

Appendix B

Water and Land Recreation Opportunity Spectrum

RECLAMATION

Managing Water in the West

Water and Land Recreation Opportunity Spectrum (WALROS)

Users' Handbook, Second Edition



Mission Statements

The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Water and Land Recreation Opportunity Spectrum (WALROS)

Users' Handbook, Second Edition

prepared by

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The Water and Land Recreation Opportunity Spectrum (WALROS) Handbook (Handbook) is designed to be flexible and adaptive. As more people and agencies apply WALROS in different locations and circumstances, we will collectively learn from experience and be able to improve WALROS. Your comments, questions, and suggestions are encouraged. Contact information and citation for this Handbook are provided in Appendix A.

The original document was published in July 2004 and was titled *Water Recreation Opportunity Spectrum Users Guidebook*. The acronym used for this planning tool was WROS. Since that time, a variety of governmental and private entities and individuals in the United States and abroad, have applied WROS to many waterbodies and their adjacent and surrounding lands. Refer to Appendix B for a comprehensive list of places where WROS or WALROS have been applied. Since 2004, many lessons have been learned. Because of the wide and varied application of the WROS planning and management tool and the lessons learned, the Bureau of Reclamation determined that a second edition was necessary to, among other things, (1) share the lessons learned, (2) demonstrate the application of WALROS as a regional planning and management tool, and (3) express that the WALROS tool can be used to appropriately classify the recreation opportunities and experiences available on lands that surround or are adjacent to a reservoir, natural lake, or within corridors and watersheds.

This Handbook is also intended to be dynamic, reflecting the input from professionals and stakeholders over time. The second edition of this Handbook and associated PowerPoint/Training Manual will be maintained on the Bureau of Reclamation's website: <http://www.usbr.gov/recreation/publications.html>

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Executive Summary



Executive Summary



Kayaking is one type of recreational activity that was not common half a century ago.

Half a century ago, when people said they were going camping, fishing, or boating, it was clear what they intended. Today, due to many factors such as new technology and equipment, more facilities, and diverse public tastes and preferences, there are many types of camping, fishing, and boating activities. The outdoor recreation industry and profession have become much more complex and sophisticated.

Research has shown that recreationists not only seek to participate in recreation *activities*, but also seek specific recreation *settings* in order to enjoy a special kind of recreation *experience* and subsequent *benefits*. These four components (activities, settings, experience, and benefits) constitute a **recreation opportunity**; that is, *the opportunity for a person to participate in a particular recreation activity in a specific setting in order to enjoy a particular recreation experience and the benefits this affords*. For example, one family might desire camping in a modern, full service campground on a reservoir in order to spend quality time with the family, to rest and relax, and to see nature's beauty. Another family might desire camping in a rural location where they can test their fishing skills, enjoy solitude, and see nature's beauty. Both families want to go camping, but in very different settings leading to different kinds of experiences and benefits; that is, they are seeking different kinds of recreation opportunities.

The components of a recreation opportunity

Recreation activity +	Setting =	Experience >>>	Benefits
Many activities	Physical attributes Social attributes Managerial attributes	Many dimensions Multiple senses	Individual Community Economic Environmental
<i>Managers manage</i>		<i>Recreationists consume</i>	<i>Society gains</i>

The preceding insert depicts the linkage of the four components that define a recreation opportunity. It also conveys that a manager manages recreation activities and settings, while a recreationist consumes a recreation experience, and society benefits from an active outdoor public.

The Water and Land Recreation Opportunity Spectrum

Urban ♦ Suburban ♦ Rural developed ♦ Rural natural ♦ Semiprimitive ♦ Primitive

The Water and Land Recreation Opportunity Spectrum (WALROS, above) is a tool to understand the type and location of six types of water-related recreation opportunities, otherwise known as WALROS classes. The six WALROS classes range across a spectrum of urban, suburban, rural developed, rural natural, semiprimitive, and primitive recreation opportunities. A particular “package” of activities, setting attributes, experiences, and benefits, defines each WALROS class.



Outdoor recreation activities are available to a variety of users.

WALROS enables an inventory and mapping of the six recreation opportunities by using expert opinion. An inventory protocol can be used to assess the physical, managerial, and social attributes of the setting. The chart below illustrates attributes that differentiate the six WALROS classes.

Physical attributes	Social attributes	Managerial attributes
<ul style="list-style-type: none"> • Degree of major development • Distance from major development • Degree of natural resource modification • Sense of closeness to a community • Degree that natural ambiance dominates the area 	<ul style="list-style-type: none"> • Degree of visitor presence • Degree of visitor concentration • Degree of recreation diversity • Degree of solitude and remoteness • Degree of nonrecreational activity 	<ul style="list-style-type: none"> • Degree of management structures • Distance to developed recreation facilities and services • Distance to developed public access facilities • Frequency of seeing management personnel

The overarching goal of WALROS is to provide planners and managers with a framework and procedure for making better decisions in order to conserve a spectrum of high-quality and diverse water and land recreation opportunities. WALROS improves our understanding of the complexity of outdoor recreation management, strengthens sound professional judgment, and enables a manager to make better and more defensible decisions.

WALROS is an indispensable tool for inventorying, planning, and managing water and land resources where recreation is an important public use that benefits local communities. More specifically, WALROS is valuable for the following reasons:

- inventorying and mapping the currently available recreation opportunities;
- helping tourists and recreationists choose where to recreate;
- assessing the effects of proposed land use and water management changes;
- improving public input and communication with stakeholders;
- improving management efficiency and effectiveness;
- improving regional analysis and interagency collaboration; and
- improving the defensibility of management decisions.

This handbook provides the operational details for applying WALROS. **Chapter 1—*Overview*** provides a foundation and overview of WALROS and discusses the important standards for WALROS decisionmaking. **Chapter 2—*Physical, Social, and Managerial Attribute Guidelines*** provides a set of guidelines for each of the six WALROS classes across more than 124 setting attributes. **Chapter 3—*Inventory*** presents the information needed to inventory water and land resources and map the location of current WALROS classes. **Chapter 4—*Planning*** discusses how WALROS integrates and supplements the key steps of a public resource planning process. Moreover, it recognizes the value of WALROS as a regional planning tool. In addition to these chapters, there are several appendices that provide important information related to visitor capacity and visitor demand.

Frequently Asked Questions



1. Will WALROS help managers and local government officials make better decisions?

Yes, WALROS is a framework and procedure to help make better decisions. It can be used by counties, state and Federal agencies, planning commissions, city councils, nonprofit organizations, private marinas, community organizations, friends, and stakeholder groups. WALROS is not intended to make decisions or take the place of sound professional judgment. However, it is intended to help yield decisions that are principled, reasoned, systematic, deliberate, traceable, and legally defensible.

2. Does WALROS give managers flexibility? WALROS is flexible. It recognizes that there will be special circumstances and situations in which flexibility and adaptation is necessary. There may be instances in which the mapping criteria or certain standards will not work. That is acceptable. On the other hand, maintaining the integrity of WALROS as a professional tool is very important. Reasonable care and clear justification should be used in making changes and adaptations to WALROS.

3. Will WALROS constrain any water or land uses or operations? WALROS will not constrain any resource use, purpose, or public or private priorities of water or land resources. Rather, it will help to optimize the net public benefits for reservoir and land operations. WALROS is a tool that helps integrate recreation considerations into complex water and land use allocation decisions. Furthermore, it helps to recognize and assess the consequences of proposed alternatives.

4. Will water drawdown or flows affect WALROS? Water drawdown and flows can affect the type and amount of recreation opportunities on a water resource and the WALROS classification. For example, the water surface acres classified as “rural natural” in early spring (high water level) may change to “rural developed” by late summer. For many reservoirs, it would be useful to have two or more WALROS maps (e.g., early, middle, and late season) to help understand potential changes in recreation opportunities. The reservoir drawdown effect on WALROS should not be construed as a constraint or limitation; it should be perceived as one of many factors that contribute to the diversity of WALROS.



Recreation activities such as hunting are seasonal.

5. Can WALROS change by season? Yes. Features such as ice, snow, road closures, wildlife migration, and special activity seasons (e.g., waterfowl hunting) can affect WALROS. In most resource settings, there is considerable change from season to season, and change can occur within a season. Having a WALROS map for each of the primary seasons of interest would help to understand the recreation situation.

6. How does WALROS help protect important natural and cultural resources? Such resources are identified early during the mapping of the WALROS classifications. These areas are provided special deliberation in terms of the types and amounts, if any, of recreation opportunities that may be appropriate. Special management and mitigation measures, along with heightened monitoring, may be required. It is important to understand that the loss of an important natural or cultural resource is also, in effect, the loss of a recreation opportunity. It is the loss of an opportunity to experience and enjoy these very special or unique features.

7. Can the public understand WALROS? The public can understand that there is a range or spectrum of recreation settings from urban cities to remote primitive settings. Most can also relate to participating in a favorite activity in a specific setting and being rewarded with a memorable experience.

Most importantly, water and land resources can be mapped using the six WALROS classifications. Maps are effective visual planning and management tools for use at public meetings, at entrance stations, on bulletin boards, and in visitor brochures.

Agency professionals, however, may use WALROS as a tool to classify public recreation areas, and in some cases, the visiting public may not understand the WALROS class names. Urban residents, for example, may not be familiar with primitive recreation opportunities.

8. How does WALROS relate to tourism? While academic distinctions label people fishing in streams next to their homes as recreationists and people who travel 50 miles or more as tourists, these distinctions serve little purpose in the WALROS system. Tourists pursuing outdoor recreation opportunities are also recreationists. Throughout this handbook, the words “tourist” and “recreationist” are used interchangeably. Thus, WALROS is a system designed to evaluate water- and land-based tourism opportunities.

9. Can recreationists and tourists use WALROS? Yes, WALROS can provide an informative map for the public, indicating

the supply of available recreation opportunities in an area. A major problem in managing public lands and waters is that recreationists and tourists do not have adequate visitor information and are not aware of what recreation opportunities are available and where. While many maps show facilities and transportation, few convey the type of experience available or the method of management within the area.

Often, visitor crowding and conflicts are really a visitor distribution problem caused by visitors' lack of awareness of alternative locations and times to visit. WALROS can help to show the diversity of water and land recreation opportunities in a particular resource setting or across a larger region.

10. Can a WALROS classification be subdivided into subclasses or zones? WALROS reflects a national spectrum of opportunities from urban cities to remote primitive areas. Each of the six classifications can be viewed as a small spectrum within a larger national spectrum. At times, it may be advantageous to subdivide one of the WALROS classifications to more effectively deal with a particular field situation. Division of a WALROS class is acceptable as long as the new subclasses or zones are compatible with the integrity of the overall WALROS class.

11. How does WALROS deal with exceptions or unique field situations? WALROS recognizes that it is not practical or desirable for a national system to try to address every field situation. It should not be used to replace sound professional judgment and reasonable decisions. On the other hand, WALROS provides guidelines for analyzing special situations and making good decisions. For any special or unusual managerial decisions, the circumstances and rationale used should be documented in the administrative record.

12. How does WALROS interface with site-level planning? WALROS is a landscape-level tool that applies to large geographic areas of water and land resources. WALROS provides guidance for the entire spectrum of opportunities in its management guidelines, yet recognizes that another planning level might be necessary to make site-specific decisions about the type, location, design, or appropriateness of facilities or actions. Site design plans, interpretive plans, monitoring plans, and engineering and architectural plans would compliment WALROS and provide the necessary detail.



Fishing is a recreational activity that is possible in almost all areas.

13. How does WALROS accommodate special management areas or units? WALROS is a landscape-level tool that applies to large geographic areas of water and land resources. Yet, it recognizes and accommodates special circumstances at the site level. Some areas within a WALROS zone may need additional site-specific management direction to accommodate their special needs, circumstances, or opportunities. WALROS encourages managers to “tier down” and provide additional management direction. Examples of such special areas or management units include the following:

- security areas
- wildlife nesting areas
- administrative sites
- seasonal resource closures
- communities and other development
- special recreation use areas
- travel corridors
- designated concessions/
marinas
- conflict mitigation areas
- overnight areas
- no-wake zones
- destination areas
- cultural resource areas
- hazardous areas
- recreation day use areas
- public access sites
(e.g., trailheads, boat
ramps)

14. Does WALROS require a special planning process? No. By analogy, if the main stem of a tree could represent an agency’s planning process, WALROS is part of the recreation branch that brings recreation information into the main stem. WALROS is a tool that helps to integrate recreation considerations into a larger comprehensive planning effort where multiple uses and allocation decisions are necessary. Although the Bureau of Reclamation (Reclamation) has taken the lead in developing WALROS, it has been designed to interface with any local, State, or Federal agency planning process. Chapter 4 describes Reclamation’s planning process and illustrates how WALROS is applied.

15. Can WALROS help make daily management decisions? Yes. Management provides recreation opportunities, including type and location, depicted on the WALROS inventory map. When there are special requests for public uses (e.g., large group camping, special events, educational programs), the WALROS map can help a manager decide on the appropriateness of a request. WALROS provides a logical and defensible means to consider daily management decisions, and can help managers make better decisions.

Furthermore, the managerial guidelines in chapter 2 are very useful for daily or annual operation and maintenance activities, budget planning and justification, assigning volunteer work crews, responding to media and local tourism boards, dealing with visitor capacity and conflict issues, and mitigating unforeseen impacts.

16. How does WALROS help justify budgets and personnel? A key component of WALROS is a set of management guidelines for many of the activities requiring time or effort (e.g., budget and personnel). The maintenance and patrol standards, for example, will differ between a semiprimitive and a rural developed WALROS class. While many of the guidelines are of a qualitative nature, continuing research and professional experience will help in the development of quantitative standards over time.

17. What if current conditions are not consistent with the WALROS guidelines? WALROS helps to determine where the current conditions differ from management guidelines. Inconsistencies are often found in the initial application of WALROS to an area. However, these inconsistencies will decline as management makes the appropriate adjustments. Inconsistencies can be mapped and prioritized on a scale of negligible, minor, moderate, or major consequence. WALROS does not obligate or direct any action. Instead, it helps to identify the type and location of inconsistencies and mitigate them over time. Chapter 3 provides more guidance on inconsistencies.

18. What size of an area is practical for WALROS? WALROS is designed for large geographic areas of water and land resources (e.g., Reclamation projects, National Forest lands, wildlife refuges, wild and scenic rivers, State parks, reservoirs and adjacent lands). It can also be applied to very small areas (e.g., 5-10 acres, half a mile of trail or river), but its practicality in these cases may be limited because the particular management program could remain unchanged.

19. Should WALROS be applied beyond an agency's jurisdiction? Oftentimes there would be an advantage to do so. In order to make a decision for a particular locale, it is helpful to consider nearby areas as well, because recreationists typically visit more than one site and participate in more than one activity on any given outing.

Recreationists visit a geographic area called a “visitation range,” which is analogous to an animal’s home range or a river’s watershed. From their overnight locations, visitors take short excursions to experience different locations throughout the

visitation range. For example, a family might camp for several days at a full service State park campground on a large lake: one day fishing 10 miles downstream; one day hiking upstream to a popular vista; and one day canoeing a designated water trail. Thus, a recreation management decision in one location may affect the quality or nature of the recreation opportunity in another location within a certain visitation range.

Another question answers this question: What is the visitation range for most of the recreationists and tourists visiting the area? In other words, to determine the answer, it is essential to ask: What other factors are necessary in determining the final decision? It may depend, for instance, on whether the proposed study area is of a practical size for a WALROS study or the number of agencies that would need to collaborate.

20. Can WALROS be applied to water and land resources in other countries and international protected areas? Yes.

WALROS is a tool with universal appeal that has been applied or is under development in Ireland, Jamaica, Belize, China, and Thailand.

Its overarching goal is to provide planners and managers with a framework for making better decisions and conserving a spectrum of high quality, diverse recreation opportunities. WALROS improves our understanding of the complexity of outdoor recreation and tourism management, strengthens sound professional judgment, and enables a manager to make better and more defensible decisions.

Many international protected areas have significant marine, forest, wildlife, and water resources. Some of these areas are extremely popular for tourists and adventure travelers and can become both a bane and a blessing for a local community or an entire nation. The management challenges and opportunities associated with visitation to the world's protected areas, whether by recreationists or by tourists, are virtually the same.

The underlying foundation and strategy employed by WALROS to conserve water and land resources and recreation opportunities have universal application. They also provide the flexibility for managers to tailor parts of WALROS (e.g., terms, pictures, descriptions, standards) to more closely reflect their unique local social, cultural, and environmental situation.

Chapter 1 – Overview



Overview



Top, some visitors need special facilities. Bottom, reasonable access is an important issue.

The outdoor recreation profession has become much more sophisticated in the 48 years since the government's first comprehensive assessment in 1962, entitled the *Outdoor Recreation Resources Review Commission Report* (ORRRC Report). According to that report:

Water is a focal point of outdoor recreation. Urban or rural, water is a magnet. Wherever they live, people show a strong urge for water-oriented recreation. There are many other reasons (purposes) for water resource programs, and recreation use often is incidental and unplanned. To say this, however, is to note how great the opportunities are.

Today, the Bureau of Reclamation (Reclamation) recognizes that water recreation and associated land and water-based management is no longer a matter of simply building a boat ramp, dock, parking area, and restroom. Water and land recreation management involves a thorough understanding of the resource and its capability, current and future visitors, the type of experiences sought, regional recreation supply and demand, resource management planning, economic/noneconomic valuation, visitor capacity, and other dimensions.

The Water and Land Recreation Opportunity Spectrum (WALROS), originally the Water Recreation Opportunity Spectrum (WROS), is a tool that planners and managers can use to make better decisions. WROS was modeled after the Recreation Opportunity Spectrum (ROS) system, but it placed more emphasis on water resources, including reservoirs, lakes, rivers, bays, estuaries, wetlands, major springs, coastal zones, and protected marine areas. WALROS has taken the finest proven features of ROS and WROS and updated, refined, and tailored them for use on land and water.

This handbook provides operational guidance on how to implement WALROS in inventorying, planning, and managing recreation opportunities on and adjacent to water and land resources. Moreover, it is intended to be flexible enough to accommodate changing public recreation use, new information from monitoring or science, recreation technologies, demand, demographics, and practical field experience gained by its application.

This handbook contains four chapters and several appendices. **Chapter 1—*Overview*** provides important background information on the WALROS system. **Chapter 2—*Physical, Social, and Managerial Attribute Guidelines*** provides a set of management guidelines for recreation-related elements in each of the WALROS classes. **Chapter 3—*Inventory*** describes the procedural steps to map the current water and land recreation opportunities that an area is providing and identifies inconsistencies where management action might be appropriate. **Chapter 4—*Planning*** provides an overview of how WALROS inventory information can interface with a resource management planning and a recreation planning process. Also described in this chapter is the use of WALROS as a valuable regional planning tool. This description is based on extensive application and testing of WALROS as a regional planning tool in California. The appendices provide valuable information related to, among other things, visitor capacity and visitor demand.

The Foundation of WALROS

The following sections describe several popular concepts in the outdoor recreation profession, which serve as the foundation for WALROS.

The Average Visitor Does Not Exist

Recreation science has revealed the great diversity in what outdoor recreationists expect upon arriving at a recreation site. It also reveals a particular recreation experience they desire, perceive, and enjoy while recreating. Not only is there diversity between the participants in different recreation activities, such as boaters, anglers, and campers, there is also diversity among participants within each activity itself. Comparing the recreation experience of sailing on a 200-acre urban reservoir for few hours to that of sailing a 50-mile-long rural reservoir for several days dramatically illustrates the diversity within this activity. The same is true for other recreation activities in urban versus rural primitive settings.

In much the same way that retailers can segment consumers into groups based on some shared buying preferences, outdoor recreationists can be segmented into groups based on the recreation experiences they desire.



Different boats have different requirements.

Recreationists also differ in other characteristics such as their place of residence, travel distance, recreational equipment, socioeconomic situation, racial and ethnic background, education, and knowledge of available opportunities.

The resulting implication is that planning and managing for a mythical “average user” will leave out or fail to accommodate the diversity of public interest in water and land resources. The conservation of recreation diversity is a fundamental purpose of the WALROS system.

Do Not Try To Be All Things to All People

Do not try to be all things to all people. A specific parcel of land, park, forest, lake, reservoir, river, or other site is a single resource within a regional and national system of land and water recreation opportunities.

A specific parcel of land, park, forest, lake, reservoir, river, or other site is a single resource within a regional and national system of land and water recreation opportunities. Each resource area can have special capabilities and opportunities to make an important contribution to the integrity of the larger system. Thus, no one water or land area can be all things to all people. Managers must identify the recreational role or niche of the resource area within the local, regional, and in some cases, national context. The implication is that it is not practical to plan and manage each land and water resource so that it provides all opportunities for all visitors. Each resource should serve a particular recreational role or fill a niche within a larger system of diverse recreation opportunities. The conservation of recreation diversity across a larger spectrum will benefit the public and increase interagency efficiency.

Managers Provide Recreation Opportunities

Managers provide opportunities for visitors to participate in a type of recreation activity in a specific setting that is defined by its important physical, social, and management attributes, to realize a particular type of experience and subsequent benefits.

The understanding of recreation continues to evolve. In the 1960s, for example, recreation was viewed principally as an *activity*, such as boating or skiing. However, in the 1970s, recreation science determined that a particular type of recreation experience motivates recreationists and that a recreation activity is a means to an experiential end. It also determined that the conditions of the resource and management of the recreation setting could influence the kind of experience a person is likely to have. In the 1990s, recreation science further determined that recreation experiences lead to benefits for individuals, families, and communities while providing benefits to the economy and the environment.

Today, it is professionally accepted that recreation managers provide **recreation opportunities**. Thus, managers provide opportunities for visitors to participate in a certain type of recreation activity within a specific setting. The setting is defined by its important physical, social, and management attributes that contribute to the realization of a particular type of experience and subsequent benefits. Figure 1.1 depicts the key components of a recreation opportunity and the linkage to one another.

Recreation activity	+	Setting	=	Experience	>>>	Benefits
Many activities		Physical attributes Social attributes Managerial attributes		Many dimensions Multiple senses		Individual Community Economic Environmental
<i>Managers manage</i>				<i>Recreationists consume</i>		<i>Society gains</i>

Figure 1.1.—The components of a recreation opportunity.

As conveyed in figure 1.1, managers manage recreation activities and settings so that recreationists can consume a high quality, safe and enjoyable recreation experience. Managers have the ability to change the activities and settings in an area to enhance the visitor’s experience and maximize public benefits.

A Seamless System of Recreation Opportunities Should Exist

The American public is much more interested in enjoying high-quality recreation opportunities than in understanding the names and missions of each local, State, and Federal agency that manages water resources. While public respect and understanding for an agency’s mission is desirable and important, agencies should also strive to collaborate and contribute to the conservation of a larger system or network of recreation opportunities.

The implication is that planning and managing for a seamless system of water and land-based recreation opportunities requires a set of recreation terms, concepts, and tools that all recreation providers understand. This does not suggest that agencies need to change or replace existing approaches to planning or managing recreation. However, there is an advantage to employing a common system (i.e., terms, concepts, and tools) to inventory, plan, and manage recreation opportunities across agency jurisdictions. WALROS is an interagency tool to help ensure a seamless system of recreation opportunities.

The implication is that planning and managing for a seamless system of water- and land-based recreation opportunities requires a set of recreation terms, concepts, and tools that all recreation providers understand.

Aspects of WALROS

This section provides an overview of the important aspects of the WALROS system.

The Goal of WALROS

As indicated in the preceding section, there is diversity among recreationists, water and land resource settings, and the agencies that manage these resources. This diversity is positive and should therefore be conserved. Likewise, recreation managers recognize that each specific resource area (e.g., forest, park, lake, river, reservoir, refuge, and wilderness) is unique and contributes to a larger system of diverse recreation opportunities.

Thus, the overarching goal of WALROS is to provide planners and managers with a framework and procedure for making better decisions in order to conserve a spectrum of high-quality and diverse water- and land-based recreation opportunities.

WALROS is a spectrum of six classifications of recreation opportunities, that is, six integrated packages containing appropriate activities, settings, experiences, and benefits for each WALROS class.

The WALROS Classifications

WALROS is a spectrum of six classifications of recreation opportunities. There are six integrated packages containing appropriate activities, settings, experiences, and benefits for each WALROS class. Figure 1.2 identifies the classifications and components of a recreation opportunity.

Spectrum descriptors	A spectrum of six WALROS classifications										
	Urban	◆	Suburban	◆	Rural developed	◆	Rural natural	◆	Semi-primitive	◆	Primitive
Recreation activities Recreation setting <ul style="list-style-type: none"> • Physical attributes • Social attributes • Managerial attributes Recreation Experiences Recreation Benefit	←————— Integrated packages —————→										

Figure 1.2.—The Water and Land Recreation Opportunity Spectrum.

Recreation Activities

Recreation activities are the leisure pursuits most commonly understood and referred to in literature. There are hundreds of examples of recreation activities, and the list continues to grow due

to technological innovations and changing public interests. However, it is impossible to provide all activities in a single location. A manager must decide which activities are appropriate for a particular area. WALROS helps managers decide the appropriateness of various recreation activities by offering a general illustration of those that may be appropriate in each WALROS class, as shown in table 1.1. It is important to note that table 1.1 illustrates the general framework of WALROS. In some specific situations, a particular activity may or may not be appropriate. Consequently, sound professional judgment and due consideration of the local situation may be necessary to decide whether a certain recreation activity is appropriate under the circumstances.

