred uses.

11. COMMUNICATING WITH RECREATIONISTS

The ROS provides a useful framework for developing a program for communicating with recreationists. Because different people will seek different kinds of information regarding a planned outing, it is important that managers be able to supply such demands. The ROS facilitates this as it rests upon a conception of recreation that deals not only with activities, settings, and experiences, but also with bio-physical, social, and managerial settings. By providing information regarding the nature of settings in this fashion, the ROS provides visitors with information in terms most relevant to them

12. DETERMINING ROLES OF VARIOUS AGENCIES AND THE PRIVATE SECTOR

The fundamental idea underlying the ROS is that a diversity of recreational opportunities are demanded by people. And, following upon this, we can best insure quality recreation by providing this spectrum of demanded settings. However, it is unlikely that any one supplier can meet all these demands or supply all the desired settings. In part, this is because different suppliers have different responsibilities and management objectives. Yet, there are often pressures for agencies to supply more and more kinds of opportunities. The ROS can help agencies make decisions about what portion of the spectrum they are best suited to supply. It can also be used to assess, on a regional level, how adequate the various public demands are being met by the various suppliers and, where gaps exist, which agency might be best suited to meet this gap. And it can help provide a rationale for providing types of opportunities that they would normally not provide, in cases where existing demands are not met by current suppliers.

13. IDENTIFYING AND EVALUATING INCONSISTENCIES

A major issue in using the ROS in resource management is how to evaluate the effects of management actions on recreation uses and opportunity classes. In particular, what types of actions or modifications are consistent within each ROS class and which are inconsistent?

In essence an inconsistency occurs when the status of one or more of the physical, social, or management factors exceeds the standards specified in an area's management plan. The key then for identifying inconsistencies is to specify explicit standards for each of the factors underlying the definition of ROS classes, for example, the type of access, amount of acceptable social interaction, and the appropriateness of other resource uses. After explicit standards have been developed, and a decision has been made about which of the ROS classes an area will be managed for, it will be readily apparent what is and is not consistent with the objectives.

Determining inconsistencies is not a relevant issue during the ROS inventory. At this stage the ROS class appropriate for an area is simply determined by current status of each of the factors. The appropriate class is the one that is met by all of the factors. If, for example, five factors fit the definition of Semiprimitive-motorized and one fits the definition of Roaded Natural, the area should be classified as Roaded Natural because all of the factors fit the definition of the RN class. Resolving what appears to be an

inconsistency at this stage (at least with regard to the SPM class) requires a determination of what conditions will be adopted for future management. Such "what should be" questions are inappropriate during the inventory of what exists now. If it is determined through the forest planning process that the area should be managed as SPM it would then be necessary to determine what should be done with the one inconsistent factor. (See Clark and Stankey 1979 for a further discussion of inconsistencies.)

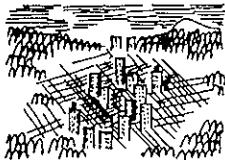
Note: Because of some confusion about the identification and evaluation of inconsistencies, a small group from research and management has been assigned responsibility for preparing a paper laying out a detailed rationale for handling the issue. Questions to be addressed include: what are the normative conditions in each ROS class that managers should strive to achieve and protect? how can inconsistencies be identified, evaluated, and managed? is there a distinction to be made between roads and other modifications presently on the ground versus those planned in areas considered as SPNM or SPM? if roads or other modifications are necessary in an area designated as SP, what are the options that might be considered to resolve the apparent inconsistency; i.e., what criteria and guidelines need to be developed to insure the integrity of the opportunity class? can a rationale be developed that covers timber management and visual management in the same way as access in the management of the ROS classes? what are the implications of inconsistencies and alternative ways to resolve them for both the land manager and the public? A major concern is to insure that the integrity of the ROS framework is not jeopardized while allowing appropriate management flexibility.

Recreation Opportunity Spectrum

Many believe the Pacific Crest National Scenic Trail (PCNST) passes mostly through wild and beautiful country. In fact, it passes through a wide variety of environments offering a range of recreational experiences. The kinds of environments and experiences can be viewed as a spectrum of recreational opportunities, from urban (highly developed and lots of people) to primitive (undeveloped and very few people).

Recreation managers use this Recreation Opportunity Spectrum to judge the appropriateness of public facilities, roads, trails, sanitation, etc., within particular settings and to gauge the appropriate design for roads and timber harvest operations in areas where they are allowed. You, the hiker, can also use the Recreation Opportunity Spectrum to find areas which offer the hiking environment you seek.

Opportunity Descriptions



Urban. This may be where you live! There are many buildings, paved roads, and lots of people. You will not experience the urban setting along the PCNST in Oregon. Hiking and biking trails through city parks and residential areas would provide an urban recreation experience.



Rural. This is the land between the cities and the forest. It includes pastoral farm land, small communities, commercial facilities, or large campgrounds and trailheads along paved highways in the forest. Expect to find many other people along these parts of the trail. These areas offer convenient day hikes and off-road vehicle opportunities throughout the year.



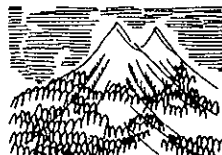
Roaded Natural. Along or near main forest roads and highways you will find subtle modifications to the natural environment. Improvements are limited to roads, trails, and a few scattered structures. The natural environment still dominates, though timber harvest and preparations for the next generation of trees are visible. Posted regulations as well as contacts with others are likely. There is a limited opportunity to get away from others. You are further from towns and their conveniences, so you must be self-reliant to meet your personal requirements. Substantial day hikes or more relaxed biking and camping opportunities prevail. The PCNST trail passes through these areas near many trailheads and road crossings.



Roaded Modified. Along less-used forest roads you will likely find large clearcuts, skid roads, and landings dominant to the view. You will find increasing chance to get away from other recreationists, but logging operations may be dominant. No facilities are provided. You are on your own.



Semi-Primitive. Leaving roads behind you leads to increasing isolation from the sights and sounds of human activity. The degree of risk and isolation increases and recreation activities become dependent on the natural scene. Tables and other improvements are left behind as human comfort and satisfaction become dependent on personal ability.



Primitive. These are the most remote parts of the forest. These areas have been little influenced by the works of people. The natural environment dominates the setting and controls the kinds of recreation experiences. Its beauty, isolation, uncertainty, risk, and discovery dictate the kinds of recreation challenges. Woodsmanship skills are important to provide safety and comfort.

Editors Note:

The Recreation Opportunity Spectrum can be used on Forest Recreation maps to help the public match their expectations with a place to recreate. This example is taken from the So. Oregon portion of the Pacific Crest National Scenic Trail map (R-6).

Essential Services

The numbers in this matrix correspond with numbered locations along the Trail on this side of the map.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Trailhead with stock facilities																	
Grazing																	

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