Recreation Settings

A recreation setting consists of physical, social, and managerial attributes. It is the combination of these attributes that shape a specific activity into a particular experience. Refer to appendix C for a glossary of key terms used in this handbook. Managers spend most of their time and effort managing the recreation setting. The guidelines in **Chapter 2—Physical, Social, and Managerial Attribute Guidelines** provide detailed guidance for achieving optimum results.

Table 1.2 illustrates various physical, social, and managerial attributes that can affect the desired recreation experience of an area. The table is not intended to be an exhaustive list or to suggest that each of these attributes must be considered. However, some attributes can be listed in more than one column (e.g., historic resources).

In the context of WALROS, the totality of these setting attributes converts a recreation activity into a recreation experience with subsequent benefits. Table 1.3 provides a short paragraph describing the general nature of the setting attributes for each class. The purpose of this description is to introduce WALROS. **Chapter 2—Physical, Social, and Managerial Attribute Guidelines**—provides the guidelines for some 124 setting attributes.



Top: Wildlife contribute to a visitor's experience. Bottom: Dramatic and expansive views are attractive to people.

Table 1.1.—A general representation of recreation activities by WALROS class

	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Water-based activities						
Water skiing/wake boarding	←			→		
Jet boating	←			→		
Personal water craft riding	←			→		
No-wake motor boating	←				→	
Fishing	←					→
Houseboating	←				→	
Rafting	←					→
Canoeing	←					→
Kayaking	←					→
Swimming	←					→
Diving/snorkeling	←				→	
Parasailing	←			→		
Land-based activities						
Developed campground use	←			→		
Rustic campground use		←			→	
Backpacking			←			→
Off-highway vehicle use		←			→	
Horseback riding		←				→
Wildlife viewing	←					→
Hunting			←			→
Golfing	←			→		
Swim beach use	←				→	
Snowmobiling	←				→	
Picnicking	←					→
Interpretive program activities	←				→	
Hiking	←					→
Biking	←			→		

Table 1.2.—Examples of recreation setting attributes

Physical attributes	Social attributes	Managerial attributes
Terrestrial vegetation Aquatic vegetation Water quality Soils/rocks/cliffs Topography/slope Fish and wildlife Natural sounds Visual resources Water flows Water elevations, drawdown Lightscapes Endangered species Human development <ul style="list-style-type: none"> • Industrial/commercial • Municipal/residential • Manmade structures • Infrastructure Water surface acreage River length, width, gradient River flows Natural hazards Air quality Natural beauty Geologic formations Climate and winds Canals and shipping locks	Recreationists (type, number) Visitor expectations Patterns of visitation Visitor behaviors Visitor safety issues Visitor conflicts Vandalism and litter Automobiles and trains Historic sites Cultural resources Adjacent private land uses Special uses Special values Density of use Types, size, and speed of boats Shoreline activity Airplanes Commercial shipping Type and level of noise Nuisance behavior Unlawful activities Agricultural activities	Recreation facilities Water storage facilities Water delivery systems Rules/regulations Interpretation Fees and charges Site design Health and safety closures Length of season Recreation maintenance Recreation programs Law enforcement/security Signage Restoration activities Administrative sites Reservoir drawdown Water safety lights/markers Timed flow releases Fishery management Vegetative management Access roads/launches Accessible facilities Personnel and volunteers Level of patrol Permits

Table 1.3.—A general description of recreation settings by WALROS class

Urban setting: An urban WALROS area can be found in extensively developed and populated cities and metropolitan spaces where virtually the entire landscape contains manmade structures. Municipal, industrial, commercial, and residential land uses dominate, and the sights, sounds, and smells are typical of a city environment. Natural features may be found in small neighborhood parks, commercial courtyards, streetscapes, riverways, residential gardens, or landscaping. The water resources tend to be highly channelized, manipulated, or altered to contain large fluctuations in water flow and to protect public safety and property. Management presence is common and obvious (e.g., personnel, rules, facilities, signs, services, conveniences, and security). Recreation use is very extensive and involves much diversity, socialization, and concentration. Furthermore, the urban setting offers a sense of security and conveniences. The sights, sounds, and smells of recreation and nonrecreational use (e.g., municipal, industrial, commercial) are dominant in an urban setting. Examples of the urban WALROS class include parks such as Central Park in New York City, the San Antonio Riverwalk, Denver’s South Platte River, the Potomac River in the District of Columbia, Tampa Bay, Baltimore Harbor, San Francisco Bay, the Chicago Waterfront on Lake Michigan, and urban trails with open spaces within metropolitan areas (refer to page 16).

Suburban setting: A suburban WALROS area is on the fringe of the urban area. The sights, sounds, and smells of development and built structures are widespread. The built environment tends to be commercial and residential. The sights, sounds, and smells of commerce and everyday living are very obvious and prevalent. Natural-appearing settings can be found in community parks, greenways, trails, open space, natural areas, wetlands, estuaries, and tidal marshes. The water resources tend to be highly channelized, manipulated, or altered to contain large fluctuations in water flow and for the protection of public safety and property. Recreation management is prevalent (e.g., personnel, rules, facilities, signs, services, conveniences, security). Recreation use, diversity, socialization, concentration, sense of security, and conveniences are also prevalent and obvious. The sights, sounds, and smells of recreation and nonrecreation use (e.g., municipal, industrial, residential) are obvious but not dominant in a suburban setting. Examples of suburban WALROS areas can be found on the outer edges of most metropolitan areas in the United States and include parks, greenbelts, and trail systems (refer to page 17).

Table 1.3 (cont'd).—A general description of recreation settings by WALROS class.

Rural developed setting: A rural developed WALROS area is beyond a metropolitan area and the suburban ring of development. Rural developed areas may serve as “bedroom” communities for urban areas and may contain working farms, ranches, and towns. In this setting, primary road networks are common. Although development will be prevalent and common, the setting has a pastoral sense because of an interspersing of forests, water resources, hills, valleys, canyons, wetlands, open spaces, and agricultural lands. Naturally appearing shoreline edges are common, although various water controls or other structures are also common. Recreation management is prevalent and common but not as extensive as in an urban setting (e.g., personnel, rules, facilities, signs, services, conveniences, security). Recreation use, diversity, socialization, concentration, sense of security, and conveniences are less common than in a developed suburban or urban setting. The sights, sounds, and smells of recreation and nonrecreation use are common, yet interspersed with locations and times when the urbanized visitor may experience a sense of tranquility and escape from everyday challenges. Examples of rural developed areas include areas with country estates, second homes and cabins, dams, power stations, primary and secondary roads, communication lines, resorts, marinas, small communities, full service campgrounds, county and State parks, farms, ranches, and small commercial and industrial establishments (refer to page 18).

Rural natural setting: A rural natural WALROS area is a considerable distance from metropolitan areas and communities. Natural features are predominant on the landscape, and the presence of development is occasional or infrequent. Agriculture, tourism, and outdoor recreation are often primary industries. Many rural natural areas are large enclaves of public lands and waters. Natural resources dominate the landscape. The sights, sounds, and smells of development are infrequent. Natural-looking settings border the water resources. Water controls or other structures are occasional along the shoreline. Management is occasionally noticeable in the form of patrols, facilities, signage, conveniences, and full services. Visitors desire a sense of tranquility and escape from their daily routine. Opportunity for visitors to see, hear, and smell nature is prevalent and common, as are occasions to enjoy periods of solitude. Recreation use, diversity, socialization, concentration, sense of security, and conveniences are periodic and occasional. Examples of rural natural areas include unincorporated rural areas with secondary and unpaved roads, small cabins, single residences, farms and ranches, rustic campgrounds, rural county and State parks, powerline rights-of-way, small stores and fuel services stations, and areas bordering or surrounded by large expanses of public lands and waters (refer to page 19).

Semiprimitive setting: A semiprimitive WALROS area is a large expanse of natural resources that is far from any city or metropolitan area and a considerable distance from small communities, subdivisions, or developments. Natural resources dominate the landscape. Development is minor, and the sights and sounds of human activity are few. However, a semiprimitive setting may include evidence of human activity such as distant farming operations, powerlines, livestock, small buildings, old roadways, historic structures, and historic logging or mining. These water resources are often within large expanses of public lands and waters. Management, in the form of patrols, facilities, and signage, is seldom noticeable and the visitors are expected to have their own equipment and skills enabling navigation and enjoyment of this setting. Visitors desire a sense of tranquility and an escape from their daily routine. Facilities are rustic and blend well into the setting. Resource protection is highly important. The opportunity for visitors to see, hear, and smell nature is widespread. Visitors sense solitude and remoteness. Examples of semiprimitive settings are large expanses of State and Federal lands and waters that are commonly designated as Wild and Scenic Rivers, Wilderness Areas, backcountry lakes, headwaters, marine reserves, roadless areas, or other types of protected areas (refer to page 20).

Primitive setting: A primitive WALROS area is a large expanse of natural resources far from development and settlement. Sights, sounds, or smells of human activity are rare and seldom sensed. The water resources and shorelines appear natural, showing little evidence of past human use. Management relies on visitor cooperation and stewardship, and management activities often focus on resource protection, restoration, and monitoring. A sense of remoteness, wildness, solitude, and self-reliance is dominant among visitors. Visitor comforts, conveniences, and concentrations are not appropriate to a primitive setting. Examples of primitive settings are large expanses of Federal lands and waters that are miles from development and settlement. The settings are commonly designated as Wild and Scenic Rivers, Wilderness Areas, backcountry lakes, headwaters, marine reserves, roadless areas, or other types of Federal or international protected areas. The backcountry in Yellowstone National Park and the South Arm of Yellowstone Lake are examples of primitive settings (refer to page 21).

Recreation Experiences

A recreation experience is the psychological and physiological response to participating in a particular recreation activity and setting. The experience is the output of management's efforts, which represents what the recreationist consumes. WALROS helps planners and managers focus on the recreation experience and provide a general description of the experience for each WALROS class.

Recreation science has contributed to identifying the important dimensions of a recreation experience. These dimensions are often referred to as motivations, psychological outcomes, or multiple satisfactions. Recreation science also recognizes that humans use all five senses to perceive or experience a situation. In other words, a recreation experience can be affected by what one sees (e.g., wildlife or litter), hears (e.g., natural sounds or engine noises), smells (e.g., grasses and trees versus barbecue smoke and pollution), touches (e.g., water and beach sand versus broken glass), and tastes or inhales (e.g., water and food versus exhaust fumes). Tables 1.4 and 1.5 provide a general description of the important dimensions and senses that define the recreation experience in each WALROS class. It is important to bear in mind that these generalizations may need to be adjusted in order to subjectively reflect a particular local or regional situation. Thus, WALROS encourages flexibility and adaptability based on sound professional judgment.



Socializing and a sense of a competition with others are experiences that many recreation users desire.

Table 1.4.—Examples of recreation experiences by WALROS class

	WALROS Spectrum					
	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Often common across spectrum						
Enjoy the outdoors	← Important in all settings →					
Get refreshed						
Have fun and pleasure						
Enjoy friends and family						
Have a change of pace						
Get away from usual demands of life						
Reduce stress						
Opportunity to contemplate						
Enjoy physical exercise						
Bond with family and friends						
Help others develop skills						
Often varies across spectrum						
Experience the sights, sounds, and smells of nature	Less Important ← → More Important					
Learn about nature and culture						
Chance to dream and reflect						
Gain a sense of adventure and challenge						
Sense of awe, wonder, and humility						
View wildlife and natural wonders						
Experience challenges and risks						
Gain a sense of self reliance, freedom, choice						
Experience tranquility and peacefulness						
Experience solitude						
Experience new and different things						
Sense of physical exertion						
Feel inspired						
Often varies across spectrum						
Opportunity to watch and be around other people	More Important ← → Less Important					
Opportunity to socialize						
Opportunity to meet new people						
Sense of competition with others						
Exhilaration of speed and thrills						
Test one's skills and equipment						
Feel safe and secure in the outdoors						
Enjoy comforts and conveniences in the outdoors						
Opportunity for a brief respite from everyday life						

Table 1.5.—A general description of the recreation experiences by WALROS class

Urban recreation experience: The area provides very limited opportunities to see, hear, or smell the natural resources (e.g., forests, wildlife, aesthetics) because of the extensive level of development, human activity, and natural resource modification. Watching and meeting other visitors is expected and desired, while large group activities such as guided fishing, tour boat sightseeing, and beach sports are popular. There may be opportunities to briefly relieve stress and alter everyday routines. Socializing with large groups, family, and friends is important. In addition, a high sense of safety, security, comfort, and convenience is central and dominant. The mix of recreation activities may be diverse, ranging from those of relaxation and contemplation (e.g., sunbathing, reading, nature walking) to physical exertion. Thrills, excitement, and challenge (e.g., parasailing, jet boating, water skiing) are often attractive to short-time visitors, large affinity groups, tourists, and school groups. The area may serve as a transportation corridor for transient visitors or as a staging area for others traveling to nonurban settings. Thus, the urban area is popular with local residents and with nonresident first-time tourists.

Suburban recreation experience: The area provides little opportunity to see, hear, or smell the natural resources (e.g., forests, wildlife, aesthetics) because of the widespread and prevalent level of development, human activity, and natural resource modification. Moreover, watching and meeting other visitors is expected and desired. The area provides an opportunity to briefly relieve stress and alter everyday routines. Socializing with family and friends is also important since large groups and families are common. A high sense of safety, security, comfort, and convenience is central and dominant. The mix of recreation activities may be diverse, ranging from relaxation and contemplation (e.g., sunbathing, reading, and nature walking) to physical exertion, thrills, excitement, and challenge (e.g., parasailing, jet boating, and water skiing). Learning about natural or cultural history, ecology, and reservoir and river operations is important to some people. Thus, the suburban area is a popular attraction to many local residents.

Rural developed recreation experience: The area provides occasional or periodic opportunities to see, hear, or smell the natural resources (e.g., forests, wildlife, aesthetics), but development, human activity, and natural resource modifications are common and frequently encountered. The area is less developed and more tranquil than a suburban setting. The opportunity to experience brief periods of solitude is important but changes from day to day. In a rural-developed area, everyday sights and sounds are also important. Socialization within and outside one's group is typical, and the presence of other visitors is expected. The opportunity to relieve stress, alter everyday routines, and achieve a moderate level of comfort and convenience along with a sense of safety and security is important. The array of recreation activities may be diverse, ranging from relaxation and contemplation (e.g., sunbathing, sailboating, shoreline fishing) to physical exertion and challenge (e.g., competing in shoreline and water sports, tournament fishing, ice fishing, water skiing, snowmobiling, motocross racing, and kayaking). The rural developed area is typically attractive for day use by weekend visitors from local metropolitan areas, nearby communities, short-term campers, recreational vehicle users, large groups, and adventure tourists within a day's drive.

Rural natural recreation experience: The area provides frequent opportunities to see, hear, or smell the natural resources (e.g., forests, wildlife, and aesthetics), as development, human activity, and natural resource modifications are only occasional and infrequent. It is noticeably more natural, less developed, and more tranquil than an urban setting. Socialization with others outside one's group is not very important, although the presence of others is expected and tolerated. The opportunity to relieve stress and get away from an infrastructure environment is important; a high sense of safety, security, comfort, and convenience is not important or expected. Moreover, a sense of independence, freedom, moments of solitude, tranquility, and the appreciation of nature are also important. Various experiences tend to be more resource dependent, diverse, and may include relaxation and contemplation. Such activities include camping, sunbathing, canoeing, sailing, and boat fishing. Other activities involve socialization and physical exertion (e.g., competitive tournament fishing, kayaking, waterskiing, hunting, and float boat fishing). The rural natural area is typically attractive to extended weekend and long-term visitors who desire to experience the outdoors and get away from large numbers of other people. The rural natural area is popular with overnight visitors using recreation vehicles, tents, and rustic cabins.

Table 1.5 (cont'd).—A general description of the recreation experiences by WALROS class.

Semiprimitive recreation experience: The area provides widespread and prevalent opportunities to see, hear, or smell the natural resources (e.g., forests, wildlife, and aesthetics) since development, human activity, and natural resource modifications are seldom encountered. The opportunity to experience a natural ecosystem with little human imprint, a sense of challenge, an adventure, a risk, a sense of self-reliance, and a feeling of solitude are all important characteristics. However, management is important on the water and at destination sites even though the recreation experiences tend to be more resource based. A sense of independence, freedom, tranquility, relaxation, appreciation of nature, testing skills, and stewardship is typical. The opportunity often requires more trip planning, preparation, travel distance of one or more days, physical effort, and duration. The semiprimitive area provides opportunities for the more adventure-based enthusiasts (e.g., fly and float fishing, hunting, backcountry camping, canoeing, rafting, and nature viewing). Overnight visits typically involve tents in settings with few conveniences and facilities, although extended stays may be accommodated. Adventure recreationists and ecotourists are attracted to this setting. However, inexperienced recreationists or visitors new to the area may be uncomfortable with the remoteness and the necessary requirement of self-reliance.

Primitive recreation experience: The area provides many opportunities to see, hear, or smell the natural resources (e.g., forests, wildlife, and aesthetics) since development, human activity and natural resource modifications are rare. The opportunity to experience natural ecosystems with very little and no apparent human imprint is paramount. The natural views, sounds, and smells dominate the area. A sense of solitude, peacefulness, tranquility, challenge, adventure, risk, and self-reliance is highly important, as is the lack of sight, sound, and smells of other humans. A sense of freedom, tranquility, humility, relaxation, appreciation of nature, and stewardship is central and dominant. The primitive recreation experience provides opportunities for human-powered activities such as canoeing, kayaking, fly-fishing, hunting, floating, and backpacking. The high-speed noise of motorized conveyances is typically inappropriate for this area. Visitation often requires considerable trip planning and preparation, travel distance, physical exertion, and duration. Overnight visitors use tents in settings with no conveniences or facilities. Adventure travelers and ecotourists from distant locations are often attracted to the undisturbed wildland setting.

Recreation benefits are improvements resulting from participating in quality outdoor recreation and tourism. These improvements or benefits may accrue to the individual recreationist and family or to the workplace, community, economy, or environment.

Recreation Benefits

Recreation benefits are improvements resulting from participating in quality outdoor recreation and tourism. These improvements or benefits may accrue to the individual recreationist and family or to the workplace, community, economy, or environment. WALROS does not explicitly include a step to measure or inventory recreation benefits, but does encourage managers to (1) engage local communities in identifying important recreation benefits in the planning process, (2) include a description of the important benefits in the management plan, and (3) reference benefits in various public education and community publications. The recreation benefits section will strengthen in the future as WALROS is used, field tested, and further refined. Table 1.6 lists some of the benefits that accrue from recreation and tourism.

Table 1.6.—Examples of recreation benefits

Individual or personal benefits	Community benefits
Physical exercise Family togetherness Self confidence Skill development Reflection/contemplation Increased wellness/happiness Increased quality of life	Sense of place Improved work performance Community pride and spirit Community attraction/appeal Youth development Increased quality of life
Economic benefits	Environmental benefits
Support of local merchants Economic stimulation Increased revenue from outside the area Increased property values Increased tax revenue Increased investor appeal	Increased knowledge of resources Increased respect for environment Increased stewardship/involvement Increased collaboration Increased political/social support Increased conservation of nature

The following photo collages provide examples of recreation activities and setting attributes by WALROS class.

Photos Showing Examples of the *Urban* Classification



Photos Showing Examples of the *Suburban* Classification



Photos Showing Examples of the *Rural Developed* Classification



Photos Showing Examples of the *Rural Natural* Classification



Photos Showing Examples of the *Semiprimitive* Classification



Photos Showing Examples of the *Primitive* Classification



The Standard for WALROS Decisionmaking

WALROS is a framework that is flexible and adaptable to specific field situations. WALROS does not replace management discretion and decisionmaking. Rather, it is a tool to help make decisions that are principled, reasoned, systematic, logical, traceable, and defensible.

While local planners and managers are empowered to adapt WALROS to the local situation, it is important that these decisions be carefully considered in order to maintain the integrity of WALROS. This section provides guidance on decisionmaking based on several fundamental principles found in decision science and State and Federal law (e.g., Administrative Procedure Act, the National Environmental Policy Act [NEPA], etc.). These guiding principles are applied by the judicial system throughout the United States. The standard for WALROS decision-making incorporates (1) sound professional judgment, (2) preponderance of the evidence, (3) a rule of reasonableness, (4) a sliding scale rule of analysis, and (5) a scale of degree.

Sound Professional Judgment

Sound professional judgment is defined as a reasonable decision that has given full and fair consideration to the appropriate information, is based on principled and reasoned analysis and on the best available science and expertise, and complies with applicable laws.

Sound professional judgment is defined as a reasonable decision that has given full and fair consideration to the appropriate information, is based on principled and reasoned analysis and on the best available science and expertise, and complies with applicable laws.

The terms in the definition of sound professional judgment are derived from judicial doctrine and legal terminology. **A reasonable decision** is one that is fit and appropriate under the circumstances. It is a decision that natural resource decisionmakers of ordinary prudence and competence would not view as excessive or immoderate under similar circumstances. It is important to remember that the judiciary does not compare a manager's decision against some single absolute right decision conceived by the court. That is, the court's function is not to make administrative decisions but rather to judge the reasonableness of an agency decision using judicial doctrine such as reasonable care, due diligence, and sufficient evidence.

Full and fair consideration of the appropriate information is the condition of considering the whole situation and making an impartial decision. ***Principled and reasoned analysis*** is the condition of not being arbitrary and capricious. Being arbitrary and capricious is one of the most frequent allegations in natural resource-related litigation. ***Best available science and expertise*** is the condition of using the best information and experience that is reasonably available to improve certainty. ***Complies with applicable laws*** is the expectation that a decisionmaker must duly consider and be in conformance with relevant laws and regulations (e.g., NEPA, Endangered Species Act).



Sound professional judgment is used to make decisions.

Preponderance of the Evidence

Preponderance of the evidence is defined as a condition whereby most of the information, data, trends, professional opinion, and other facts and circumstances of a situation support the reasonableness of a particular decision or course of action more than another decision or course of action. It is a situation where the weight of evidence of one course of action is greater than the weight of evidence of another course of action.



"No wake" or slow zones can contribute to a quality experience.

Rule of Reasonableness

The rule of reasonableness is defined as a decision that professional recreation managers of ordinary prudence and competence would not view as excessive or immoderate under similar circumstances.

Managers need flexibility to make decisions based on a level of analysis that is commensurate with the purpose and potential consequences of the decision.

Sliding Scale Rule of Analysis

This sliding scale rule states that the level of analysis used to implement WALROS should be commensurate with the potential consequences of the decision; that is, managers need flexibility to make decisions based on a level of analysis that is commensurate with the purpose and potential consequences of the decision. For example, the greater the possibility that a decision may significantly alter natural resource conditions, the heritage of an area, local economies, water operations, or the type or quality of the water recreation opportunity, the greater the level of analysis and deliberation. A sliding-scale rule of analysis (table 1.7) can range from slight to ordinary to extraordinary and can vary by the (1) level and type of information necessary, (2) tools and techniques used, (3) time and effort required, (4) level of certainty and risk, and (5) level of scientific input.



Moorings can provide an important service to the public.

WALROS uses a three-level sliding scale analysis (table 1.7) that parallels the judiciary's interpretation of due diligence by a responsible official: slight, ordinary, and extraordinary levels of analysis. The sliding scale should serve as a guide for managers.

Table 1.7.—Three levels of WALROS analysis

Sliding scale of WALROS analysis	Type of use for the WALROS analysis	Level of detail and precision	Description of the WALROS inventory
Level 1 Coarse filter	General administrative inventory; visitor brochures; routine visitor, resource, and maintenance decisions, etc.	Slight or low level of detail, intensity, effort, data, time, and precision.	A knowledgeable recreation staff person can conduct a level 1 inventory with available information, no original data collection or field inventory, and in a relatively short period (e.g., 1–2 days of effort).
Level 2 Moderate filter	Regional inventories and plans; environmental assessments; commercial service plans; assessments of impacts from proposed small to moderate scale changes in facilities, land and water uses, visitor regulations, etc.	Ordinary or moderate level of detail, intensity, effort, data, time, and precision.	Level 2 should involve a small interdisciplinary team of recreation experts, a field inventory using the WALROS inventory protocol, development of a current and comprehensive water resource base map, and original data collection, if possible. Level 2 can be conducted with modest effort (e.g., 2–4 days of effort after selecting and training the team).
Level 3 Fine filter	Environmental Impact Statement – compliance planning, resource management plans, general management plans, assessments of impacts from proposed moderate to large scale changes in facilities, resource use, visitor management, etc.	Extraordinary or high level of detail, intensity, effort, data, time, and precision.	Level 3 should involve a larger interdisciplinary team of recreation experts, several long-time visitors to the particular area, an intensive field inventory using the WALROS inventory protocol, a detailed and current base map, visitor survey information, and resource data collection, if possible. Level 3 requires substantial effort (e.g., 10–20 days of effort after selecting and training the team and excluding the visitor survey task).

Scale of Degree

The scale of degree in WALROS is analogous to a yardstick used to measure inches and feet. For the yardstick to be effective, society needed to agree upon and standardize the measurement of an inch and foot. Similarly, the scale of degree in WALROS is intended to help standardize the measurement of attributes for each WALROS class. The scale of degree contains several qualitative terms and a quantitative expression. The terms listed under the six WALROS classes in table 1.8 are synonymous and used interchangeably in the WALROS guidelines (chapter 2) and inventory protocol (chapter 3).

In the WALROS inventory stage, a team of experts will select and inventory a series of sites on the waterbody. At each inventory site, the team is asked to **circle the degree, extent, or magnitude that the following attributes are present at this site.** In response, each team member circles the set of terms along the scale of degree in table 1.8 that best represents his or her view. For example, structures and human activity in an urban setting are characterized as **dominant, extensive, a great deal, extreme, or apparent in 80 percent or more** of the setting. Conversely, evidence of other recreation use in a primitive setting is characterized as **very minor, rare, very little, or apparent on 3 percent or less** of the area. Use of the scale of degree in the WALROS Inventory Protocol is described in **Chapter 3—Inventory.**



Accessible facilities are important.

Table 1.8.—The scale of degree of major development used in WALROS

Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
80-100%	50-80%	20-50%	10-20%	3-10%	0-3%
Dominant	Very prevalent	Prevalent	Occasional	Minor	Very minor
Extensive	Widespread	Common	Infrequent	Little	Very little
A great deal	Very obvious	Apparent	Periodic	Seldom	Rare
Extremely	Very	Moderately	Somewhat	Slightly	Not at all

In **Chapter 2—Physical, Social, and Managerial Attribute Guidelines**, the scale of degree is used in the guidelines to indicate the degree, extent, or magnitude of the attribute's **appropriateness** in each WALROS class. For example, the presence of full-service bath facilities is characterized as **extensive** in an urban setting, but as **not at all appropriate** in a primitive setting. Note that there are a few attributes in chapter 2 and in the WALROS Inventory Protocol (e.g., degree of solitude, degree of natural ambiance) where the scale has been reversed to ensure logic and integrity of the recreation opportunity.



A variety of recreation activities can occur within a setting.

Design Criteria Used in Developing WALROS

Varieties of important considerations were identified early in the development of the WROS in 2004. Since that time, additional criteria have been developed to encompass the value of using WALROS in land, regional water resource, and river recreation planning. Properly formulated design criteria help ensure that WALROS is efficient, effective, and valuable to water resource planners and managers. The design criteria used to help develop WALROS include the following:



Parks and beaches provide for multiple recreation uses.

- interfacing with Reclamation's Resource Management Planning process and other NEPA-compliant planning processes used by other agencies;
- applicability to local or regional recreation planning;
- interfacing with the ROS system used by the U.S. Forest Service and Bureau of Land Management (BLM);
- consistency with the prevailing expert opinion in the recreation profession;
- relative ease and affordability to use;
- ability to integrate with other planning tools, databases, and processes;
- appeal and understandability to the recreating public, communities, stakeholders, and private-sector businesses;
- applicability to land-based physical, social, and managerial attributes that may support water-based recreation or stand alone as land-based;
- providing objective criteria for reasoned and deliberate decision making;
- accommodating flexibility and adaptation to special field situations;
- using the best available social and biophysical science;
- supplying only those facilities, services, and opportunities that are consistent with the appropriate WALROS class;
- accommodating change and adaptation through monitoring, research, and experience;

- applying reasonably well to a variety of recreation settings across the nation;
- helping to ensure a high-quality, safe, and enjoyable recreation experience; and
- helping to prioritize facility, infrastructure, program development, and management actions.

The Planning and Management Value of WALROS

WALROS is an inventory, planning, and management tool. As such, it is valuable to the managing agencies, local communities, recreationists, and the private sector (e.g., tourism industry) especially for its applicability to the following tasks:

- inventory and map water and/or land recreation opportunities;
- integrate recreation into the agency planning process;
- compare recreation demand to the supply of available recreation opportunities;
- provide a visual map (compatible with geographic information systems [GIS]) of proposed planning alternatives;
- evaluate the benefits and costs of proposed alternatives;
- identify and manage a tourism niche for communities and the private sector;
- plan and manage a regional system of water and/or land recreation opportunities;
- identify and protect important natural and cultural resources;
- increase public awareness of recreation choices and available opportunities;
- decide the type and location of visitor management activities;
- prioritize, design, and locate facilities;
- develop visitor capacities;
- justify budget and personnel needs;

WALROS is an inventory, planning, and management tool.



Fishing is one of many activities that may occur in all six of the WALROS spectrums.

- legally justify planning and management decisions;
- provide interagency communication, consistency, collaboration, and coordination;
- conserve a diversity of water and land recreation opportunities; and
- ensure high-quality recreation experiences and benefits for current and future visitors and the local community.

Examples of How WROS Has Been Successfully Used

Since the original WROS Guidebook was published in 2004, WROS has been applied to many waterbodies for a variety of reasons. Following are several examples of where WROS has been applied, plus a brief discussion of its use and value.

Resource Management Planning for Boating Capacity at Public Meetings

The California Department of Parks and Recreation used WROS to help develop the Resource Management Plan (RMP) and Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for Millerton Lake State Recreation Area. As part of this planning process, they used WROS to inventory, map, and classify the lake and its surrounding lands. Using the WROS classifications and boating capacities contained in this handbook, they established boating capacities for different areas of the lake and its surroundings. They also used WROS in public meetings to present alternatives to the public. They found WROS to be an excellent tool to help the public easily understand the possible implications of each alternative's effect on their recreation experience. Among other things, the alternative selected by the public and planning team added diversity of recreation experiences within the planning area. It assigned limits on boats for each WROS classified area on and around the lake. The selected alternative also recommended that a proposed marina not be built due to its location and impact on carrying capacities in adjacent areas that were best suited for more natural types of recreation experiences.

The value of using WROS for RMP, boating capacity, and public meetings was stated by Robert Epperson, Resource Manager in Reclamation's Mid-Pacific Region (since retired):

Due mostly to the use of WROS, the RMP was cited for excellence by Commissioners of California State Parks and Recreation. We received a number of comments during our various public meetings on the Millerton RMP expressing how easy it was to understand the planning goals through the WROS description. It seems to be a process that makes a complex planning process filled with tradeoffs, intuitively understandable to the layperson. It seems to have been appreciated as well by the Commissioners.

Interagency Cooperation and Problem Solving

Under the direction of the BLM's Lake Havasu Office and Reclamation, WROS was applied to an approximately 60-mile corridor of the Colorado River/Lake Havasu from Davis Dam to Parker Dam. The original objective was to bring together some 30 management agencies and two Indian tribes across three States in order to build cooperation in solving management problems within the river corridor. WROS was highly successful in achieving this objective. Agency planners and managers congregated on boats to conduct WROS site inventories along the entire river corridor. During this gathering, they discussed various management problems and opportunities. They compared alternative solutions using possible changes in WROS site classes and in recreation opportunities. A major outcome of this WROS exercise was the establishment of the Tri-States Waterways Group. This group is currently involved in cooperative interagency recreation planning and management of the river corridor and the Tri-State Region.

Regional Planning

Reclamation and the California Department of Parks and Recreation selected 30 waterbodies in the Central Valley from Los Angeles to the Oregon border and subdivided the reservoirs and rivers into five regions. Subsequently, these waterbodies were inventoried using WROS. The purpose of the inventories was to provide regional information that could be used in recreation planning of individual reservoirs and rivers. The information provided a database that allowed managers and planners to compare their waterbodies to others in the region and avoid planning in a vacuum. Several Federal, State, and local agencies have used their own WROS

waterbody inventories as well as the WROS regional information from other waterbodies in their recreation and resource plans. The WROS regional information also allows comparison of recreation opportunities and management between and across regions. The report from this major study is titled: *Applying the Water Recreation Opportunity Spectrum on a Regional Scale—Five Regions within the California Central Valley*, 2010.

Recreation Master Planning, Environmental Impact Report, and Commercial Services Planning



Multi-disciplinary teams are important during the WALROS planning process.

Using a Level 1 WROS inventory of lands within Reclamation's Canyon Ferry-Goose Bay Planning Area, Montana, Reclamation was able to recommend site plans that allowed a diversity of recreation opportunities, experiences, and commercial services on the planning site and the entire reservoir. The ensuing reports are titled: *Recreation Master Plan Goose Bay Planning Area; Master Plan, Commercial Services Plan, and Financial Feasibility Evaluation*; and *Goose Bay Environmental Assessment 2010*. Copies of the reports may be obtained by contacting the Montana Area Office of the Bureau of Reclamation in Billings, Montana.

Land Use Planning

After comparing WROS to the ROS, the BLM's Havasu office selected WROS over the former because WROS worked better for inventorying BLM lands for recreation purposes. The WROS land inventory proved highly successful for identifying recreation opportunities and was used to help develop BLM's Recreation Lands Master Plan.

Demonstrating Changes and Success in Preserving Recreation Opportunities and Visitors' Experiences over Time

In 2003, Santa Barbara County Parks, California and Reclamation conducted a WROS inventory of Cachuma Lake in order to provide information on the recreation opportunities and visitor experiences offered. The information from the survey was beneficial to the development of Santa Barbara's Cachuma Lake Recreation Management Plan. The implementation of the plan resulted in

management actions aimed at preserving certain recreation experiences and opportunities. Seven years later, in 2010, WROS was once again applied across the lake at the same exact inventory site locations as in 2003. The comparison between the 2003 and 2010 inventory results showed that the planning and management effort has been successful in preserving recreation opportunities and visitor experiences. Table 1.9 shows the study results.

Table 1.9.—Comparison of Lake Cachuma 2003 and 2010 WROS inventory site scores and classifications

Site	2003 WROS score	2010 WROS score
# 1 Marina	RD 4	RD 4
# 2 Narrows	RN 6	RN 7
# 3 Santa Cruz Bay	RN 7	RN 7.8
# 4 Cachuma Bay	RN 7	RN 6.88
# 5 Yurts	RD 4	RD 4

Road Closures and Land Uses

Reclamation used WROS to inventory lands, recreation opportunities, and experiences on a portion of New Melones Lake in California. Based on this inventory and the recreation impact of alternatives demonstrated through WROS, some roads were closed to protect recreation experiences and resources. The report is titled: *Shell Road Interim Management Plan for Reclamation, 2003*.

Expanding Regional Diversity and Facility Location

A Level 1 WROS inventory of 10 reservoirs within the vicinity of New Melones Lake found that only 2 percent of all the water recreation opportunities in the region were in the WROS semiprimitive class and that none of the opportunities were in the primitive class. This led managers at New Melones Lake to take immediate action to protect a segment of the lake as semiprimitive. The simple placement of “no wake” buoys on the upper reach of the lake was all that was required to accomplish this. The result was a diversification of recreation experiences at the lake and within the region. Moreover, a tentative plan to place a marina in a rural natural area in close proximity to a protected wildlife area was abandoned because of the WROS inventory of New Melones Lake.

Reservoir WROS Designations

The Tennessee Valley Authority (TVA) has used WROS to help plan recreation on their reservoirs. (See list of TVA reservoirs where WROS has been applied in appendix B.) TVA also utilized WROS to creatively explore the possibility of designating an entire reservoir in one WROS class in order to preserve a single recreation experience and opportunity on that reservoir.

Assistance in Determining a Recreation Strategy within a Variety of Water Operation Alternatives

As part of the Yakima River Basin Storage Feasibility Study in the State of Washington, WROS was used to assess the potential impacts of several water operation alternatives to the recreation resources. WROS also helped managers determine a viable recreation strategy within the Yakima River Basin. As part of this Feasibility Study, a technical report was prepared, entitled *Recreation Demand and User Preference Analysis, 2007*. A WROS Level 1 analysis was used to inventory (i.e., map) the current supply of water recreation opportunities and to develop a regional profile of the water resources across the six WROS classes.



Water operations or environmental factors such as extensive rain may temporarily affect a user's recreation experience.

It is typical in recreation resource planning to examine “comparables” in order to help determine demand and user preference. Refer to **Chapter 3—Inventory** under the subheading of *Develop a Basic Profile of the Planning Area and Region* for additional information regarding establishing a regional profile. In this recreation demand and user preference, the two criteria used to select the comparables for analysis were (1) the major existing reservoirs and rivers within the Yakima River Basin and (2) other water resources near the basin that were similar in terms of geography, topography, climate, ecotype, elevation, vegetation, and recreation use. The water resources inventoried included 36,235 water surface acres and 413 miles of rivers. Moreover, WROS was used in this study as a basis for helping to determine the recreation economic feasibility of water alternatives and to evaluate the feasibility of two new proposed reservoirs.

One innovative aspect of this Level 1 inventory was the use of aerial observation of the lakes and rivers within the planning area. Using a helicopter transport, it took a 3-person-team one day to inventory most of the waterbodies. Consequently, the use of a helicopter

saved valuable time and funding. Table 1.10 shows the results of the Yakima River Basin recreation and user demand study.

Table 1.10.—Inventory of the current supply of water recreation opportunities in the Yakima River Basin based on the WALROS system

Water resource	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Lakes	Water surface acres by WROS class					
Keechelus Lake			2,360			
Kachess Lake			1,684	2,595		
Cle Elum Lake			4,478			
Lake Easton			205			
Rimrock Lake			2,351			
Bumping Lake			472	849		
Clear Lake				231		
Moses Lake		3,417	2,551	760		
Potholes Lake			5,220	9,062		
Total water surface acres		3,417	19,321	13,497		
(% of total)		(9.4%)	(53.3%)	(37.3%)		
Rivers	River miles by WROS class					
Yakima River		29	144	30		
Columbia River	13	11	54	42		
Bumping River			3	13		
Tieton River			1	20		
Naches River		3	36	6		
Cle Elum River			8			
Total river miles	13	43	246	111		
(% of total)	(3.1%)	(10.4%)	(59.6%)	(26.9%)		

Source: Technical Series No. TS-YSS-10, Recreation Demand and User Preference Analysis, A Component of Yakima River Basin Water Storage Feasibility Study, 2007.

Improving Management of River Recreation Resources

Due to the dramatic increase in the popularity and use of river recreation areas in the State of New Hampshire, a Level 1 WROS analysis was conducted in order to inventory and analyze recreation use on the Connecticut, Upper Ammonoosuc, and Androscoggin Rivers. As a result, a total of 75 miles were inventoried. The three rivers inventoried in New Hampshire are part of the 740-mile

historic Northern Forest Canoe Trail (NFCT), which spans the States of New York, Vermont, New Hampshire, and Maine, and the Canadian province of Quebec. The three rivers pass through Federal, State, and private ownership, each with a varying degree of management authority. This scenario makes it difficult to initiate an overall management strategy for the river corridors that are part of the NFCT in the State of New Hampshire.

The primary objectives for completing the WROS inventory were to accomplish the following:

- better understand the resource and facilitate communication with visitors by improving maps and information regarding the type of recreation experiences offered at different locations;
- develop future management direction and justify actions based on regional planning and understandable information;
- provide a visual understanding of how proposed development or adjacent changes may affect available recreation opportunities; and
- clearly explain rules and regulations as to why certain actions are desirable.

To accommodate differences in visitation between weekdays and weekends, the study team made multiple trips to each river and compiled their results to provide an overall WROS score for each (i.e., Connecticut—semiprimitive; Upper Ammonoosuc—semiprimitive; and Androscoggin—rural natural).

The information obtained from the WROS inventory and analysis currently provides an overall management strategy for the 75 miles of rivers managed by a variety of entities. The inventory and map information can be used in any government or private organization's planning process and may accomplish the following tasks:

- assist in developing future management directions;
- justify actions;
- develop reasonable alternatives;
- analyze tradeoffs and benefits among alternatives; and
- visually depict the alternatives and their corresponding results to improve community understanding and input.

Chapter 2–Physical, Social, and Managerial Attribute Guidelines



Physical, Social, and Managerial Attribute Guidelines



Top, trails are important to access water. Bottom, this patrol boat and the law enforcement it provides are important management tools.

Recreation managers provide opportunities for visitors to participate in an activity within a specific setting, which is defined by its important physical, social, and managerial attributes. The opportunity will ensure that visitors realize a particular type of experience and its subsequent benefits (refer to figure 1.1 in chapter 1). This chapter contains recommended guidelines for many setting attributes that, when considered together, encompass and define the WALROS class and its corresponding recreation opportunity. The guidelines provided are for water-based and associated land-based attributes. For example, if an entity is managing a section of a lake or river and its associated land base for rural developed recreation, the guidelines in the rural developed column should be considered.

The physical, social, and managerial guidelines are intended to provide guidance while adapting to unique local situations. They serve as indicators to signal that further assessment or action may be necessary (e.g., more monitoring, patrols, or discussion). Failing to meet a guideline or standard does not necessarily obligate or direct management action. Rather, it indicates that the appropriate level of due diligence has been taken by conducting the assessment. Guidelines also are critical for an efficient monitoring program since they provide a reference point, baseline, or anchor by which managers can compare current actual conditions to the preferred conditions reflected in the guidelines.

Managers may decide to deviate from the recommended guidelines occasionally, but they need to carefully consider all the facts and circumstances before making this decision. It is important for them to first address this basic question: What is the justification for this deviation and will it violate the integrity of the WALROS system? Sound professional judgment and the rule of reasonableness (see chapter 1) should be the standards for decisionmaking. It is important to include a written detailed explanation in the administrative record for future administrative or judicial inquiries.

However, managers must keep in mind that continued modification of the attributes within any given recreation setting and a deviation from the recommended guidelines may result in physical, social,

and managerial inconsistencies over time. Scenarios that may result from a deviation from established guidelines include the below factors:

- a decrease in user satisfaction;
- a change in available opportunities;
- an increase in user conflict;
- an eventual decrease in visitation; and
- environmental impacts, such as a decrease in water quality, loss of wildlife habitat, and degradation of cultural resources.

Managers need to remember that continued modification of the attributes within any given recreation setting and deviation from the recommended guidelines may result in physical, social, and managerial inconsistencies over time.

Due to the potential social and environmental impacts, the monitoring of program activities addressed in chapter 4 may become more important. Urban areas may require more comprehensive monitoring efforts than primitive areas.

Refer to **Chapter 3—Inventory** for additional information on identifying and mitigating inconsistencies identified between the physical, social, or managerial settings.

This section provides guidelines for the physical, social, and managerial attributes across each WALROS class. It will continue to evolve and improve over time with management experience and greater input from professionals.



Areas within a setting that attract multiple users may have negative environmental impacts, such as poor water quality, and require management that is more intensive.

For each specific attribute in this section, such as the degree of human activity, recreation use, and the presence of structures, a qualitative descriptor conveys the appropriateness, recommended degree, or extent to which the attribute may be present for each WALROS class. Table 2.1, below, is repeated from chapter 1 (table 1.8) for clarification of the descriptors used in the following guidelines.

Table 2.1 (repeated from chapter 1).—The scale of degree of major development used in WALROS

Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
80-100%	50-80%	20-50%	10-20%	3-10%	0-3%
Dominant	Very prevalent	Prevalent	Occasional	Minor	Very minor
Extensive	Widespread	Common	Infrequent	Little	Very little
A great deal	Very obvious	Apparent	Periodic	Seldom	Rare
Extremely	Very	Moderately	Somewhat	Slightly	Not at all

Physical Setting Attribute Guidelines

Changes to the physical setting are often irreversible.

The physical setting may encompass unique scenic and visual features that offer a primitive type of recreation opportunity or highly developed features that are associated with a modified landscape albeit visitors enjoy an urban style recreation experience. Among other things, the degree of human development, natural resource modification, and sensory perception to the sights, sounds, and smells of a typical community will determine the type of recreation experience a visitor can expect within a defined area. The size of the area, its topography and vegetation, and the access to it are also relevant in determining the type of recreation experience available to the public. A large area with abundant vegetation and topographical relief but very little road access will offer the public a more primitive type of recreation experience.

It should be noted that the physical setting within WALROS cannot be changed easily, although changes will likely become irreversible if they are undertaken.

Table 2.2 provides several physical setting attribute guidelines that can assist managers in determining an area's WALROS classification.



Facilities and scenic views can define a recreation experience.



Service facilities within a setting, such as restaurants, may enhance the recreation experience.

Table 2.2.—Physical setting attribute guidelines

Physical attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Degree of development: Extent that human built structures dominate the viewshed (e.g., dams, major bridges, docks, commercial businesses, residential areas, marinas, roads, resorts, highways, communities, airports, utilities, and other business or industrial complexes).	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Distance from major development: Mileage from dams, major bridges, marina resorts, communities, commercial, or residential areas.	Less than 0.5 mile	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	More than 10 miles
Degree of natural resource modification: Extent of visitor awareness that natural resources have been altered by human activity, technology, or development.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Sense of closeness to a community: Degree that visitors sense a close proximity to the sights, sounds, and smells typical of a community.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Degree that natural ambiance dominates the area: Extent to which a sense of tranquility and opportunity to see, hear, and smell nature exist.	Very minor, very little, or rare 0–3%	Minor, very little, or seldom 3–10%	Occasional, infrequent, or periodic 10–20%	Prevalent, common, or apparent 20–50%	Very prevalent or widespread 50–80%	Extensive, dominant, or a great deal 80–100%
Water quality standards	Meets or exceeds State standards	Meets or exceeds State standards	Meets or exceeds State standards	Meets or exceeds State standards	Exceeds State standards	Exceeds State standards
Air quality standards	Meets or exceeds State standards	Meets or exceeds State standards	Meets or exceeds State standards	Meets or exceeds State standards	Exceeds State standards	Exceeds State standards

Table 2.2 (cont'd).—Physical setting attribute guidelines

Physical attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Visual quality objective of nature	Maximum modification	Maximum modification	Modification	Partial retention	Retention	Preservation
Communication towers	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Grain silos and smoke stacks	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Water break wall, riprap, channelization	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Other human built structures and activities	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Commercial air traffic (e.g., noise, contrails, quantity)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Restricted areas (i.e., administrative sites, cultural sites, environmentally sensitive areas)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A

Social Setting Attribute Guidelines



Developed campgrounds provide an appropriate setting for those individuals who wish to socialize with other recreation users.

The social setting can range from a defined recreation area where many visitors interact with one another while participating in their recreational pursuits to a defined area where other visitors are seldom encountered. Among other things, the degree of visitor preference, congestion, solitude and remoteness, and nonrecreational use will determine which type of recreation experience a visitor can expect.

Table 2.3 provides several social setting attribute guidelines that can assist land managers in the supervision of visitors who prefer to recreate in a defined area with other recreationists.

Table 2.3.—Social setting attribute guidelines

Social attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Degree of visitor presence: Degree that the sights, sounds, and smells of other visitors, their equipment, their impacts, or their litter is present.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Degree of visitor concentration: Degree that visitors congregate in the area (e.g., service area, launches, entrances, swim areas, trailheads, picnic, or camp areas).	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Degree of recreation diversity: Degree that there is a mixture of recreation activities being participated in or equipment being used.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Distance to visitor services, security, and safety: Conveniences, comforts, and security, approximately measured in miles.	Less than 0.5 mile	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	More than 10 miles
Degree of solitude and remoteness: Degree that visitors view themselves as being alone and far away from civilization in a wild and remote place.	Very minor, very little, or rare 0–3%	Minor, little, or seldom 3–10%	Occasional, infrequent, or periodic 10–20%	Prevalent, common, or apparent 20–50%	Very prevalent or widespread 50–80%	Extensive, dominant, or a great deal 80–100%
Degree of nonrecreational activity: Degree that the sights, sounds, and smells of nonrecreational users are present (i.e., shipping, trains, factories, roads, houses, airplanes, mining, and farming).	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Reasonable standard for the percent of “extremely” or “very” satisfied visitors.	80%	80%	80%	80%	80%	80%

Table 2.3 (cont'd).—Social setting attribute guidelines

Social attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Reasonable standard for the percent of “extremely” dissatisfied visitors.	10%	10%	10%	10%	10%	10%
Reasonable standard for the percent of visitors who would like to visit the area again.	70%	70%	70%	70%	70%	70%
Reasonable standard for the percent of visitors who would tell others that this site is a good place to visit.	80%	80%	80%	80%	80%	80%
Reasonable number of boat heard per day.	N/A	N/A	N/A	N/A	Less than 10 boats per day	Less than 3 boats per day
Reasonable number of boats seen per day.	N/A	N/A	N/A	N/A	Less than 10 boats per day	Less than 3 boats per day
Reasonable standard for percent of boating accidents per number of boat launches.	0.01%	0.01%	0.01%	0.005%	0.005%	0.001%
Reasonable standard for the percent of emergency medical responses per number of recreation groups.	0.01%	0.01%	0.01%	0.005%	0.005%	0.001%
Reasonable standard for the percent of verbal or physical conflicts per number of boat launches.	0.01%	0.01%	0.01%	0.005%	0.005%	0.001%
Reasonable standard for the percent of noise disturbances per number of recreation groups.	10%	10%	10%	5%	1%	1%
Reasonable standard for percent of visitors perceiving “extreme” or “very” high crowding.	25%	20%	20%	10%	5%	5%

Table 2.3 (cont'd).—Social setting attribute guidelines

Social attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Reasonable standard for percent of repeat visitors indicating the resource is “extremely” or “very” adversely affected.	20%	20%	20%	20%	10%	10%
Reasonable standard for the percent of repeat visitors indicating the experience has been “extremely” or “very” adversely affected since a previous visit.	20%	20%	20%	20%	20%	20%
Reasonable standard for the percent of visitors complaining about a recurring issue.	10%	10%	10%	5%	5%	5%

Managerial Setting Attribute Guidelines

Among other things, the managerial setting may encompass an established degree of management presence, public access facilities such as roads, developed recreation facilities, and visitor services. Managers can easily change the recreation spectrum within a defined area by implementing the many managerial attributes that are available to them. The conscientious development of an area may result in inconsistencies with the physical and social setting. Careful monitoring of the actions implemented by managers, evaluating the collected monitoring data, and appropriately adapting to each situation will likely mitigate the inconsistencies.

Managers must also understand that it is easy to go from a more primitive type of recreation spectrum to an urban spectrum. Once substantial development has occurred within a defined area and the spectrum has shifted toward an urban experience, it is unlikely that those developments will be eliminated. Therefore, it is important that managers put forth effort to protect and/or conserve some areas that are on the primitive end of the spectrum for future use.

It is readily apparent that the diversity of recreation opportunities will decrease as one moves from an urban to a primitive classification.



Popular recreation sites often require intensive management.



Rules and regulations can be important factors in maintaining a recreation experience.

Likewise, it should be obvious to managers that the managerial attribute guidelines imposed at a site will be greater in an urban area than in the five other recreation classifications.

Table 2.4 provides several managerial setting attribute guidelines that can assist land managers in providing the appropriate facilities, opportunities, and administrative actions for each of the six recreation classifications.

Table 2.4.—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Degree of management structures: Degree of management facilities, buildings, interpretive signage, equipment, buoys, mileage markers, entry stations, towers, security lighting, administrative offices, and compounds are present.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Distance to on-site developed recreation facilities and services: Mileage to developed campgrounds, restaurants, stores, marinas, resorts, pump stations, amphitheaters, picnic sites, play areas, telephones, showers, visitor centers, etc.	Less than 0.5 mile	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	More than 10 miles
Distance from developed public access facilities: Mileage to developed and well-maintained access points such as parking lots, trailheads, entrances, boat launches, access roads, and other staging or launching areas.	Less than 0.5 mile	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	Varies

Table 2.4 (cont'd).—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Frequency of noticing management personnel: The likelihood of sighting management personnel such as rangers, local sheriff or police, entrance station staff, hosts, maintenance workers, lifeguards, marina operators, concessionaires, guides, and other persons of authority.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor or seldom 3–10%	Very minor, or rare 0–3%
Reasonable maximum decibel levels for boat motors	65-75 dB	65-75 dB	55-65 dB	55-65 dB	45-55 dB	35-45 dB
Reasonable maximum boat speed	35-45 mi/hr	35-45 mi/hr	35-45 mi/hr	15-30 mi/hr	5-15 mi/hr	0-5 mi/hr (no wake)
Reasonable watercraft launch time	Less than 30 minutes	Less than 30 minutes	Less than 30 minutes	Less than 15 minutes	No wait	No wait
Reasonable watercraft retrieval time	Less than 30 minutes	Less than 30 minutes	Less than 30 minutes	Less than 15 minutes	No wait	No wait
Quiet times	10 pm to 6 am	10 pm to 6 am	10 pm to 6 am	10 pm to 6 am	24/7	24/7
Reasonable number of flat water acres per boat	1 to 10 acres	10 to 20 acres	20 to 50 acres	50 to 110 acres (¼ sq mi)	110 to 480 acres (¾ sq mi)	480 to 3200 acres (5 sq mi)
Reasonable separation between river boating groups	⅓ mile (220 yards)	¼ mile (440 yards)	¼ mile (440 yards)	½ mile or a 20-minute separation	2 miles or a 1-hour separation	4 miles or a 2-hour separation
Vehicle parking at beach and picnic areas	25 plus per acre	20 to 25 per acre	15 to 20 per acre	10 to 15 per acre	N/A	N/A
Houseboat use	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be very prevalent	Appropriate and may be occasional	Appropriate and may be occasional	N/A
Tour boats	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A

Table 2.4 (cont'd).—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Sea planes	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be very prevalent	Appropriate and may be occasional	N/A	N/A
Space between houseboats on mooring balls	1.25 times the length of the boat	1.25 times the length of the boat	1.25 times the length of the boat	1.25 times the length of the boat	N/A	N/A
Minimum number of acres per group campsite in developed campground	5	5	5	10	N/A	N/A
Campsites per acre in developed campground	5 to 10 per acre	5 to 10 per acre	3 to 5 per acre	3 per acre	N/A	N/A
Minimum distance between dispersed shoreline campsites outside of developed campgrounds	N/A	N/A	1/8 mile (220 yards)	1/4 mile (440 yards)	1/2 mile or out of sight and sound of other parties	1 mile or out of sight and sound of other parties
Minimum distance between floating or boat in campsites outside developed campgrounds	N/A	N/A	1/8 mile (220 yards)	1/4 mile (440 yards)	1/2 mile or out of sight and sound of others	1 mile or out of sight and sound of others
Picnic and day use areas	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Designated beach areas	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Paved boat ramps	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Unpaved boat ramps	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Overnight security lights	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Marine sanitation devices	Appropriate and may be required	Appropriate and may be required	Appropriate and may be required	Appropriate and may be required	Appropriate and may be required	Appropriate and may be required

Table 2.4 (cont'd).—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Modern restrooms (e.g., flush toilets, electricity, and showers)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Rustic septic or vault toilets	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Floating camping platforms	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Designated campsites	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	Appropriate and may be very few
Interpretive signs	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Directional signs	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Regulatory signs	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Administrative office signs	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Informational signs	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Visitor centers	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Paved trails	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Unpaved or unimproved trails	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	Appropriate and may be very few

Table 2.4 (cont'd).—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Water-based trails (e.g., boat, raft, canoe, and scuba)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	Appropriate and may be seldom
Paved parking	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	N/A	N/A	N/A
Unpaved parking	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Modern, full service RV and tent campgrounds	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Rustic or primitive campgrounds (i.e., no utilities or amenities)	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Large group picnic and camping facilities	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Full service resorts	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	N/A	N/A	N/A
Full service marinas	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	N/A	N/A	N/A
Fuel services and storage	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Golf courses	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	N/A	N/A	N/A
Sports fields (e.g., baseball, soccer)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	N/A	N/A	N/A
Community boat docks	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A

Table 2.4 (cont'd).—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Youth camps and dude ranches	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Interpretive programs (e.g., trail or boat tours)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Fishing tournaments	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	N/A
Motorized boat racing events	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	N/A	N/A	N/A
Water skiing events	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be seldom	N/A	N/A
Life guards	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Reservation systems (e.g., launch times, picnic areas, camping, tours, back country hiking, river rafting)	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
User fee systems (e.g., camping, tours, entrance fees, launches, back country hiking, river rafting)	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Administrative buildings (e.g., employee housing, office buildings, equipment storage)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Land-based food service concessions	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Long-term use permitted	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A

Table 2.4 (cont'd).—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Outdoor shooting or archery ranges	N/A	N/A	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Amphitheaters	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Wildlife viewing stations	Appropriate	Appropriate	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
General utilities (e.g., electricity, sewer, water)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Access for persons with disabilities	Appropriate and established by law	Appropriate and established by law	Appropriate and established by law	Appropriate and established by law	Appropriate where reasonable and established by law	Appropriate where reasonable and established by law
Fireplaces/grills	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Fish cleaning stations	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	N/A	N/A
Fish habitat improvements	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate but not intrusive	Appropriate but not apparent
Vegetative management	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate but not intrusive	Appropriate but not apparent
Wildlife management	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate but not intrusive	Appropriate but not apparent
Wildfire management	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate but not intrusive	Appropriate but not apparent
Resource monitoring	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate but not intrusive	Appropriate but not apparent
Visitor monitoring	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate but not intrusive	Appropriate but not apparent

Table 2.4 (cont'd).—Managerial setting attribute guidelines

Managerial attributes	Urban	Suburban	Rural developed	Rural natural	Semiprimitive	Primitive
Minimum standard for monitoring visitor use (e.g., type, amount, location, duration)	Daily in primary season, weekly in secondary	Daily in primary season, weekly in secondary	Daily in primary season, weekly in secondary	Weekly in primary season, monthly in secondary	Weekly in primary season, monthly in secondary	Monthly in primary season, monthly in secondary
Minimum standard for monitoring visitor satisfaction, perceptions, or preferences	Every 3 years	Every 3 years	Every 3 years	Every 3 years	Every 3 years	Every 3 years
Minimum standard for monitoring regional recreation demand and supply trends	Every 3 years	Every 3 years	Every 6 years	Every 6 years	Every 6 years	Every 6 years
Limit on the number of visitors to protect the resources	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Limit on the number of visitors to protect special or important values	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Limit on the number of visitors to protect quality of experience	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Limit on the number of visitors to protect health and human safety	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Management zoning (e.g., wakeless areas, no camping, security areas, wildlife habitat)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	Appropriate and may be very little
Speed limits for boats	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Law enforcement presence	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Volunteers	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Camp hosts	Appropriate	Appropriate	Appropriate	Appropriate	N/A	N/A
Cooperating associations	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Man made reservoir operations (e.g., 34 drawdown for municipal, industrial, and agriculture purposes)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	Appropriate and may be very minor
In-stream flow changes (e.g., flushing flows for fish habitat improvements)	Appropriate and may be extensive	Appropriate and may be very prevalent	Appropriate and may be common	Appropriate and may be occasional	Appropriate and may be seldom	Appropriate and may be very minor

Visitor Capacity Guidelines

In 2002, the Federal Interagency Task Force on Visitor Capacity on Public Lands and Waters, delivered its final report to the Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of the Interior. The Task Force was a 2-year effort to improve visitor capacity decisionmaking affecting the lands and waters managed by the Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, Forest Service, and National Park Service. The report contains important background information on the concept of visitor capacity, a set of principles and criteria for decisionmaking, seven tools to help make better and more defensible capacity decisions, and a directory of 100 locations in the United States that have numerical visitor capacities. Pages 10 to 22 of the report are particularly relevant to WALROS and to this handbook. Refer to appendix G for pertinent excerpts from the interagency task force report. The full report can be obtained by contacting the National Recreation and Park Association in Ashburn, Virginia.

The citation for the final report is:

Haas, G. E. 2002. *Visitor Capacity on Public Lands and Waters: Making Better Decisions*. A Report of the Federal Interagency Task Force on Public Lands. Submitted to the Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of the Interior, Washington, D.C. May 1, 2002. Published by the National Recreation and Park Association, Ashburn, Virginia. (ISBN 0-929581-66-0)

Reasonable Flat-Water Recreation Boating Capacity Coefficients

To help managers make better and more defensible boating capacity decisions, a set of boating capacity coefficients has been developed based on collaborative expert opinion, professional experience, published articles and plans, sound professional judgment, the rule of reasonableness, and the sliding scale rule of analysis discussed in chapter 1 of this handbook. The boating coefficients in table 2.5 would be reasonable for a Level 1 analysis. (See table 1.7.)

Table 2.5.—A range of reasonable boating capacity coefficients

WALROS class	Range of boating coefficients (acres per boat)	
	Low end	High end
Urban	1	10
Suburban	10	20
Rural developed	20	50
Rural natural	50	110 (¼ sq mi)
Semiprimitive	110	480 (¾ sq mi)
Primitive	480	3,200 (5 sq mi)

A boating capacity coefficient is defined as the number of water surface acres adequate for each recreational boat in a particular WALROS class. These coefficients can be multiplied by the suitable or available water surface acres for each WALROS class on a body of water to help justify and defend a boating capacity decision. Additional scientific study and monitoring can help refine these boating capacity coefficients.

A boating capacity is defined as the number of recreational boats at one time (BAOT) that will be accommodated in an area, or the BAOTs for an area. BAOT refers to the number of boats that are untethered from the shoreline or any docking apparatus whose occupants are pursuing recreational opportunities. The following coefficients do not account for the inactive recreational boats moored at a dock, marina, or along the shoreline, nor do they account for nonrecreational boating activity (e.g., commercial fishing, shipping, and law enforcement).

Because of the many factors that influence a boating capacity decision, a range of reasonable coefficients is provided for each WALROS class in table 2.5. A decision tool is also provided in table 2.6 to help ensure that important factors are duly considered by managers when deciding what part of the range may be most appropriate for the area in question.



Boating capacity decisions are important.

Table 2.6.—A boating capacity range decision tool

Instructions: The purposes of this decision tool are to help ensure that managers consider important factors affecting boating capacity and to help document the reasoned analysis used in making a boating capacity decision. For each WALROS zone, consider the following factors that may affect boating capacity. *Circle the descriptor that best matches the situation.* The preponderance of the answers will indicate which part of the capacity range may be more reasonable.

Factor	Higher Capacity	Medium Capacity	Lower Capacity
Typical size of boats	<15 feet	16 to 25 feet	>25 feet
Typical speed of boats	<10 mi/hr	10 to 25 mi/hr	>25 mi/hr
Diversity of boating: <ul style="list-style-type: none"> • Different types of boats • Different size of boats • Different speed of boats 	low low low	moderate moderate moderate	high high high
Boater visitation pattern	simple/ predictable	moderate	complex/ unpredictable
Level of boater stewardship/ civility/respect for resource and others visitors	high	moderate	low
Shoreline configuration	simple/ circular	moderate	complex/ meandering
Boater destination or pass-through area	pass-through corridor/in-transit	mixed	destination area/overnight area
Extent of sensitive resources/ potential for impact	low	medium	high
Compatibility with adjacent recreation/ nonrecreation land uses	high	moderate	low
Islands/shallows/hazards	infrequent	occasional	frequent
Historic public safety record/ accidents/complaints/conflicts	infrequent	occasional	frequent
Level of boater management/ rules/information/education/ compliance	high	moderate	low
Suggested capacity range	lower end (more boats)	mid-range	higher end (fewer boats)

Chapter 3—Inventory



Inventory

This chapter provides operational details of how to conduct a WALROS inventory to map the current supply of recreation opportunities based upon measurement of the current physical, social, and managerial attributes in the area. Chapter 3 has three sections that (1) define the scope of the inventory, (2) describe the attributes and protocol used in the WALROS inventory, and (3) detail the inventory steps involved in mapping the current supply of recreation opportunities.

Define the Scope of the Inventory

A variety of important decisions and actions must be completed early in the process to define the scope of effort and level of analysis required. Listed below are key questions and actions that are precursors to the actual WALROS inventory.

The WALROS inventory requires a quality base map and a compilation of all related documents and materials. Developing a comprehensive base map will define the planning area and assist managers in understanding the level of effort that may be required.



Signs are often needed to inform and regulate recreation users but can change the visual landscape.

Most agencies and offices have assembled comprehensive GIS databases. These resources contain many of the features listed below and are invaluable for building base maps. Some of the features that may be important are included in the list that follows.

- water surface area
- seasonal water levels
- water depths
- topography
- primary and secondary roads
- power transmission lines
- aquatic and terrestrial vegetation
- hazards and shallows
- cultural and historic structures
- important fish and wildlife habitat
- seasonal closed areas
- land acres
- water operation facilities
- special resources or values
- private land and rights of way

- navigational lights, markers
- subdivisions, communities
- buildings and structures
- recreation and concessions facilities
- diversions, channels, riprap
- dam security area
- public health and safety areas
- administrative areas

The various documents and materials that may be collected include the following:

- laws, regulations, policies;
- maps, air photos, pictures, videos;
- management and other operational plans;
- special use permits, concession agreements, leases;
- relevant scientific studies, inventories, and monitored reports;
- visitor use statistics, trends, studies, road counts, surveys;
- regional maps showing the location of other water recreation opportunities;
- reports, studies, trends, or other materials from counties, States, or Federal partners; and
- a list of important contacts (e.g., local, State, and Federal agencies; local communities; tourism offices; special interest groups; colleges and universities).

Define the Planning Area for the WALROS Inventory

While agencies have jurisdictional boundaries, the visiting public often enjoys multiple local, State, and Federal areas on a single visit. The public's "visitation range" is often larger than a single agency's jurisdiction and includes adjacent lands and waters where visitors spend time traveling, recreating, or viewing. Thus, the question is, how large should the planning area be to make good management decisions on the lands and waters within a manager's jurisdiction?

A reasonable rule of thumb is to define the planning area for the WALROS inventory to include those lands and waters that may affect the quality of the water recreation opportunity. It might also be helpful to adopt the perspective of the visitor:



The sizes and sounds of watercraft do affect the recreation experience.

- What is the visitation range or area that most visitors frequent when they are near the general area?
- Where do visitors go and what do they do beyond the primary water and land area in question?
- Are there land uses adjacent to or within the planning area that may affect the recreation opportunities?

Detailed WALROS inventory, planning, and management will only occur within the defined planning area. Yet, it may be necessary and beneficial to consider, particularly during WALROS inventory and planning stages, the larger area of influence beyond the planning area, which may cross agency boundaries. This will help decide how to manage the recreation opportunities in the planning area. Moreover, there may be an advantage to interagency efforts to inventory large areas within a person's "visitation range."

Decide the Level of Resolution or Appropriate Scale of the Base Map

In theory, one could conduct a WALROS inventory on any size area (e.g., 50 square miles, 10,000 acres, 1 acre). The real question is what scale is practical, usable, and compatible with other resource inventories. It is also important to use a scale to ensure that the final WALROS inventory map will fit into any existing GIS database.

A reasonable scale for WALROS inventory mapping is a minimum of 160 acres, or one-quarter of a section; that is, a WALROS zone should be at least 160 acres to be mapped as a separate and distinct WALROS class. Furthermore, maps of a 1:50,000 scale have been found to be reasonable, although a 1:24,000 scale might be more suitable for small planning areas.

A reasonable rule of thumb is that the minimum size or acreage for an area should be practical and useful for planning and management purposes and should be compatible with other inventory and mapping efforts.

Decide the Time Period for Applying WALROS

Recreation opportunities and management direction change during the year because of weather, water uses, type and pattern of visitation, facility closures, water operations, personnel staffing, and many other factors. Thus, an important decision relates to the period of time to which WALROS is being applied. It is reasonable to develop several WALROS inventory maps for the major recreation seasons, for the high- and low-water periods, or for periods when major changes are anticipated.

A reasonable rule of thumb is that the important public concerns and management issues will drive the analysis or planning process defined by the time. For example, if river rafting, dispersed camping, or marina operations are a primary planning issue, then their respective peak seasons define the time period for applying WALROS.



Different types of recreation activities may occur within the same physical setting.

Decide If WALROS Will Be Used in a Resource Management Planning Process

The WALROS inventory can be used either as input to a comprehensive resource management planning process or directly by managers to implement recreation management direction for the area. If the inventory is to be used in a resource management planning process, it is important to anticipate and to be consistent with other criteria being used in the process (e.g., scale, planning horizon, public process, timetable, and level of analysis).

The WALROS inventory will describe the type and location of current recreation opportunities and identify inconsistencies that may be affecting the quality of the current opportunities. Thus, if a planning process will not be applied in the near future, WALROS can directly and immediately help manage the current recreation situation by addressing the inconsistencies or by altering the current situation to a more desired recreation opportunity.

Determine the Effective WALROS Area under Consideration

The effective WALROS area consists of those acres that are available and suitable for recreation purposes. Identifying and

The effective WALROS area consists of those acres that are available and suitable for recreation purposes.



Water operation facilities and security areas often remove an area from recreation use.

demarking on the base map all the areas that are not suitable for recreational purposes is important early in the inventory process.

Unsuitable lands and waters, for example, could include security areas, water storage and power facilities, private in-holdings, municipal or industrial operations, commercial shipping or barge lanes, ecologically sensitive areas, public hazard areas, cultural and historic sites, wildlife nesting areas, shallows and wetlands, or locations that are undesirable because of smells, sounds, and views. The effective supply of recreation opportunities can change weekly (e.g., no commercial transport on weekends) or seasonally because of fish and wildlife migration, hunting seasons, facility closure, reservoir drawdown, wildlife breeding and nesting areas, weather, special events, and many other factors.

Identify Any Other Important Factors that May Influence the WALROS Inventory

The following factors may affect the application of WALROS in defining the scope of the inventory:

- primary uses and commitments of the water and land resources;
- major forces or interests driving the application of WALROS at the current time;
- the level of public concern or controversy;
- the timetable and schedule of major activities;
- the allocation of personnel days and adequate funding towards the activity;
- the composition of a WALROS team and the responsibility of each member;
- the decision-maker or the responsible official and criteria used to arrive at a decision;
- the planning horizon or number of years into the future that should be targeted;
- the nature of external collaboration with visitors, communities, private sector organizations, and other stakeholders;
- the inclusion of external experts, if any, and their role(s); and
- the changes to the current water operations, recreation opportunities, adjacent land use, or other considerations that are unreasonable or beyond the scope of the planning effort.

Develop a Basic Profile of the Surrounding Recreation Region

The management and planning of any single particular setting should take into consideration other nearby recreation settings to ensure coordinated, consistent, compatible, seamless, and efficient recreation management and planning.

A WALROS profile tool can be used to map the current recreation opportunities and resource conditions at other surrounding or nearby recreation settings. In addition, the profile tool can be used to build a regional recreation profile.

Appendix D provides an example of a regional profile tool to assemble and record important water and land resource information that will be useful in recreation management and the application of WALROS. This profile tool is useful in comparing sites as well as in the regional planning process. Further, it can be modified in order to correlate to regional issues, concerns, and management priorities.

New Melones Reservoir managers, for example, found that only 2 percent of water in their region in California offered a WALROS primitive or semiprimitive recreation experience after utilizing the profile tool. Thus, managers were able to expand these opportunities in the region and on their reservoir by simply placing no-wake buoys on upper reaches of their reservoir arms.

Appendix D has a sample generic profile form with important variables that provide the profile of the planning area or region for analysis. In addition, a detailed description of the steps that may be followed when conducting a comprehensive analysis of the recreation opportunities and experiences within a planning area or region can be found in the section entitled *Applying WALROS as a Regional Planning and Management Tool* in chapter 4, *Planning*.



Wildlife nesting areas and migration patterns should be considered in WALROS.



Proximity to cities influences recreation experiences.

The following are examples of variables that can be used for analysis and comparison across planning areas or regions:

- total water surface acres;
- total river miles;
- water elevation at high and low pool;
- number of developed campgrounds;
- miles of trails;
- number of concessions;
- annual operating budget;
- amount of user fees charged for camping;
- number of annual visitors; and
- experiences that visitors are seeking.

The WALROS Inventory Attributes and Protocol

The WALROS inventory produces a map delineating the type and location of the current WALROS classes; that is, a map that shows the current supply of available recreation opportunities. This section explains the WALROS inventory protocol, the attributes used in the inventory, and details the steps necessary for a WALROS inventory of the current situation.

As previously described in chapter 1, a recreation setting consists of physical, social, and managerial attributes that affect the quality or nature of the recreation experience (table 1.2). Since it is not practical to inventory every possible setting attribute, WALROS uses 15 attributes as the basis for delineating the type and location of the existing WALROS classes. Five physical, six social, and four management attributes have been chosen, because each can have a major influence on the type of recreation opportunity that is currently available.

The inventory attributes are packaged into the WALROS Inventory Protocol (Protocol). The Protocol is an inventory “booklet” completed by each trained person at each inventory site. Figure 3.1 depicts the front page of the Protocol. Inside the Protocol is a page for each of the physical, social, and managerial attributes. Figures 3.2, 3.3, and 3.4 show the three pages in the Protocol, the

15 inventory attributes used to delineate the WALROS class, and the scale of degree previously discussed in chapter 1 (table 1.8). (Note that the scale of degree presented is reversed in the Inventory Protocol for one attribute and replaced with a mileage measurement for a distance attribute.)

RECLAMATION
Managing Water in the West

WALROS Field Inventory Protocol
Mapping the Current Supply of Recreation Opportunities



Name of Resource: _____ *Date:* _____

Your Name/Title: _____ *Day of Week:* _____

Inventory Site #: _____ *Local Name:* _____

GPS Coordinates: _____

Planning Period Under Consideration: _____

(September 2011)

Figure 3.1.—Sample cover sheet for inventory protocol.

Physical Inventory

Physical attributes are features that are relatively permanent or fixed within the landscape and are not likely to change soon.

Physical Inventory Protocol Sheet											
Field notes:											
Mark the degree, extent, or magnitude that the following attributes are present at the site.											
Degree of development —Degree that dams, major bridges, marinas, parks, resorts, highways, or other municipal, residential, industrial, or commercial structures are present.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%					
Sense of closeness to a community —Degree that visitors sense that they are close to the sights, sounds, and smells typical of a community.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%					
Degree of natural resource modification —Degree that the visitors are aware that human activity, technology, or development has altered the natural resources.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%					
Distance from development on or adjacent to the water resource —Mileage from dams, major bridges, marinas, resorts, or other municipal, industrial, commercial, or residential areas.	Less than 0.5 miles	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	More than 10 miles					
Degree that natural ambiance dominates the area —Degree that there is a sense of tranquility and opportunity to see, hear, and smell nature.	Very minor, very little, or rare 0–3%	Minor, little, or seldom 3–10%	Occasional, infrequent, or periodic 10–20%	Prevalent, common, or apparent 20–50%	Very prevalent or widespread 50–80%	Extensive, dominant, or a great deal 80–100%					
Circle the number that best represents your overall judgment of the area. Scores with one decimal point such as 5.5 are acceptable.	1	2	3	4	5	6	7	8	9	10	11
	Urban		Suburban		Rural developed		Rural natural		Semi-primitive		Primitive

Figure 3.2.—Physical inventory protocol sheet.

Social Inventory

Social attributes include the type and the current recreation use, nearby land and water activities, and special values and meanings associated with the area.

Social Inventory Protocol Sheet											
Field notes:											
Mark the degree, extent, or magnitude that the following attributes are present at the site.											
Degree of visitor presence — Degree that the sights, sounds, and smells of other visitors, their equipment, their impacts, or litter are present.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%					
Degree of visitor concentration — Degree that visitors congregate in the area (e.g., service area, launches, entrances, swim areas, trailheads, vistas, picnic, or camp areas).	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%					
Degree of recreation diversity — Degree that there is a mixture of recreation activities being participated in or equipment being used.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%					
Distance to visitors services, security, safety, comforts, and conveniences.	Less than 0.5 miles	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	More than 10 miles					
Degree of solitude and remoteness —Degree that visitors view themselves as being alone and far away from civilization, in a wild and remote place.	Very minor, very little, or rare 0–3%	Minor, little, or seldom 3–10%	Occasional, infrequent, or periodic 10–20%	Prevalent, common, or apparent 20–50%	Very prevalent or widespread 50–80%	Extensive, dominant, or a great deal 80–100%					
Degree of nonrecreational activity —Degree of sights, sounds, and smells of nonrecreational activities (i.e., shipping, trains, factories, roads, houses, airplanes, mining, and farming).	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%					
Circle the number that best represents your overall judgment of the area. Scores with one decimal point such as 5.5 are acceptable.	1	2	3	4	5	6	7	8	9	10	11
	Urban	Suburban	Rural developed	Rural natural	Semi-primitive	Primitive					

Figure 3.3.—Social inventory protocol sheet.

Management Inventory

Management attributes are those features that are provided for, managed, and may be changed by the managing agency or its partners.

Management Inventory Protocol Sheet						
Field notes:						
Mark the degree, extent, or magnitude that the following attributes are present at the site.						
Degree of management structures —Degree that management facilities, buildings, interpretive signage, equipment, buoys, mileage markers, entry stations, towers, security lighting, administrative offices and compounds are present.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Distance to on-site developed recreation facilities and services —Mileage to developed campgrounds, restaurants, stores, medical services, marinas, resorts, pump stations, amphitheaters, picnic sites, play areas, telephone, showers, visitor centers, etc.	Less than 0.5 miles	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	More than 10 miles
Distance from developed public access facilities —Mileage to developed and well-maintained access points such as parking lots, trailheads, entrances, boat launches, access roads, and other staging or launching areas.	Less than 0.5 miles	0.5–2 miles	2–5 miles	5–8 miles	8–10 miles	More than 10 miles
Frequency of seeing management personnel —Likelihood of seeing management presence such as rangers, local sheriff or police, entrance station staff, hosts, maintenance workers, lifeguards, marina operators, concessionaires, guides, and other people of authority.	Extensive, dominant, or a great deal 80–100%	Very prevalent or widespread 50–80%	Prevalent, common, or apparent 20–50%	Occasional, infrequent, or periodic 10–20%	Minor, little, or seldom 3–10%	Very minor, very little, or rare 0–3%
Circle the number that best represents your overall judgment of the area. Scores with one decimal point such as 5.5 are acceptable.	Urban	Suburban	Rural developed	Rural natural		

Figure 3.4.—Management inventory protocol sheet.

Map the Current Supply of Recreation Opportunities

Mapping the current supply of recreation opportunities in the planning area means determining which WALROS class(es) will best represent how the area is currently being managed and the type of recreation opportunities available. The following steps are recommended for Levels 2 and 3 of the WALROS analysis (see table 1.7 in chapter 1). A recreation staff member typically conducts a Level 1 analysis in the office. Therefore, many of the steps below do not apply.

1. Assemble a small core team (i.e., four to six members) of experienced professionals representing different staff functions (e.g., recreation management, natural and cultural resources, maintenance, law enforcement, or interpretation). These members would probably be the agency experts who have become most familiar with recreation incidents over the years. Having several professionals from different areas, agencies, or private firms with experience of applying WALROS is highly recommended. Because the purpose of the inventory is to describe and map the nature of the current recreation opportunities, there is an advantage to having several team members from the local community, landowners, and recreation user groups (e.g., hiking, fishing).

The total team might range in size from 6 to 12 members for a Level 2 or 3 WALROS analysis.

2. Introduce the team to the planning area, base map, WALROS system, time of year under consideration, and the inventory protocol used for mapping the supply of current recreation opportunities. Thorough understanding of the descriptions of the recreation settings and experiences for each WALROS class (see tables 1.3, 1.4, and 1.5 in chapter 1) is important early in the process. The WALROS Handbook is also a valuable training tool for those inexperienced with WALROS.
3. Once familiar with WALROS, the team should prepare for the field inventory. In the case of inventorying a water resource, the field inventory requires the use of a boat large enough for the team to experience the inventory sites and comfortably discuss their observations and ratings. Pontoons, patio boats, and houseboats work well for this task. While maps, air photos, reports, GIS analyses, and other office information are



Top, using collaborative expert opinions to conduct an inventory is encouraged. Middle, team members evaluating the setting. Bottom, the team needs to prepare for the WALROS inventory.

very helpful for Level 1 analysis, they are not sufficient for Level 2 and 3 WALROS mapping. It is vital that the team literally “experience” the recreation phenomena and ambiance (e.g., sights, sounds, smells) of the inventory setting.

4. The field inventory typically begins in the vicinity of the most highly developed portion of the planning area (e.g., marina, subdivision, resort, campground, industrial activity, or developed park complex).
5. At each inventory site, regardless of whether the team accessed the site by boat or land vehicle, it is important to turn the engine off. The team should take a few minutes to “experience” the sights, sounds, smells, etc. of the setting. They should also record geographic positioning system (GPS) readings and take pictures from all directions. This data will become an important part of the site record.



Park visitors can help in the inventory

After a few minutes, the team members familiar with the location have a chance to present their views of the type and nature of the recreation use for the planning period in question (i.e., describe how, when, and why recreationists use the area, the type and extent of management, and the description of recreationists). Team members can also ask questions or offer information that might be important.

It is also important for the team to have a common understanding of the area under consideration at the inventory site. The site, for example, might include the water and land resources within a 2-mile radius, a small canyon setting or short stretch of river, or a large viewshed. Of course, the rule of reasonableness applies in this important question. As a reminder, the team is trying to inventory the recreation opportunity a visitor would have from this particular inventory site.

It is also important to remind the team of the time period that is under consideration (e.g., weekend, May, summer, winter).

6. Each team member is given a copy of the WALROS Inventory Protocol. The attributes listed on the left side of the Protocol are considered to be the important characteristics of the setting. Each rater is asked to circle the degree, extent, or magnitude that the following attributes are present at this site. To the right of each attribute is the scale of degree previously discussed in chapter 1 and displayed in table 1.8.

There will be instances when an attribute is considered irrelevant or other attributes should be added for consideration and upon discretion. As described in chapter 1, WALROS is flexible and operates on the standards of the rule of reasonableness and sound professional judgment.

7. Working individually, each rater completes the WALROS physical inventory page in the Protocol (see figure 3.2) by considering each attribute in the left column and then circling or checking the cell that best describes the attribute's presence at that site. Note: On the physical inventory, the distance from development attribute is measured in miles, and the degree of natural ambiance reverses the scale of degree from very minor on the left to dominant on the right.

After each attribute is checked or circled on the scale of degree, each rater is asked at the bottom of the page to **circle the number that best represents your overall judgment of the area**. Each person individually circles a number, ranging from 1 to 11, that best represents his or her overall judgment of the WALROS class at the inventory site. The odd numbers represent the six WALROS classes, while the even numbers represent the midpoint between two WALROS classes.

This decision should be based on the sound professional judgment of the raters, preponderance of the evidence, and how the attributes were circled in the cells above. There is no formula or mathematical calculation to arrive at this overall judgment for the area.

8. After all raters complete his or her physical inventory, a "straw" vote is taken and each person states the overall rating number at the bottom of his or her own inventory form. After all raters have had a chance to express factors that influenced their scores, a second straw vote is taken and duly recorded on a master form. Typically, the results of the second vote (i.e., the overall numbers expressed after some discussion) will converge and there will be team consensus. Rounding the average score to the nearest tenth is acceptable.

In cases where team members' ratings differ significantly, further discussion is advisable until a consensus has been reached. In some cases, it may be helpful to dismiss the two extreme outliers and revisit the disputed site after other sites have been inventoried. A final decision can be made after more information becomes available.



Local groups know a great deal about the lake's recreation use. They are experts to be included in the WALROS inventory.

As a rule of thumb, when the raters' scores vary by two or more scale points, extra effort should be taken to discuss the factors that were driving the scores. Expect people to have different perspectives about what they have seen or heard. However, it is important to share these thoughts with and for the benefit of the entire team.

9. It is important for the team lead to consistently ask the team which of the six WALROS recreation experiences best describes the type of experience a visitor is being provided at the location being inventoried. It is important during the inventory process, particularly for those inexperienced with WALROS, to periodically reread the descriptions of the recreation setting for each WALROS class (table 1.3) and the recreation experiences for each WALROS class (tables 1.4 and 1.5). Referring to pictures depicting each WALROS class may also help.
10. The process used for completing the physical inventory is repeated for the social and managerial inventory (see figures 3.3 and 3.4) contained within the protocol.
11. The results of these efforts are three numbers for each inventory site; that is, a number from 1 to 11 for the physical setting, social setting, and managerial setting. Next, these numbers are recorded on a master map and maintained during the field inventory.

In some cases, the physical, social, and managerial scores will be very similar — within 1-2 scale points of each other. These scores will be considered “consistent.” In other cases, the scores may vary by 2 or more scale points and will be considered “inconsistent.” The physical scores, for example, might be rural natural (e.g., 6.5) while the management score is reflects a semiprimitive setting (e.g., 9), suggesting there might be insufficient management presence.

When inconsistencies are discovered, it is appropriate to discuss why they exist and what reasonable mitigation actions can be taken. These discussions and suggestions will assist in resolving any future inconsistencies and in making sound planning and management recommendations. Further, team members with differing responsibilities, views, or agendas will have a better understanding of each other's positions and concerns. (See Inconsistency Mitigation below.) Lastly, the

team forms are collected and filed for the administrative record.

The first site inventoried may take 30 to 45 minutes with inexperienced team members. The time at subsequent inventory sites will shorten to perhaps 15 minutes after a half dozen trials by the team. The first one or two inventory sites can be viewed as practice runs or trials. Thus, it is advisable to return to these sites after the entire resource area has been surveyed to determine if adjustments will be necessary.

12. After the initial site inventory is complete, the team travels to the next inventory site. Two strategies have worked well: One, the next inventory site can be chosen when there is an apparent change in the physical, social, or management attributes of the setting or when the team has traveled a significant distance (e.g., several miles) from the previous site. Two, the next inventory site might be the location with the least development (compared to the first, most developed inventory site) and in the most remote part of the water resource. This allows the team to get a sense of the WALROS diversity in the planning area, although the logistics of travel and time may not be reasonable.

13. If inventorying on water in an area that includes popular land-based locations such as campgrounds, swimming beaches, or popular islands, it may be helpful to conduct a site inventory from land. The opposite holds true for land-based inventories. If a large waterbody is present, providing water-based recreation, it is important to conduct inventories from on the water.

On a very large resource (e.g., 100-mile-long planning area), one may decide to conduct the initial WALROS inventories every 5 or 10 miles. In contrast, a detailed or finer-level inventory may be necessary for parts of the resource on a follow-up trip. Depending on public access, distance from developments, and team members' familiarity with the planning area, it may not be practical to physically inventory the entire planning area.

14. The final results of the field inventory include (1) a working map of the planning area identifying the inventory sites, (2) the team's three overall ratings for the physical, social, and managerial settings for each inventory site, (3) an overall initial rating score for the site, and (4) a file of the completed



Top, it is important to inventory on the water. Bottom, WALROS engages stakeholders to ensure better decisions.

protocols, pictures, and GPS readings for the administrative record. Note: Team consensus is required for both an overall rating for each setting attribute (i.e., physical, social, and managerial setting) as well as an overall rating for the inventory site.

15. At this point, the responsible recreation staff person must
 - (1) delineate the current overall WALROS classes, and
 - (2) identify and prioritize inconsistencies that may exist in the current situation. These two considerations are discussed in the following sections, which also provide examples of the final WALROS maps depicting the type and location of the current recreation situation.

Delineation of Current Overall WALROS Class

At this point in the WALROS inventory, each site has an agreed-upon team rating for its physical, social, and managerial attributes. Figure 3.5 is an example of how each inventory site and its respective ratings can be displayed.

Inventory sites	Setting attribute ratings			WALROS classification
	Physical	Social	Managerial	
1. Rainbow Resort	3.0	3.0	3.0	Suburban (S3)
2. Heavenly Houseboats	5.3	4.5	4.0	Rural developed (RD5)
3. Leisure Landing	6.1	5.7	5.1	Rural developed (RD6)
4. Canyon Camp	10.2	9.3	8.2	Semiprimitive (SP9)

Figure 3.5.—A tool for displaying the setting attribute ratings and overall WALROS classification.

The next step is for the team to use sound professional judgment in aggregating the three attribute ratings, in order to make an overall selection of the WALROS class which best represents the current situation or the supply of recreation opportunities. In some instances the physical, social, and managerial WALROS ratings will be the same (e.g., inventory site 1). More often than not, though, the ratings will differ when WALROS is first applied (e.g., inventory sites 2, 3, and 4). When two or three of the setting attribute ratings at a site are similar, the decision about the overall WALROS classification is relatively easy to make. However, it is more difficult to decide the overall WALROS classification if the

physical, social, and managerial classifications at a site differ considerably (e.g., inventory site 4).

Where there are large differences between the setting attribute ratings, the 11-point scale in the Inventory Protocol offers a major advantage. Figure 3.6 is an example of the 11-point scale, which allows for a finer level of assessment than a 6-point scale. In addition, it identifies areas where there are transitions, gradations, or “leanings” towards one WALROS class versus another. It allows for a higher level of accuracy during the inventory stage and helps managers to consider alternative ways to manage the area in the future. In effect, an 11-point scale gives the expert team the option to indicate up to 16 gradations of recreation opportunities, as depicted in figure 3.6 below.

1	2	3	4	5	6	7	8	9	10	11					
U		S		RD		RN		SP		P					
U1	U2	S2	S3	S4	RD4	RD5	RD6	RN6	RN7	RN8	SP8	SP9	SP10	P10	P11

Figure 3.6.—WALROS inventory scale.

The six primary WALROS classes are U1, S3, RD5, RN7, SP9, and P11. The other ratings reflect a transition or leaning between two primary WALROS classes. For example, RD6 is a score to the right of the primary rural developed WALROS class (RD5), suggesting that there are some attributes in this area that are more typical of a rural natural setting that pull the overall rating from RD5 to RD6. Likewise, RN6 indicates that there are some attributes at the site that are more typical of a rural developed WALROS class, and these attributes pull the overall rating from the primary rural natural WALROS class of RN7 to RN6.

A major advantage of using an 11-point scale in the inventory stage is that it conveys more detail while suggesting the feasibility of altering the management of an area from one WALROS class to another. A “transitional” rating for an area (e.g., RN6 or RN8), suggests a high probability that a small shift in one or more of the physical, social, or managerial attributes will cause a shift in the WALROS class.

Figures 3.7–3.10 illustrate how the overall WALROS classes can be depicted and show the type and location of water recreation opportunities currently available. All four maps show a fine level of detail and how the six WALROS classes can be subdivided for purposes of the WALROS inventory.

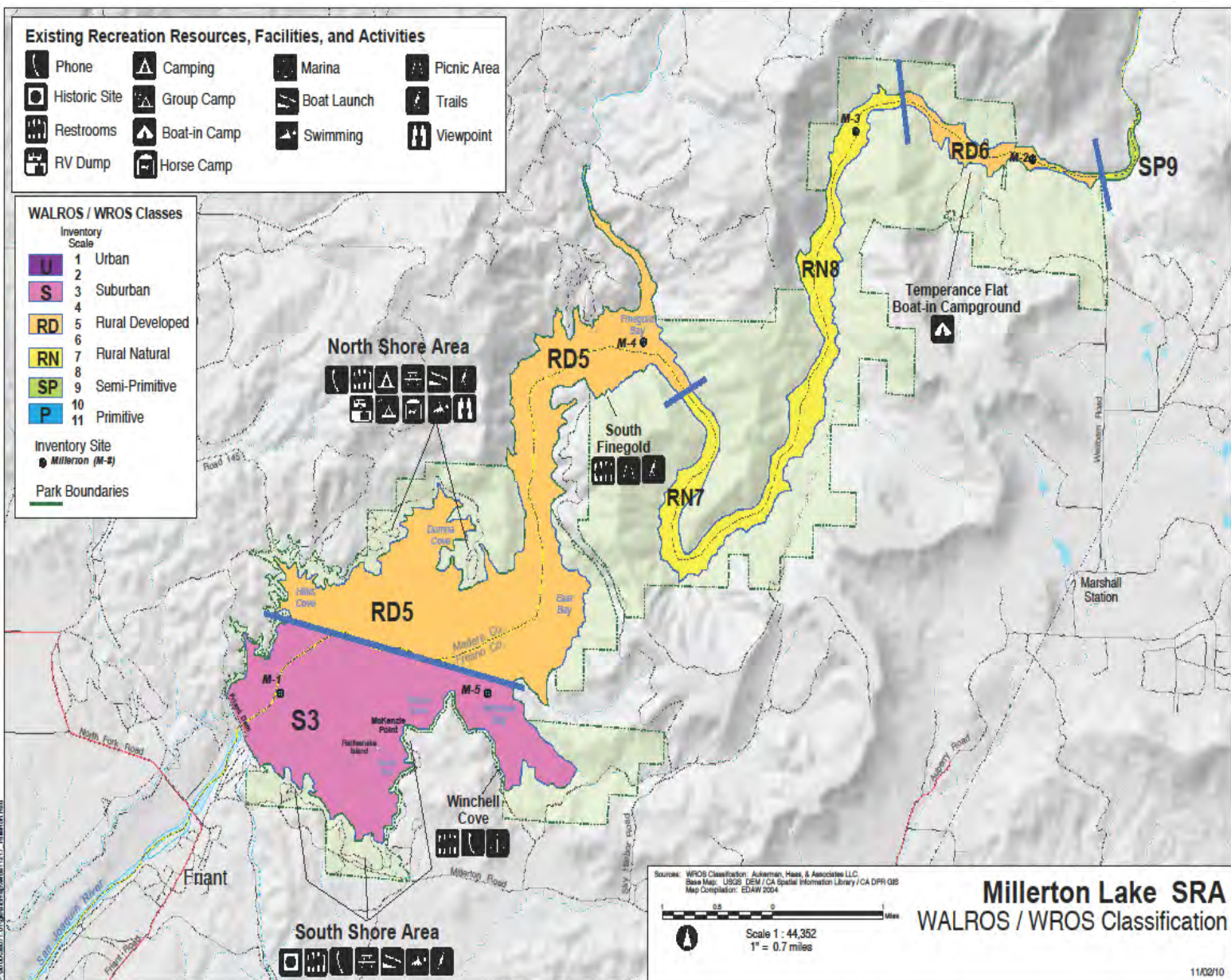


Figure 3.7.—Millerton Lake WALROS classifications.

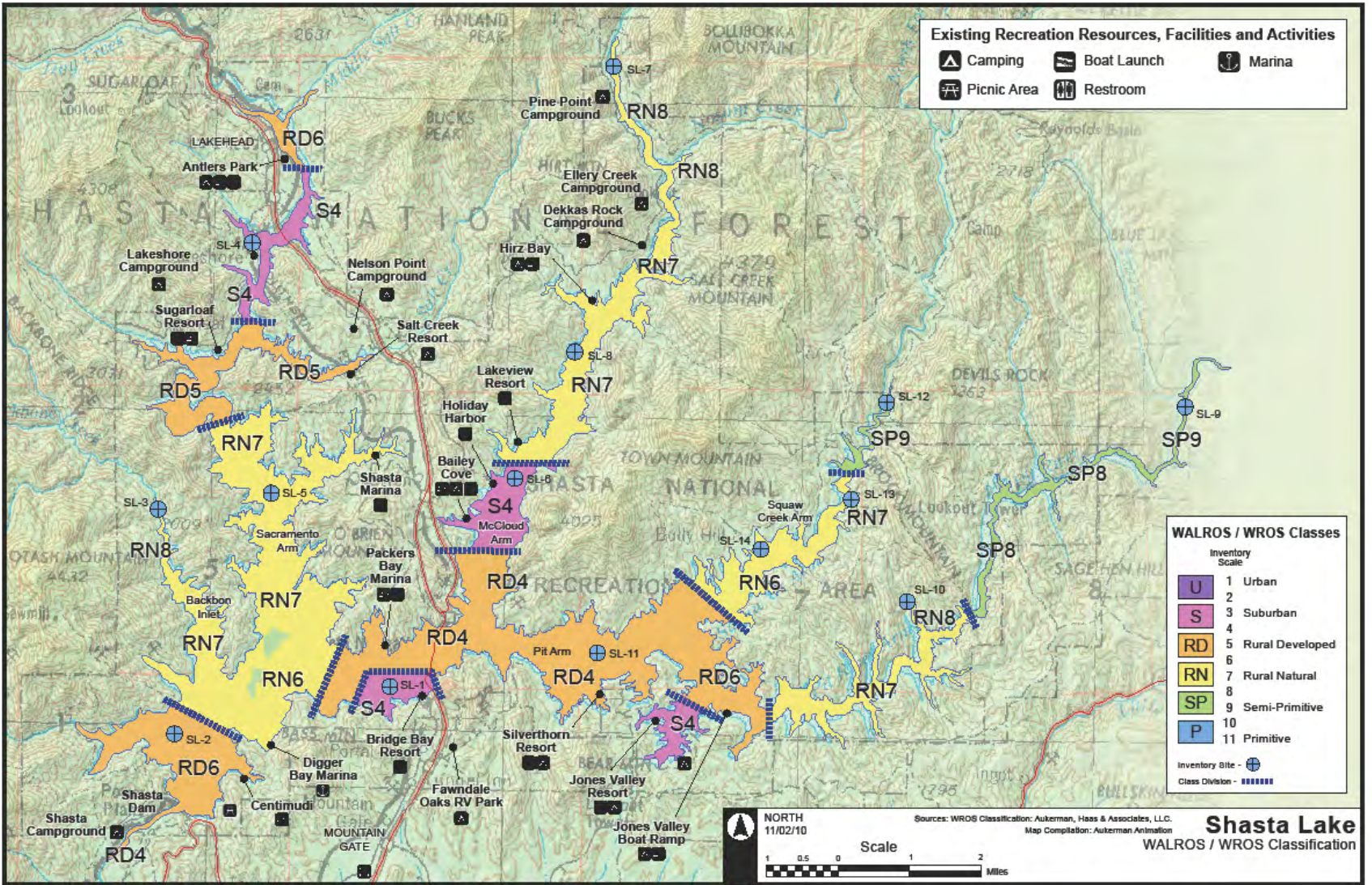


Figure 3.8.—Shasta Lake WALROS classifications.

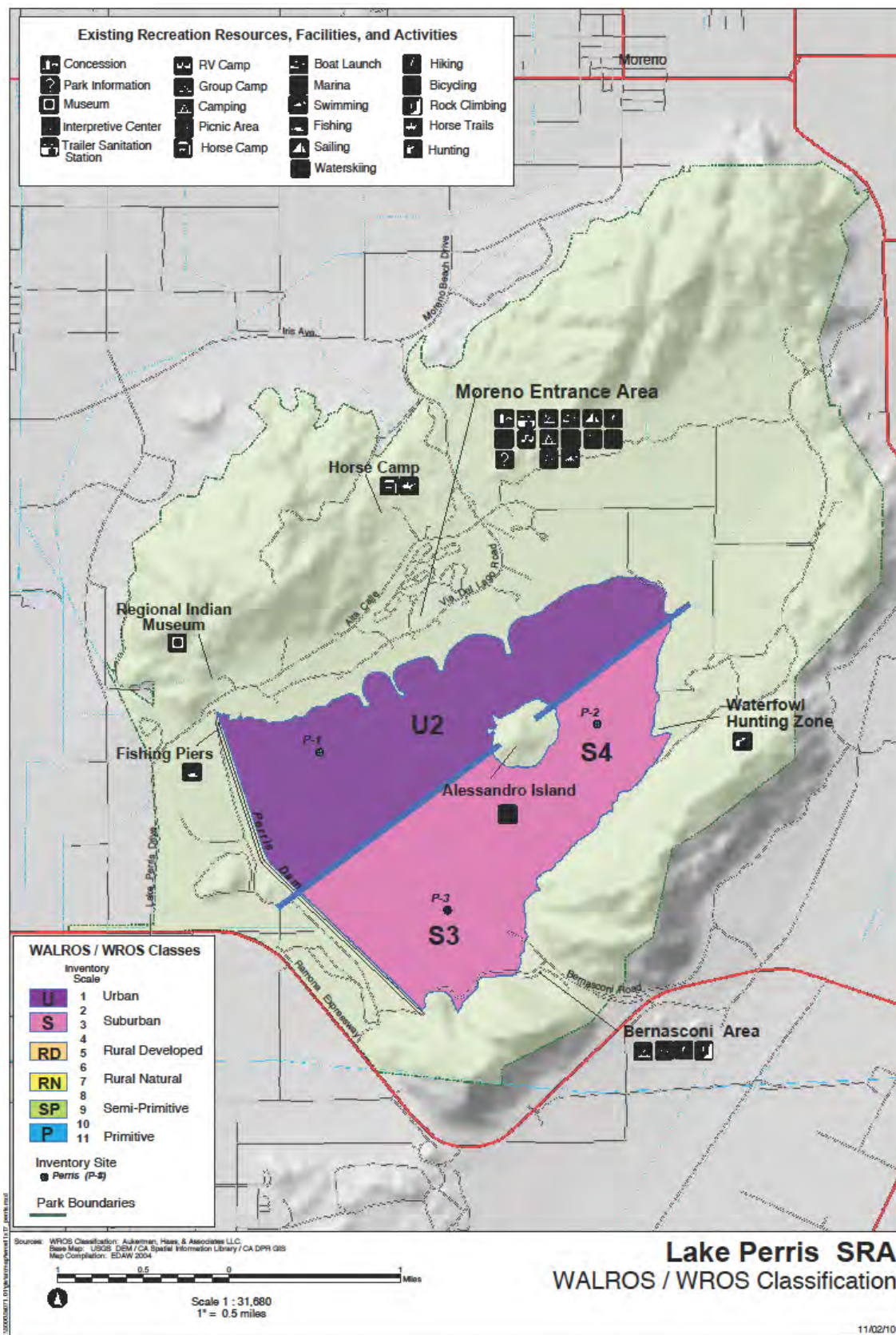


Figure 3.9.—Lake Perris WALROS classifications.

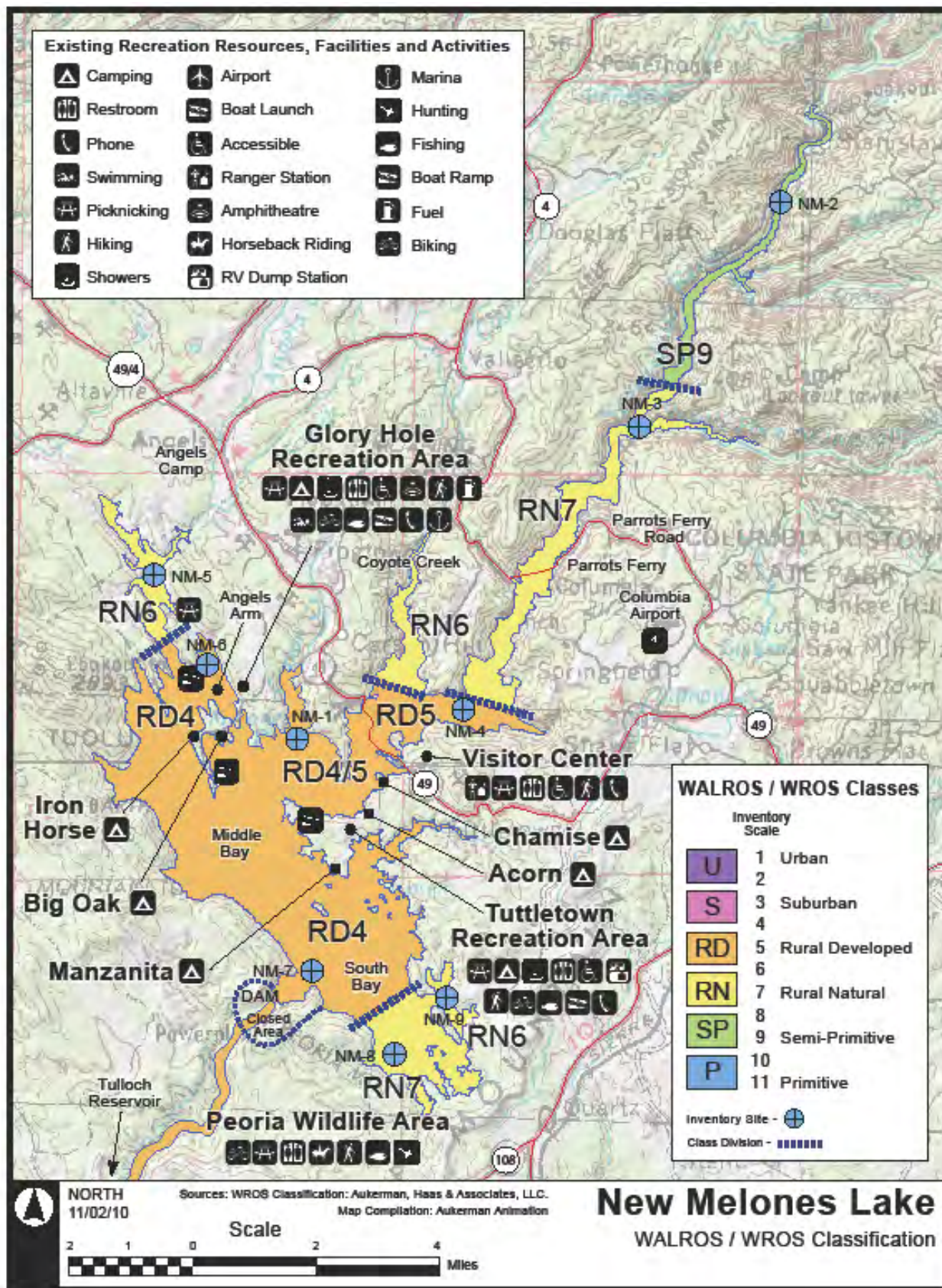


Figure 3.10.—New Melones Lake WALROS classifications.

Inconsistency Mitigation

An inconsistency is a situation in which the physical, social, and managerial ratings are different (e.g., sites 2, 3, and 4 of figure 3.5); that is, where the physical, social, and managerial attributes are not aligned or not consistent. For example, the physical and social attributes might depict a rural developed WALROS class, yet the lack of management signage, facilities, and patrols might be more consistent with a primitive WALROS class. Another example might be weekends in June when the social attributes depict a suburban WALROS class (e.g., large numbers of diverse recreationists), while the physical and managerial attributes depict a rural natural WALROS class. A final example is an area where the physical and social attributes depict a semiprimitive WALROS class, but the managerial attributes (e.g., floating toilets and flashing strobe safety lights) depict a rural developed WALROS class. Depending on the inconsistency, mitigation may be necessary or desired.

Mitigation might involve a change in current management actions to eliminate inconsistencies and improve the recreation experiences being provided. The guidelines in **Chapter 2—Physical, Social, and Managerial Attribute Guidelines** can assist managers in both identifying and mitigating inconsistencies.

Table 3.1 depicts an inconsistency mitigation tool with two dimensions: (1) the degree of impact and (2) the degree of reasonableness to mitigate. In some situations, inconsistencies may have a high impact on the intended water recreation opportunity, yet there may be no reasonable way to mitigate (e.g., major highways, commercial shipping, holiday weekends). Alternatively, some inconsistencies with high impact could be easily mitigated (e.g., remove unnecessary buoys, restoration of eroded campsites, or institute a speed limit). Table 3.1 is a tool to help sort the inconsistencies by their relative degree of impact or consequence, to assess the ability of management to mitigate, and to develop a prioritization scheme.

The output of inconsistency mitigation is a list, and perhaps a map, that identifies the type, location, and degree of inconsistencies. Ideally, managers should give the highest priority (i.e., Priority A) to the reasonable mitigation of those inconsistencies that have a high degree of severity or consequences.

The physical, social, and managerial attribute guidelines provide guidance on how to mitigate inconsistencies and to align the setting attributes.

Table 3.1.—A WALROS inconsistency mitigation tool

Degree of reasonableness to mitigate	Degree of impact or inconsistency			
	Negligible	Minor	Moderate	High
None				
Low			Priority D	Priority C
Moderate			Priority C	Priority B
High			Priority B	Priority A

After the WALROS inventory stage, the user of this handbook has the following two options.

One, Institute a formal planning process; or two, begin implementing direction and applying the following if there is no formal planning process anticipated in the future:

- mitigate inconsistencies to the extent feasible;
- improve visitor maps and brochures to show the type and location of WALROS classes;
- explain rules and regulations to the public more clearly. Clarify why certain actions are desirable to protect the integrity of certain recreation opportunities and experiences;
- advise local residents and special interest groups of the increased clarity in management direction;
- initiate a monitoring program;
- add the WALROS classes to a geographic information system;
- utilize tourism welcome centers and web sites in order to clearly inform the prospective visitor of recreation opportunities that are available; and
- utilize the WALROS guidelines to develop and justify an annual operating plan and budget.



Maps and photos are important tools in the inventory process.

Note: If the proposed changes in management qualify as a “major Federal action,” as defined under NEPA, a NEPA-compliant planning process will be necessary. In addition, if there is a planning process underway or anticipated in the near future, the manager can take the WALROS inventory information, proceed to **Chapter 4—*Planning***, and begin to integrate the inventory information to describe the current situation.

Chapter 4– Planning



Planning



Wildlife resources are often significant public issues and attractions on or near water.

WALROS is not a special or unique planning process. It is simply a tool that helps bring recreation considerations into a comprehensive and integrated planning process. Metaphorically, WALROS is like a tree branch that connects to the main stem or trunk of a tree. More specifically, WALROS is one of many inventory tools that feed into an agency planning process. Reclamation, along with all local, State, and Federal land and water agencies, should have regulations and procedures describing in detail each step of its planning process.

The first part of this chapter discusses how WALROS integrates with and supplements the key steps of a public recreation or resource planning process. Refer to figure 4.1 for a generic eight step agency planning process. The third planning process step, **Inventory**, has been highlighted in figure 4.1 because WALROS is primarily an inventory planning tool as previously stated in chapter 1. However, it is important to consider the guidance contained in this handbook during each of the eight agency planning steps. The second part of this chapter focuses on how WALROS is used in a regional context to analyze and compare water-based and associated land-based recreation opportunities and experiences.

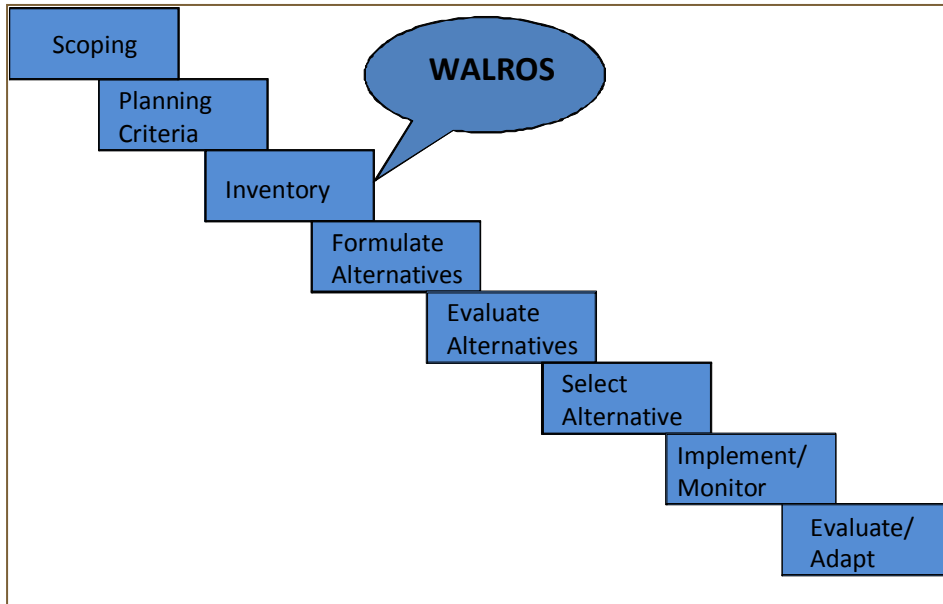


Figure 4.1.—Generic agency planning process.

Planning Process

Prior to initiating a WALROS planning process, the appropriate level of analysis should be determined. Refer to chapter 1, table 1.7 for a description of the three levels of WALROS analysis. Please note that the level of analysis may change at any time during the planning process. Subsequent to scoping, for example, team members other than the recreation specialist may be assembled in order to expand the level of analysis. If WALROS is part of a larger, more comprehensive planning process, the level of analysis will be determined by the scope of the larger planning process.

In a comprehensive agency planning process, the inventory of physical and biological resources should include all recreation resources within the area being studied (i.e., land and water-based recreation resources, such as rivers, reservoirs, and natural lakes). The degree of data collection ultimately depends on the level of analysis being conducted.

Care should be taken to ensure that the concepts and guidelines related to the WALROS planning tool can be integrated with or complement other agency systems such as the Scenery Management System used by the U.S. Forest Service or the Visual Resource Management System used by the Bureau of Land Management. For example, GIS would provide the means to interface WALROS with these other agency systems. Appendix E contains a directory of sources of information and other planning tools that can be used in a planning process.

Following is a brief discussion of each of the planning steps shown in figure 4.1.

Scoping

Depending on the level of analysis (i.e., Level 1, 2, or 3), internal and/or external scoping will be necessary. A Level 1 analysis will often require only internal scoping and a review of agency policies, procedures, and guidelines, among other things. On the other hand, a Level 3 analysis will likely require both an internal and external scoping process. External scoping may require that an agency solicit input from the public throughout the planning process. A scoping process should consist of the following assignments:

- identify significant recreation-related public issues, management concerns, opportunities, and constraints;



Accessibility is often a significant public issue.



Recreation opportunities should be provided for diverse users.

Planning criteria are short and concise statements that help establish sideboards and parameters for developing a specific type of planning document.

- identify recreation stakeholders and develop a plan for collaboration;
- assess quality and quantity of best available recreation-related science and monitoring information;
- identify and document all agency recreation-related policies, procedures, and guidelines, as well as applicable laws and regulations; and
- identify those areas or times unsuitable for recreation use.

Planning Criteria



Adjacent land uses need to be identified early in WALROS planning process.

Reclamation, like all Federal land and water agencies, has regulations and procedures describing each step of its planning process in detail. This chapter, among other things, is a supplement to the key planning steps in the existing Reclamation Resource Management Plan Guidebook. Planning criteria are short and concise statements that help establish sideboards and parameters for developing a specific type of planning document. In many instances, the goals and objectives established at the beginning of a planning process are considered planning criteria in that they guide development of the planning document. Planning criteria may be revised as the planning process proceeds and as information is collected and analyzed or new issues are identified. To establish appropriate planning criteria, recreation planners should accomplish the following tasks:

- compile the applicable laws, regulations, policies, resource commitments, concession contracts, land use authorizations, maps, and existing plans;
- assemble relevant professional planning principles (e.g., recreation management, ecosystem management, NEPA, and visitor capacity decision making);
- identify long-term resource/administrative programs that may influence or limit recreation development (e.g., public health and safety, security, Indian trust assets, and accessibility);
- define planning area, time horizon, available resources, procedural steps, and responsibilities;
- develop a working base map, determine an appropriate scale of analysis, assess GIS capabilities, and secure current aerial photos, if available;

- designate the decision/planning criteria for evaluating alternatives, assessing recreational tradeoffs, and selecting the preferred alternative;
- identify other administrative units or projects (comparables or analogs) that have similar recreation situations, uses, and patterns; and
- identify other resources that could be affected by recreation development, and plan mitigation measures if negative impacts seem likely.

Inventory

Inventorying can be a rigorous and labor-intensive process. The scope and level of effort should be guided by the previously agreed upon level of analysis and by significant recreation-related issues, concerns, threats, and opportunities. Of course, there may be other non-recreation related issues and concerns (e.g., fire, invasive species, etc.) that propel the inventory of additional factors.

Inventorying has a supply and demand component. A supply analysis is an assessment of the recreation-related natural and cultural facilities, programs, services, rules and regulations, fees, and other aspects that may currently define the type and quality of recreation opportunities.

A demand analysis defines the current public users and uses of the setting. It may include the type and amount of recreation use, visitation patterns, residence of visitors, length of stay, level of satisfaction, and other factors that define the recreation use. There may also be nonrecreational users and uses that affect the management of recreation opportunities. Another aspect of demand to consider is the recent recreation-related trends and the future demand for recreation. Existing agency planning guidance, such as Reclamation’s 2007 *Estimating Future Recreation Demand: A Decision Guide for the Practitioner* (see figure 4.2), should be used to assist agency personnel in acquiring appropriate information needed to make informed decisions. Refer to appendix F for excerpts from the 2007 demand report.

As discussed in chapter 1, there is value in considering what uses are taking place within the region — that is, at other nearby settings that the visiting public might consider as comparable or substitute destinations. Refer to end of this chapter for an additional discussion on regional WALROS planning, and see appendix D for an example of a regional recreation profile form. Table 4.1 is an



Long time lake users can help in the inventory.



Expert teams are important in the recreation inventory.

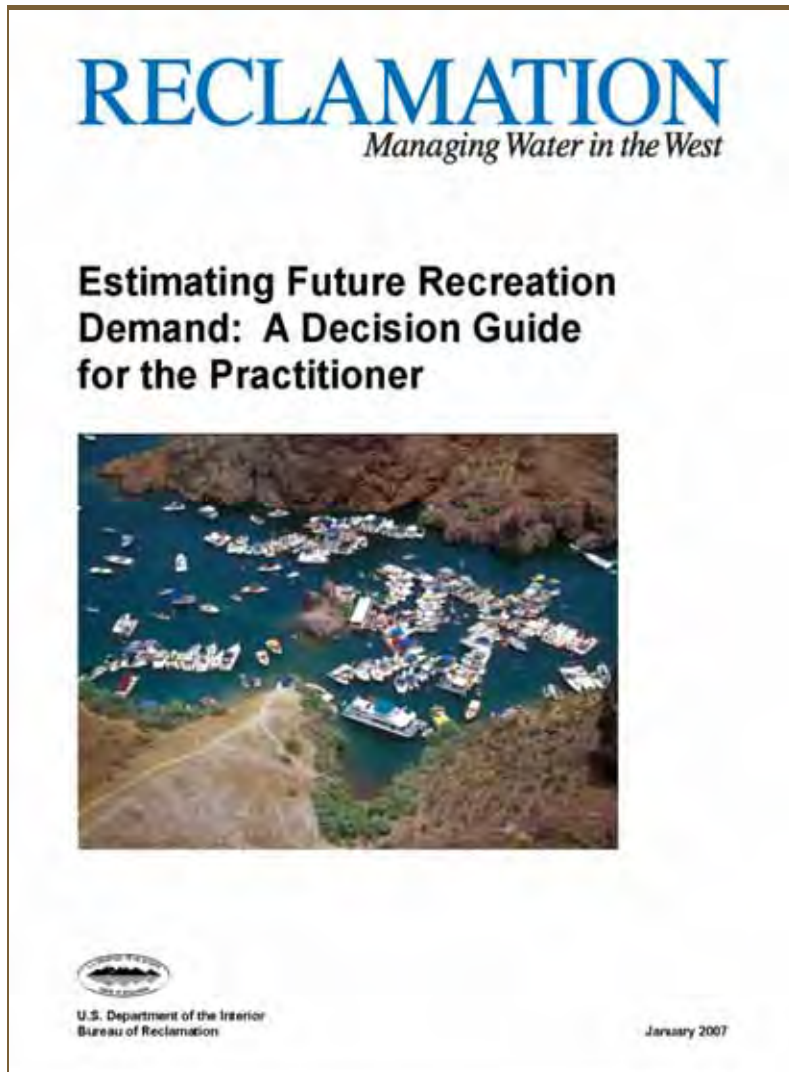


Figure 4.2.—The cover of Reclamation's 2007 *Estimating Future Recreation Demand: A Decision Guide for the Practitioner*.

example of how two variables (i.e., acres and shoreline miles) can be presented in table form.

During this planning step, it is beneficial to research and document the varying degree of management responsibilities that other entities may have in the recreation resources within the planning area (e.g., a State park agency and its boating regulations, or a fish and wildlife agency for wildlife management and regulations). Certain individuals from other agencies may be part of the inventory team and could be called upon to produce a portion of the planning document.

Recreation planners should accomplish the following tasks.

- Conduct a WALROS inventory and assemble a base map that depicts the current type and location of recreation opportunities in the setting.
- Develop a GIS overlay from the WALROS

inventory map. GIS is a powerful tool that allows planners and managers to look at multiple features and resources at one time. It is an excellent way to store inventory information and to formulate and evaluate alternatives later in the planning process.

Table 4.1.—Hypothetical comparison of reservoirs based on the percent of water surface acres by WALROS class

Regional lakes (surface acres/shoreline miles)	Urban (%)	Suburban (%)	Rural developed (%)	Rural natural (%)	Semiprimitive (%)	Primitive (%)
Folsom (11,400/75)	0	20	70	10	0	0
Pardee (2,257/37)	0	0	30	60	10	0
Comanche (7,700/53)	0	0	75	25	0	0
New Hogan (4,400/50)	0	0	60	40	0	0
Tulloch (1,260/31)	0	80	20	0	0	0
Don Pedro (12,960/160)	0	0	50	50	0	0
Lake McClure (7,400/80)	0	0	70	30	0	0
Millerton (4,900/51)	0	10	60	20	10	0
Gross averages ¹	0	37	54	29	3	0

- Identify current and future recreation demand. Measuring the demand for any public good or service is both an art and a science. It involves identifying current use and users in the planning area, their use locations, type of activity, duration, travel patterns, origins, participation percentages, and quality of recreation opportunities. It may also involve using social surveys to ask the public in the local or regional area what they would like to have available that is not currently available, and to gauge user satisfaction with existing opportunities and management strategies.
- Identify current and anticipated nonrecreational use and users in the planning area, location, duration, type of effect, and anticipated changes. County records on taxes, building permits, development plans, land use zoning, commerce trends, and other local, county, and State reports can be helpful for this purpose.
- Conduct inventory of all human-built structures (recreation and nonrecreation), infrastructure, services, programs, personnel, budgets, partners, and expected operational changes.
- Assess the regional supply of water recreation opportunities, including those provided by other agencies and the private

Measuring the demand for any public good or service is both an art and a science.

¹ In this hypothetical example, the gross average is determined by adding the figures in each recreation setting column then dividing by the total number of regional lakes listed in table 4.1.

sector within the “visitation” region. Table 4.1 illustrates how the regional supply of the six WALROS classes can be depicted.

- Compare current responses and social conditions with the desired quality standards. Map the locations of known or likely impairment.

Formulate Alternatives

The basic goal in formulating different alternatives is to identify a variety of water and land uses and practices that will address the issues identified during internal and/or external scoping. The information collected during the inventory planning step is essential, as it will support and justify the management strategy and associated elements within each of the alternatives. The examples in this section are not intended to track with each other. **Note:** Table 4.2, figure 4.3, and figures 4.5 through 4.9 are considered to be entirely separate examples. In completing this planning step, recreation planners should, among other things, complete:



Accessibility planning will provide individuals with disabilities a quality recreation experience.



Good access can enhance the recreation experience for a variety of users.

- a WALROS map, generated in the WALROS inventory that depicts the current recreation management situation. This alternative is often referred to as the “no action” or “no change” alternative; and
- a matrix developed to highlight key differences and to ensure consideration of a reasonable range of alternatives.

Evaluate Alternatives

This planning step requires a thorough evaluation and comparison of each alternative. Evaluation of each alternative and associated recreation actions should be based on professional judgment and the experience of staff specialists.

Table 4.2 and figure 4.3 illustrate how WALROS can be used to help evaluate and compare the proposed alternatives.

The decision criteria identified in a previous planning step (i.e., development of planning criteria) are used to evaluate the positive and negative consequences or impacts of each alternative. In this instance, the planning criteria can also be considered “key indicators” to assess the degree of change from one alternative to another, in particular, to compare the no action (existing condition) alternative to the other alternatives.

Table 4.2.—An example evaluation matrix for comparing management alternatives using WALROS

Evaluation criteria	Alternative #1 (no action)	Alternative #2	Alternative #3
	U S RD RN SP P	U S RD RN SP P	U S RD RN SP P
Recreation management prescription for each WALROS class (e.g., objectives and quality standards)			
Number and percent of water and land acres by WALROS class: <ul style="list-style-type: none"> • Spring • Summer • Fall • Winter 			
Percent of water surface acres by WALROS class for other waterbodies in the region			
Major management actions and programs			
Boat capacity for selected locations			
Estimated budget and personnel needs			
Economic benefits <ul style="list-style-type: none"> • Projected visitor expenditures • Public valuation 			

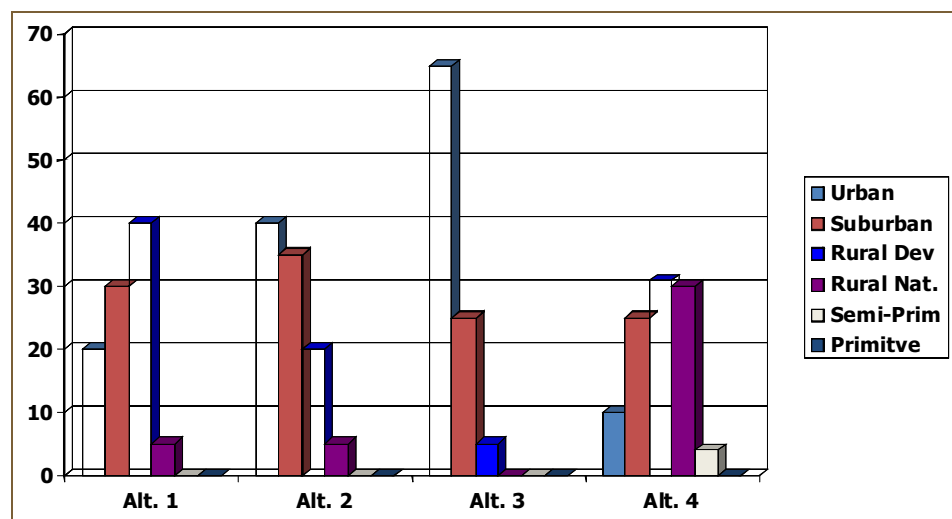


Figure 4.3.—Use of WALROS to compare alternatives.

Furthermore, each alternative will have different strengths and weaknesses. Thus, it is likely that one or two alternatives, among the range provided, will be preferred. It is beneficial to examine the preferred alternative more closely in order to mitigate their most significant negative consequences or impacts and to incorporate the strengths from other alternatives. This facet of evaluating the alternatives is called mitigation assessment and enhancement analysis.

During this planning step, recreation planners should complete the following duties:

- analyze how the different recreation actions in each alternative will address the identified issues;
- determine how each alternative may affect the recreation experiences of visitors and the recreation spectrum of certain areas;
- assess how each recreation action may affect the physical and biological resources within the planning area. The depth of analysis should correspond to the scope of the potential impacts and use the sliding scale rule of analysis discussed in chapter 1;
- determine if the changes to the recreation environment contemplated in each alternative meet public demand and user expectations;
- assess whether the available funding is sufficient to implement the recreation actions, future maintenance and monitoring programs, and an appropriate staff to administer the recreation program; and
- determine the economic consequences of various recreation-related management decisions contemplated during the WALROS planning process by following agency guidance such as Reclamation's 2008 *Outdoor Recreation Business Plan Guidebook* (<http://www.usbr.gov/recreation/publications>) (see figure 4.4 below).

During any type of public, open house/informational meeting, WALROS maps can be used to illustrate how the different alternatives may affect a visitor's recreation experience within the planning area. Figures 4.5 through 4.9 are examples of how WALROS alternatives can be presented in a public meeting.

Note: Figures 4.5 through 4.9 are maps that include representative pictures of the WALROS spectrum of classes if the alternative is implemented. These maps would typically become part of any final planning document produced because of the planning effort.

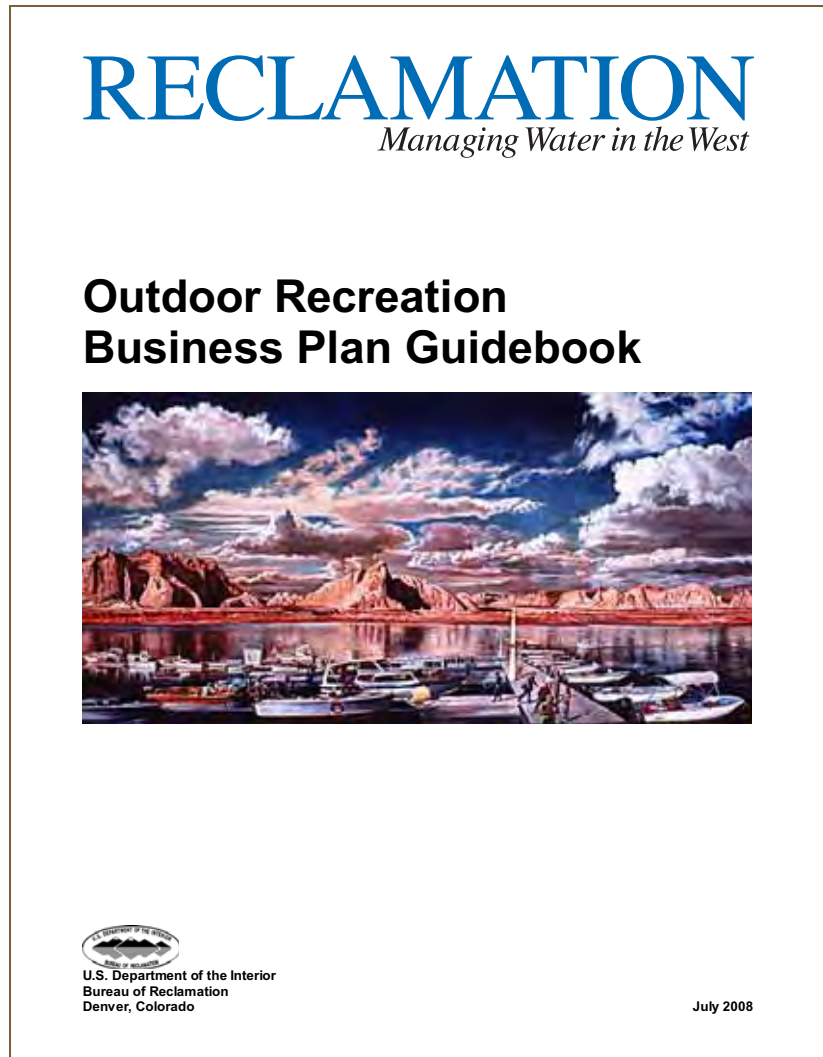


Figure 4.4.—The cover of Reclamation’s 2008 *Outdoor Recreation Business Plan Guidebook*.

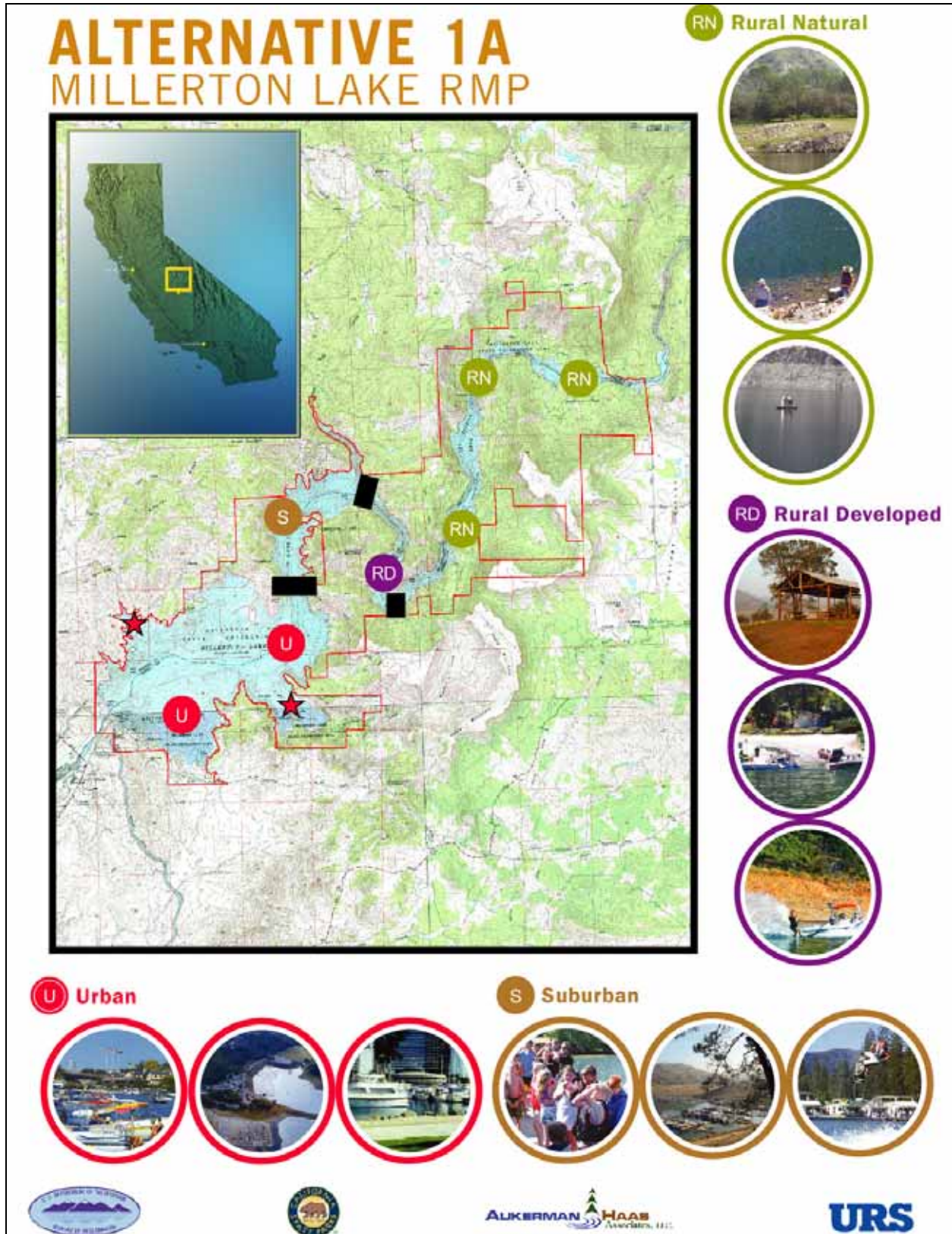


Figure 4.5.—Excerpt from Millerton Resource Management Plan, Alternative 1A.

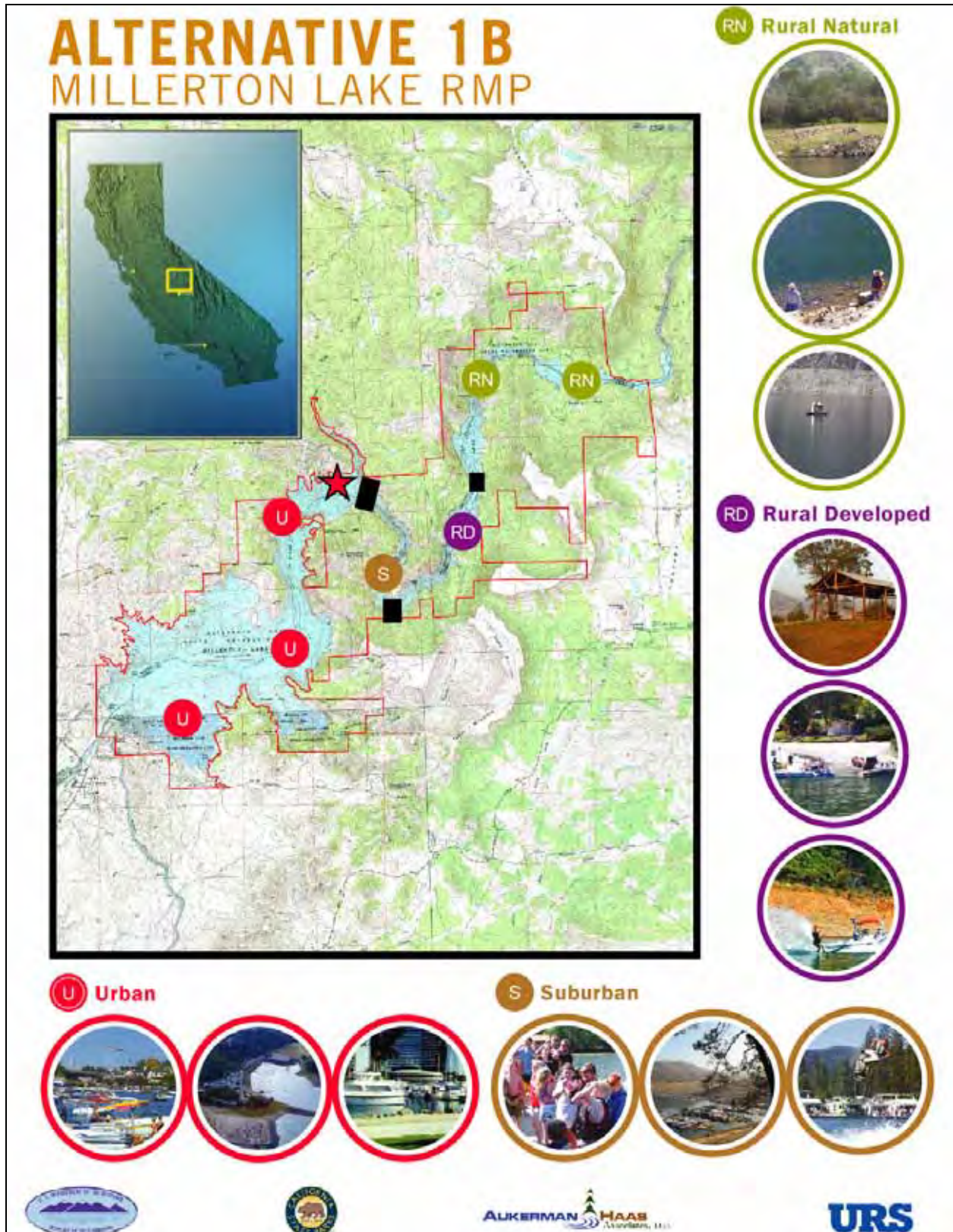


Figure 4.6.—Excerpt from Millerton Resource Management Plan, Alternative 1B.

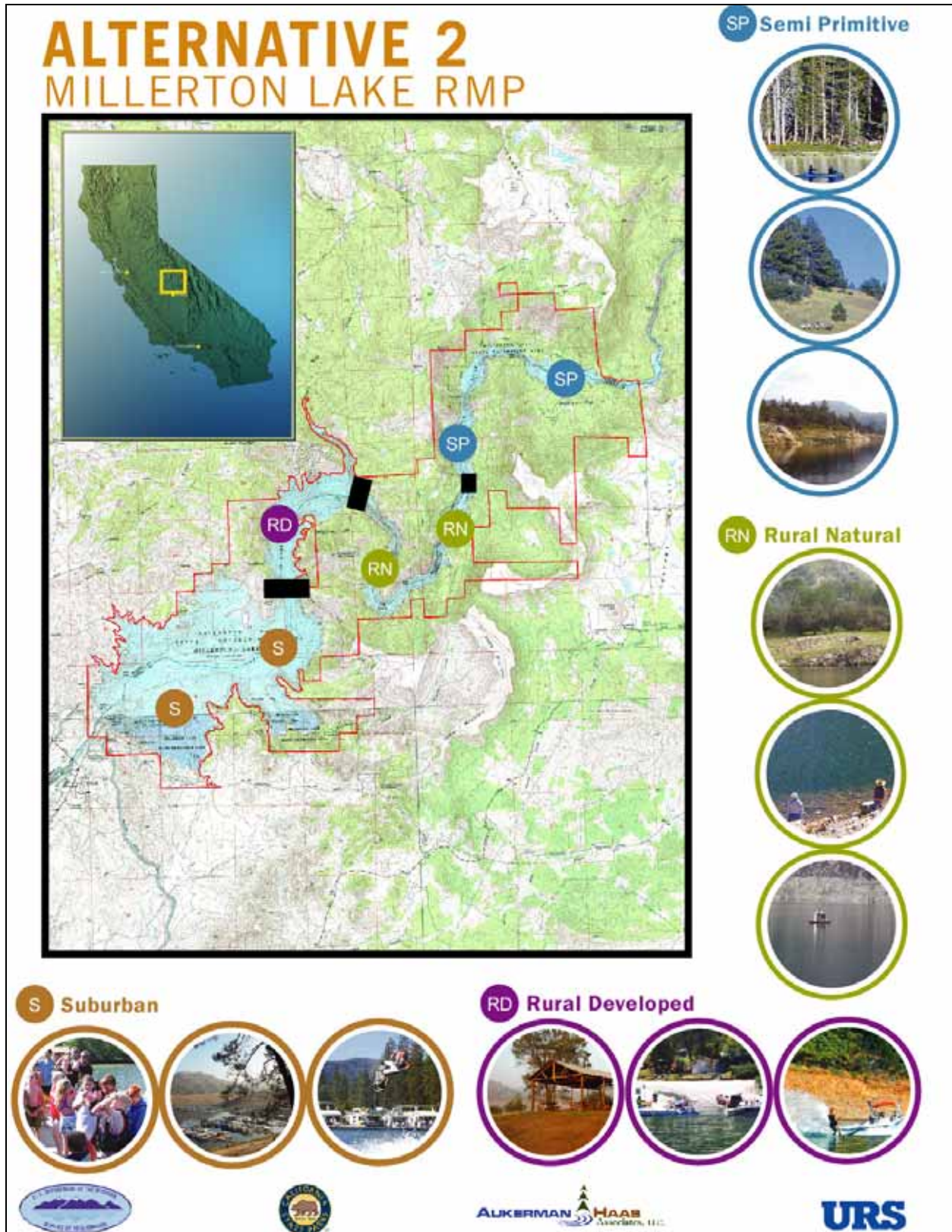


Figure 4.7.—Excerpt from Millerton Resource Management Plan, Alternative 2.



Figure 4.8.—Excerpt from Millerton Resource Management Plan, Alternative 3.

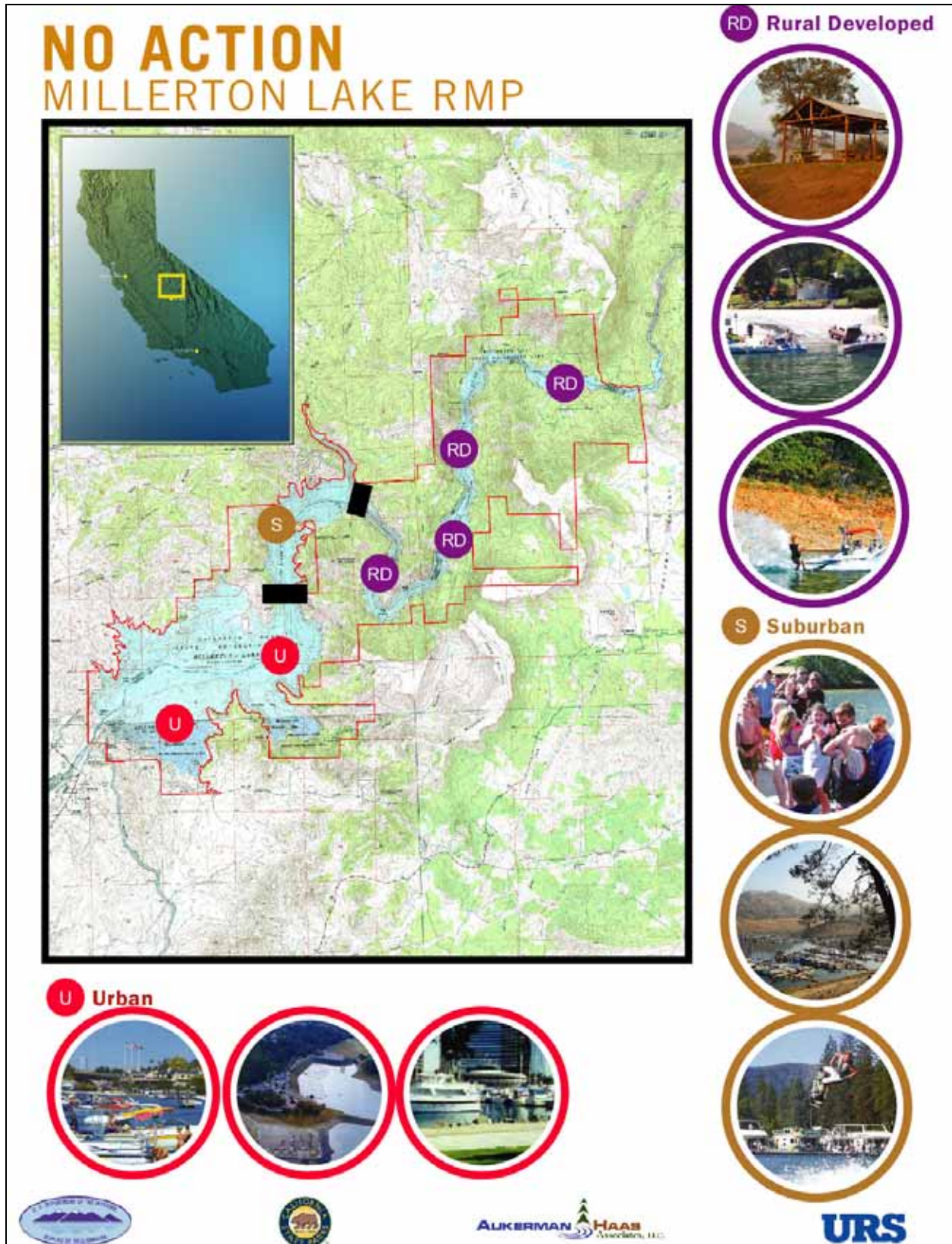


Figure 4.9.—Excerpt from Millerton Resource Management Plan, No Action Alternative.

Select Alternative

The preferred alternative should be the one that best meets the WALROS planning goals and objectives, falls within the established planning criteria, meets public demand, agency policies, and appropriate laws and regulations. The following are factors to be considered when selecting the preferred alternative.

- Even if the preferred alternative consists of several recreation modifications to the planning area, it may not change the existing recreation spectrum or the recreation experience.
- The rationale for selecting the preferred alternative should be placed in the administrative record.
- The preferred alternative may consist of combinations of recreation management and administrative actions taken from any or all of the original formulated alternatives. In other words, the preferred alternative may not be one of the original evaluated alternatives.
- The planning criteria can be used to justify the selection of the preferred alternative.



Monitoring recreation use is critical.

Implement and Monitor

This step involves the implementation of both the selected alternative and the preferred WALROS strategy proposed in the alternative. Inconsistency mitigation and the matrix in table 3.1 in chapter 3, **Inventory**, are useful in prioritizing and scheduling the implementation of activities and programs over time and across the planning area.

Monitoring is a vital tool to help managers learn from their efforts, be responsive, and make good changes during implementation (i.e., adaptive management). It is important to integrate monitoring activities into the responsibilities of all personnel and to view monitoring as a routine management responsibility. The monitoring program need not be complex, but it does need to cover important components such as: (1) monitoring selected guidelines at sample sites (refer to the guidelines in chapter 2 and assess the current situation versus the desired or intended guidelines), (2) monitoring the actual versus desired or intended water and land recreation opportunity and experience for an area (e.g., type, amount, location, duration, and quality of recreation opportunity), and (3) monitoring

Monitoring is an ongoing and routine management responsibility.

the actual versus planned annual budgets, personnel assignments, activities, actions, and programs.



Monitoring water quality is an important function.

Managers and associated staff should meet annually to review the monitoring data, identify potential reasons for achieving or not achieving planned targets and standards, propose strategies to mitigate negative consequences or new circumstances, and discuss priority actions and locations. Adaptive management is an expectation in the WALROS system. Change should be expected because of knowledge gained from monitoring as well as from new science, information, or circumstances. However, adaption and change should be deliberate and based on the same standards for decisionmaking as prescribed in chapter 1.

Evaluate and Adapt

This is an ongoing step of assessing the information gathered by monitoring and taking steps to alter the management strategies to achieve the desired goals and objectives established in the planning document and to resolve any issues identified during the implementing and monitoring planning step.

This planning step is an iterative decisionmaking process that requires managers to continually monitor their actions and make changes based on what has been discovered over time. Depending on the degree of change needed, this step could involve a simple plan amendment that can be completed internally or a major plan revision that may necessitate further scoping, data collection, and external public involvement.

Applying WALROS as a Regional Planning and Management Tool

Sound recreation planning and management requires that a single planning area be considered as part of a complex of recreation areas or sites that provide a spectrum and diversity of recreation opportunities and experiences within a given region. No one area can be everything to everyone. It is important to know what sorts of activities other nearby recreation areas are providing. In other words, a planner or manager needs to know the following about other recreation areas in their region:

- the physical features or attributes;
- the types of recreation usage available (i.e., social attributes); and
- the type of management (i.e., managerial attributes).

This information allows for more informed decisionmaking. Without this information, planners and managers are working in a vacuum. Duplication of facilities and services, unnecessary expenses, competition, and failure to meet the public's recreation needs are all more likely without this information and a regional perspective. WALROS has been designed and extensively tested to help assure that it will provide a regional perspective for recreation planning and management.

Without a regional analysis, there can be a duplication of facilities, services, unnecessary expenses, and competition, as well as failure to meet public demand.

The following sections identify steps that must be taken in order to use WALROS as a regional analysis for recreation planning and management.

Identify the Location, Size, and Boundaries of the Region

The boundaries, size, and location of a region will depend on a number of factors, such as: the goals, objectives, or purposes of the management or recreation plan; political boundaries; topographic features; management boundaries; the population served by the area; driving distance to population centers that the sites serve; proximity of sites to each other; clustering of sites; or any other measurable variables.

Identify the Sites to Be Compared within the Region

Identifying which sites should be selected for inclusion in a regional plan depends on the goals, objectives, and purposes of the planning or management effort. For example, if the goal is to demonstrate the full recreation opportunity of a region, then all sites within the region that provide some form of recreation can be selected. If the goal is to demonstrate how the spectrum of recreation opportunities can be expanded, then sites that appear to have the greatest potential for diversification might be selected. If the goal is to compare similar sites that are competing for recreationists within the region, then sites with similar characteristics should be considered. These characteristics may include size of the sites, population centers from

which visitors originate, budgets, recreation experiences, and activities offered. If the goal is to find out how scarce a recreation opportunity is within a region, then it would be important to include sites that might provide that opportunity. Often, sites selected will reflect similar resource types, such as public forested recreation areas, reservoirs, costal zones, rivers, or wildlife areas.

Not all regions require site comparisons. A stretch of river, such as a 60-mile stretch of the Colorado River from Davis Dam to Parker Dam, might in and by itself be considered one site or region. In this case, WALROS would be applied across the river corridor at locations where the recreation opportunities and experiences change. On the other hand, an entire region may be compared to other regions, as discussed in the section titled *Comparing Regions* at the end of this chapter.

Gather Information from Each Site for Comparison

WALROS provides a tool for comparing sites. Once sites are selected, each site manager and/or their staff need to fill out the WALROS Recreation Profile Form. This form provides a standardized and comprehensive inventory of information from each site in the region. Information from the WALROS Field Inventory, along with data obtained from each site, allows for site comparisons across the region. Refer to appendix D for a copy of the WALROS Regional Recreation Profile Form.

Conduct a WALROS Field Inventory for Each Site

The WALROS inventory is conducted on each site in the region using the WALROS Field Inventory Protocol Form (see sample figure 3.1 on page 63). Teams of field surveyors can use this form to inventory, classify, and map the social, managerial, and physical settings, and the overall WALROS class of each site. Chapter 1 of this handbook describes the process in detail.

Compare Sites

Once the information for each site is gathered from the WALROS Field Inventory Protocol Form and the WALROS Regional Recreation Profile Form, sites can be compared.

Example of Applying WALROS as a Regional Planning and Management Tool

Reclamation and the California State Parks conducted a regional analysis for 30 recreation sites within the State. The information provided below demonstrates how WROS, the predecessor to WALROS, has been used for a regional site comparison of one site (Lake Cachuma) to the other sites within the planning area (California Region V). Region V is the South Central Region planning area of California's Central Valley. Region V includes Lake Cachuma, Lake Casitas, Castaic Lake, Lopez Lake, Lake Perris, Santa Margarita Lake, and Silverwood Lake. If a comparison of Lake Cachuma to any individual study lake in Region V or in the State of California is needed or desired, the reader is referred to the California WROS Regional Report available through Reclamation's South Central Area Office, Fresno, CA.

Located a few miles west of Santa Barbara in close proximity to the Los Angeles metropolitan area, Lake Cachuma and its beautiful rural setting provide a unique opportunity for the public to escape the noise and congestion of one of the largest urban population centers in the United States.

The following tables 4.3, 4.4, and 4.5 provide a comparison of Lake Cachuma to the averages and totals of other study lakes in Region V (Cachuma, Castaic, Lopez, Perris, Santa Margarita, and Silverwood). Table 4.3 shows a comparison of the water surface acres for each WALROS class at Lake Cachuma to the average and total water surface acres for the other study lakes in Region V. All of the information in these tables comes from the WALROS Field Inventory and the WALROS Recreation Profile information gathered for Lake Cachuma and from similar information gathered at the other lake sites in Region V.

Since WALROS is an inventory of the physical, managerial, and social settings/profiles of a waterbody, the variables that help define each of these settings for Lake Cachuma are organized under each setting/profile in tables 4.4 and 4.5. Each of these lake variables is then displayed for comparison of Lake Cachuma to the average or total for all the other study lakes in Region V.

Table 4.3.—Comparison of water surface acres in each WALROS Class: Region V and Lake Cachuma

WROS classes	Region V water surface acres ^{1, 2}			Lake Cachuma water surface acres		
	Region average	Region total	Region percentage	Cachuma total	Cachuma percentage	Cachuma percentage of regional total
Urban	160	1,120	8%	0	0%	0%
Suburban	272	1,907	14%	0	0%	0%
Rural developed	985	6,897	52%	1,826	60%	26%
Rural natural	473	3,308	25%	1,217	40%	37%
Semiprimitive	0	0	0%	0	0%	0%
Primitive	0	0	0%	0	0%	0%

¹ Region V includes Lake Cachuma, Lake Casitas, Lake Castaic, Lake Lopez, Lake Perris, Lake Santa Margarita, and Silverwood Lakes.

² Water surface acres in each WROS class are estimates derived from the Regional Recreation Profile Form and the WROS inventory maps.

Table 4.4.—Comparison of regional recreation physical and managerial profile variables: Region V and Lake Cachuma

Variables	Region V*		Lake Cachuma	
	Region average	Region total	Cachuma total	Cachuma % of regional total
Physical profile variables				
Total water surface acreage (high pool)	1,881	13,168	3,043	23%
Shoreline miles (high pool)	24	171	32	19%
Water elevation at high pool (feet)	1,371		753	
Managerial profile variables				
Number of developed campgrounds	5	34	2	6%
Number of developed campsites	245	1,717	NA	NA
Number of undeveloped/rustic campgrounds	2	13	0	0%
Number of undeveloped/rustic campsites	97	581	0	0%
Number of boat-in campsites	2	13	0	0%
Number of picnic areas	9	65	2	3%
Number of picnic sites	315	1,892	NA	NA
Miles of hiking trails	10	69	4.75	7%
Miles of horseback riding trails	8	54	7	13%
Miles of bike trails	12	87	0	0%
Miles of off-highway vehicle trails	0	0	0	0%
Number of boat launch sites	3	18	2	11%
Number of paved boat access lanes	12	81	NA	NA
Number of marinas	1	6	1	17%
Number of boat rentals (boats)	24	166	NA	NA
Number of private moorings (slips)	69	481	50	10%
Number of visitor centers	1	5	1	20%
Number of full time personnel	20	120	12	10%
Number of summer seasonal employees	41	290	NA	NA
Annual operating budget (\$)	2,030,023	12,180,137	2,100,000	17%
Annual user fees collected (\$)	1,417,857	9,925,000	NA	NA
Annual concessionaire fees collected (\$)	85,667	514,000	90,000	18%
Percent of user fees used by local management	59%	NA	NA	NA
Entrance fee charged (\$)	4	NA	0	NA
Camping fee charged (\$)	20	NA	20 to 30	NA
Boat launch fee charged (\$)	6	NA	12	NA
Day use fee charged (\$)	5	NA	8	NA

Source: Regional Recreation Profile Form. See Appendix D.

*Region V includes Lake Cachuma, Lake Casitas, Lake Castaic, Lake Lopez, Lake Perris, Lake Santa Margarita, and Silverwood Lakes. Note: NA = Not Available

Table 4.5.—Comparison of regional recreation social profile variables: Region V and Lake Cachuma

Social profile variables	Region V ¹	Lake Cachuma
	Region average	Cachuma total
Number of annual visitors ²	588,857	700,000
Average length of stay (days)	3	2
Average size of visitor groups (people)	5	NA
Percent of large groups over 12 people	10%	30–40%
Percent of repeat visitors	76%	NA%
What experiences visitors are seeking:		
• Social	17%	0%
• Skill development	4%	0%
• Peace and quiet	25%	40%
• Thrills	21%	0%
• Aesthetics	29%	20%
• Other (fishing)	4%	40%
Percent of visitors residing in California:	92%	NA
Home origin of visitors:		
• Less than 10 miles	6%	10%
• 10–25 miles	36%	10%
• 26–100 miles	40%	20%
• 101–250 miles	15%	50%
• 250+ miles	3%	10%
Percent of visitors by ethnicity:		
• Caucasian	38%	35%
• Mexican-American	41%	30%
• American Indian	2%	5%
• Asian American	8%	20%
• African-American	8%	10%
• Other	3%	0%
Percent of boats by size:		
• <16 feet	48%	50%
• 16–25 feet	48%	45%
• Over 25 feet	4%	5%
Percent of boats by boat type:		
• Nonmotorized	7%	0%
• Outboard engine	51%	60%
• PWC	18%	0%
• Inboard engine	23%	40%
• Houseboat	<1%	0%

Source: Regional Recreation Profile Form. See Appendix D.

¹ Region V includes Cachuma, Casitas, Castaic, Lopez, Perris, Santa Margarita, and Silverwood Lakes.

² The total number of visitors for Region V is approximately 4,122,000. Cachuma's percent of the regional total is 17%.

Note: NA = Not Available

Following are some planning and management implications drawn from the information provided in the previous tables.

Most of the other study reservoirs in the South Central WALROS region have large concentrations of recreation visitors with all of the socialization, congestion, noise, thrills and excitement associated with a more urban or suburban experience and WALROS class. At these other reservoirs, crowded beaches, boat ramps, high-speed motor boating, waterskiing, jet skiing and other urban-related water activities dominate the largest part of the scene. On the other hand, Lake Cachuma, along with Lake Casitas and Santa Margarita Lake, are the only lakes in the region to offer significant rural natural areas that provide opportunities for recreationists seeking a very different experience. People who recreate in this type of setting seek peace and quiet and an escape from the urban scene. Due mainly to the “no body contact” regulation, Lake Cachuma does not allow personal watercraft or waterskiing. These restrictions significantly reduce noise levels, wakes, and the numbers and congestion of motorized boats. Fishing, sightseeing, slow cruising, and camping are popular lake-related activities. Protecting and enhancing these recreation experiences are important since, according to this study’s profile variables, 60 percent of Lake Cachuma visitors are mainly seeking peace, quiet, and aesthetics. The other 40 percent are seeking a quiet, peaceful experience.

In order to continue to provide a diversity of water recreation opportunities and visitor experiences, it is most important to protect the WALROS classes and opportunities that are relatively rare on a regional scale. Only 25 percent, or 3,300 acres, of the 13,200 water surface acres across all study lakes in the South Central Region fall on the undeveloped side of the WALROS spectrum. Only three lakes account for the majority of the 25 percent, all of which fall in the Rural Natural WALROS class. Lake Cachuma provides over one-third of all existing rural natural or undeveloped water recreation opportunities in the region.

In order to continue to provide this rural natural experience and the lake’s unique recreation niche, and in order to maintain diversity of water recreation experiences in this South Central Region of California, it is important to manage Lake Cachuma as rural natural as much as possible. Consequently, the “no body contact” and the “no personal watercraft” restrictions must be maintained. In addition, development must be limited and screened (e.g., through setting strict boat speed, noise, and size limits).

Comparing Regions

For planning purposes, it may be beneficial to compare regions or divide large regions into subregions and then compare the subregions. The South Central Region is just one of five designated regions in the Central Valley of California. A study by Reclamation and California State Parks and Recreation, titled *Applying The Water Recreation Opportunity Spectrum (WROS) on a Regional Scale* (October 2010), compared the five subregions of the California Central Valley using WROS, which was the predecessor of WALROS. The reader is referred to this report as an excellent example for comparing regions. The report can be obtained by contacting Reclamation's South Central California Area Office (SCCAO).

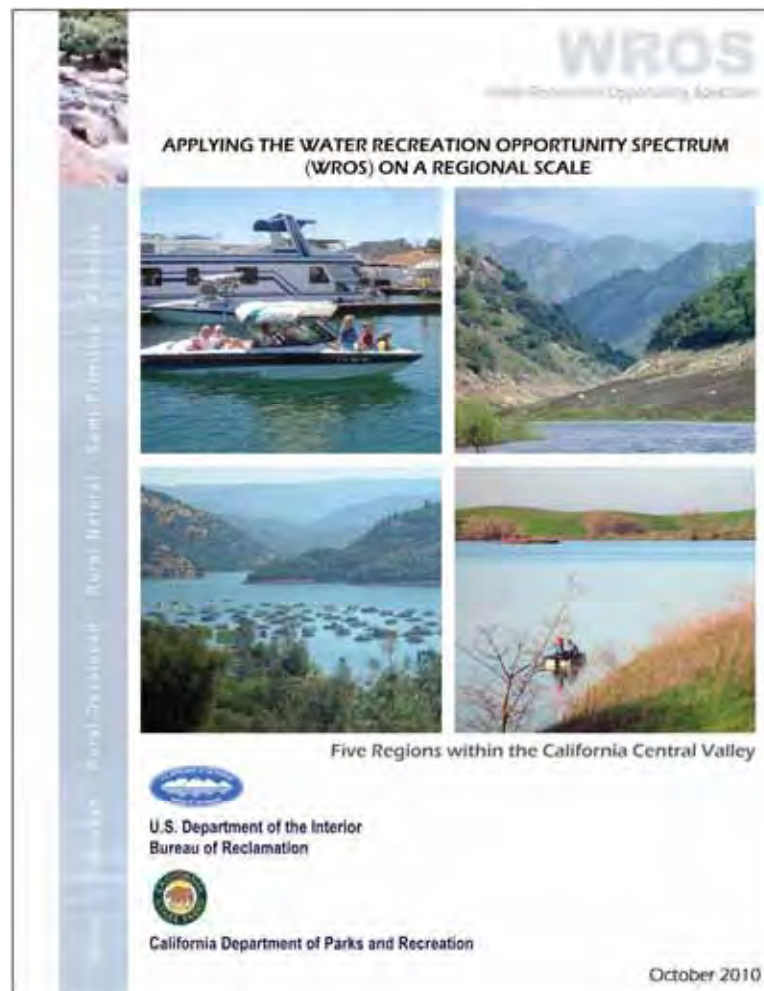


Figure 4.10.—The cover of Reclamation's 2010 *Applying the Water Recreation Opportunity Spectrum (WROS) on a Regional Scale: Five Regions within the California Central Valley*.

Appendices



Appendix A

Contact Information, Acknowledgement, and Citation

Contact Information

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Contractors:

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Information on in-service staff training, orientation, and PowerPoint presentation can be obtained on Reclamation's website: <http://www.usbr.gov/recreation/publications.html>

Acknowledgements

WROS was developed by the hard work of recreation resource professionals and outdoor enthusiasts from across the United States. We acknowledge their vital contribution.

A special acknowledgement is extended to the Federal Lakes Recreation Study Commission who contributed the funds in year 1999 to the WROS study for field testing and development of the original 2004 guidebook.

The 2011 2nd Edition of WROS, now called WALROS, is a credit to the leadership of the Bureau of Reclamation, Program and Administration, Denver, Colorado. Feeding into the 2nd edition revisions were multiple field applications, a California Central Valley regional application, and a validation study supported by the Bureau of Reclamation's South Central California Area Office, and by California State Parks. Mr. Robert Epperson and Mr. Wayne Woodroof deserve special recognition.

Photography: The Bureau of Reclamation would like to provide a special acknowledgement to Mr. Richard Hines, United States Fish and Wildlife Service, who provided multiple pictures used in this 2nd edition.

Citation

Haas, G., Aukerman, Grizzle, V., Jackson, J., 2011. *Water and Land Recreation Opportunity Spectrum Handbook*. 2nd Edition. United States Department of the Interior, Bureau of Reclamation, Program and Administration, Denver Federal Center, Denver, Colorado.

Appendix B

List of Reservoirs and Locations Where WALROS/WROS Has Been Applied

The following is a list of where WALROS/WROS has been tested or used for planning or management purposes.

Lake/Reservoir or River	Location By State or Country	Primary Managing Agency(s)
Bear Creek	Alabama	Tennessee Valley Authority (TVA)
Guntersville	Alabama	TVA
Pickwick	Alabama, Mississippi, Tennessee	TVA
Wheeler	Alabama	TVA
Wilson	Alabama	TVA
Colorado River	Arizona, California, Nevada	Bureau of Reclamation (Reclamation), Bureau of Land Management (BLM)
Lake Havasu	Arizona/ California	BLM
Lake Pleasant	Arizona	Maricopa County
Salt River Project	Arizona	Reclamation
American River/Auburn	California	California (CA) State Parks State Parks
Bethany Reservoir	California	CA State Parks
Castaic Lake	California	Los Angeles County Parks
Folsom Lake	California	CA State Parks
Keswick Reservoir	California	U.S. Forest Service (USFS), BLM
Lake Berryessa	California	Reclamation
Lake Cachuma	California	Santa Barbara County Parks
Lake Casitas	California	Casitas Water District
Lake Clementine	California	CA State Parks
Lake Contra Loma	California	East Bay Regional Parks
Lake De Valle	California	East Bay Regional Parks
Lake Don Pedro	California	Don Pedro Recreation Agency
Lake McClure	California	Merced Irrigation District
Lake McSwain	California	Merced Irrigation District

Lake Natoma	California	CA State Parks
Lake Oroville	California	CA State Parks
Lake Perris	California	CA State Parks
Lake Shasta	California	USFS
Lake Turlock	California	Merced Irrigation District
Lewiston Lake	California	USFS
Lopez Lake	California	San Luis Obispo County Parks
Los Banos Creek	California	CA State Parks
Millerton Lake	California	CA State Parks
New Melones Lake	California	Reclamation
O'Neill Forebay	California	CA State Parks
Pine Flat Lake	California	Corps of Engineers (COE)
San Luis Reservoir	California	CA State Parks
Santa Margarita Lake	California	San Luis Obispo County Parks
Silverwood Lake	California	CA State Parks
Trinity Lake	California	USFS
Whiskeytown Lake	California	National Park Service (NPS)
Bodecker Lake	Colorado	Larimer County Parks
Boulder Reservoir	Colorado	Boulder County Parks
Boyd Lake	Colorado	Colorado (CO) State Parks
Carter Lake	Colorado	Larimer County, BOR
Chatfield Reservoir	Colorado	CO State Parks, COE
Cherry Creek Reservoir	Colorado	CO State Parks, COE
Clark Lake	Colorado	Weld County Parks
Douglas Lake	Colorado	CO Division of Wildlife
Flatiron Reservoir	Colorado	Larimer County Parks
Granby Lake	Colorado	USFS
Horsetooth Reservoir	Colorado	Larimer County Parks
Jackson Gulch Reservoir	Colorado	CO State Parks
Lake Loveland	Colorado	City of Loveland Parks
Lake Wellington #4	Colorado	CO Division of Wildlife
Lon Hagler Lake	Colorado	CO Division of Wildlife
Lone Tree Reservoir	Colorado	CO Division of Wildlife
North Sterling Reservoir	Colorado	CO State Parks
Pinewood Lake	Colorado	Larimer County Parks
Blue Ridge	Georgia	TVA
Chatuge	Georgia and North Carolina	TVA
Nottely	Georgia	TVA

Lake Rathbun	Iowa	COE
Kentucky	Kentucky and Tennessee	TVA
Lake Cumberland	Kentucky	COE
Canyon Ferry Reservoir, Goose Bay Marina	Montana	Reclamation
Clark Canyon Reservoir	Montana	Reclamation
Northern Forest Canoe Trail	New Hampshire	Coalition of Non-Profit Agencies
Appalachia	North Carolina	TVA
Hiwassee	North Carolina	TVA
Lake Texoma	Oklahoma, Texas	COE, Oklahoma State Parks, Texas State Parks
Lake Sakakawea	North Dakota	COE
Allegheny Reservoir	Pennsylvania	COE
Boone	Tennessee	TVA
Cherokee	Tennessee	TVA
Chickamauga	Tennessee	TVA
Douglas	Tennessee	TVA
Fort Loudoun	Tennessee	TVA
Fort Patrick Henry	Tennessee	TVA
Melton Hill	Tennessee	TVA
Nickajack	Tennessee	TVA
Nolichucky	Tennessee	TVA
Normandy	Tennessee	TVA
Norris	Tennessee	TVA
Ocoees	Tennessee	TVA
South Holston	Tennessee and Virginia	TVA
Tellico	Tennessee	TVA
Tims Ford	Tennessee	TVA
Watauga	Tennessee	TVA
Watts Bar	Tennessee	TVA
Lake Amistad	Texas	NPS
Bumping Lake	Washington	USFS
Clear Lake	Washington	USFS
Cle Elum Lake	Washington	USFS
Lake Easton	Washington	Washington State Parks
Lake Kachess	Washington	USFS
Lake Keechelus	Washington	USFS
Natches River	Washington	USFS
Rimrock Lake	Washington	USFS
Tieton River	Washington	USFS

Yakima River	Washington	USFS, BLM
Strangeford Loche	Ireland	Country of Ireland
Black Rio Grande River	Jamaica	Country of Jamaica
Black River	Jamaica	Country of Jamaica
Cabarita and Roaring Rivers	Jamaica	Country of Jamaica
Great River	Jamaica	Country of Jamaica
Martha Brea River	Jamaica	Country of Jamaica
Milk River	Jamaica	Country of Jamaica
Roaring River St. Ann	Jamaica	Country of Jamaica
Rio Grande River	Jamaica	Country of Jamaica
South Negril River	Jamaica	Country of Jamaica
White River	Jamaica	Country of Jamaica

Appendix C

Glossary

Managerial attributes (setting). Managerial attributes are the features or characteristics of a recreation setting that may define and distinguish the recreation experience. Management attributes may include facilities (e.g., ranging from water markers to full service marinas and campgrounds), rules, regulations, water operations, educational programs, fees and charges, interpretation, signage, law enforcement, design, lighting, concessions, and special use permittees.

Physical attributes (setting). Physical attributes are features or characteristics of a recreation setting that may help to define and distinguish the recreation experience. Physical attributes can be divided into natural features or built structures of a more permanent or fixed nature. Examples of natural resource attributes include water quality, aquatic and terrestrial vegetation, topography, shoreline curvature, fish and wildlife habitat, soil, natural soundscape, and air quality. Examples of built structures include all those municipal, commercial, industrial, residential, agricultural, and major recreation buildings and infrastructure common to any city or community (e.g., dams, water and power conveyances, water control structures, residential subdivisions, industrial complexes, commercial centers, air and ground transportation systems, developed resorts and marinas, theme parks, and shipping and cargo facilities).

Preponderance of the evidence. Preponderance of the evidence is defined as a condition whereby most of the information, data, trends, professional opinion, and other facts and circumstances of a situation support the reasonableness of a particular decision or course of action more than another decision or course of action. It is a situation where the weight of evidence of one course of action is greater than the weight of evidence of another course of action.

Recreation activity. Recreation activity is a leisure-time pursuit that a person participates in voluntarily to secure a pleasurable experience.

Recreation benefits. Recreation benefits are the positive gains or improvements made by people participating in recreation opportunities. The gains may include benefits for the individual, community, economy, or environment.

Recreation diversity. Recreation diversity is the type, variety, distribution, quality, and abundance of outdoor recreation opportunities. Diversity is accommodated through management of a spectrum of recreation opportunity classes, zones, or units named in WALROS as urban, suburban, rural developed, rural natural, semi-primitive, and primitive.

Recreation experience. Recreation experience is the psychological and physiological response to participating in a particular recreation activity in a specific recreation setting. Recreationists consume a recreation experience (activity + setting = experience).

Recreation opportunity (RO). Recreation opportunity is the opportunity for a person to participate in a particular activity in a specific setting to realize a particular type of experience and subsequent benefits. RO = activity + setting = experience >>> benefits.

Recreation setting. Recreation setting is a geographic location comprised of physical, social, and managerial attributes where a person participates in a particular activity to have a specific type of recreation experience. Managers manage the recreation setting.

Rule of reasonableness. The rule of reasonableness is defined as a decision that professional recreation managers of ordinary prudence and competence would not view as excessive or immoderate under similar circumstances.

Setting attribute. A setting attribute can be defined as a site feature or condition that recreation users consider important for a quality recreation experience and that will result in return visits to the site (e.g., solitude, scenery, adequate riverflow or reservoir elevation, law enforcement, signing, shower, restroom, and boat ramp).

Sliding scale rule of analysis. The sliding scale rule states that the level of analysis used to implement WALROS should be commensurate with the potential consequences of the decision; that is, managers need flexibility to make decisions based on a level of analysis that is commensurate with the purpose and potential consequences of the decision.

Social attributes (setting). Social attributes are the features or characteristics of a recreation setting that may define and distinguish the recreation experience. Social attributes may include such features as (1) recreation use and users (e.g., the type, amount, time, location, distribution, origin, behaviors, and quality), (2) nonrecreation use and users (e.g., business people, educational groups, agency personnel, scientists, farmers and ranchers, and local residents), and (3) special values associated with the cultural, historical, and spiritual or religious significance.

Sound professional judgment. Sound professional judgment is defined as a reasonable decision that has given full and fair consideration to the appropriate information, is based on principled and reasoned analysis and the best available science and expertise, and complies with applicable laws.

Suitable recreation acres. Suitable recreation acres are those acres within a project or planning area that can or will accommodate some type and level of recreation use. Unsuitable recreation acres may be those acres that include security closures, pose public safety hazards, contain sensitive wildlife habitat or heritage sites, have incompatible industrial activity, or are inaccessible because of topography or private land.

Visitor (recreation) capacity. Visitor capacity is the supply, or prescribed number, of recreation opportunities that will be accommodated in a particular area in order to achieve the prescribe management goals and objectives.

WALROS classes, areas, or zones. WALROS is a system of six classes of recreation opportunities ranging from urban to primitive. The word *class* refers to the narrative description of the six classes in this guidebook. When a body of water is mapped or delineated as belonging to one or more WALROS classes, they may be called WALROS areas or zones.

Water resources. Water resources is the term used in this guidebook to refer to the types of water resources to which WALROS can be applied, including lakes, reservoirs, wetlands, bays, estuaries, rivers, coastal zones, and marine protected areas.

Appendix D

Sample Form to Develop a Regional Recreation Profile

Sample Regional Recreation Profile Form

Date: _____
 Your name and title: _____
 Name of water resource: _____
 Agency name: _____
 Phone: _____ Email: _____

Please answer the questions below based upon the **best available information and your professional judgment**. Provide reasonable estimates if there are no exact numbers available. Leave blank if you cannot estimate and/or if the question is not applicable to your resource. Thank you very much for your valuable input.

Acres in your management area _____ % Land _____ River _____
 Lake/Reservoir _____ Coastal _____

Sample WALROS Regional Recreation Profile Form			
If Reservoir or Lake			
Total water surface acres:	High Pool _____	Low Pool _____	
Total Shoreline miles:	High Pool _____	Low Pool _____	
Total Water elevation:	High Pool _____	Low Pool _____	
If River-Length and Width			
Length of river in management area: _____		Average width of river: _____	
Facilities			
Number of developed campgrounds: _____		Number of developed campsites: _____	
Number of rustic or undeveloped campgrounds: _____		Number of undeveloped campsites: _____	
Number of boat-in campsites: _____			
Number of picnic areas: _____		Number of picnic sites: _____	
Miles of trails for:	hiking _____	horseback riding _____	bike riding _____ OHV _____
Number of boat launch sites: _____		Number of paved boat access lanes: _____	

Sample WALROS Regional Recreation Profile Form

Number of marinas: _____ Number of boat rentals: _____
Number of private moorings: _____ Number of visitor centers: _____
Number of houseboats: _____ Number of other facilities (please list facility and #): _____

Management

Number of Non-seasonal employees: _____ Number of seasonal summer employees: _____
Annual operating budget: _____ Amount of user fees collected: _____
Concessions gross revenues: _____ Percentage of user fees applied by local management: _____
Year of most recent approved management plan: _____ Percentage of user fees retained for use at site: _____

Circle if there is a reservation system for: camping picnicking boat launches boat rentals

Individual amount of user fee charged for:

Entrance \$ _____ Camping \$ _____ Day use \$ _____ Special events (i.e. fishing tournaments) \$ _____
Boat launch \$ _____ Boat mooring \$ _____ other (list) \$ _____

Visitors:
(please use your best professional judgment on all of the questions if you do not have actual data)

Number of annual visitors: _____ Number of annual visitor days: _____
Percentage of visitors by season: Summer _____ Spring _____ Fall _____ Winter _____
Percentage of day use only: _____
Average length of stay: _____ Average size of visitor groups: _____
Percentage of large groups over 12 people: _____ Percentage of repeat visitors: _____
Percentage of visitors who are extremely or highly satisfied with their visit: _____

Appendix E

Directory of Related Information Sources

Bureau of Reclamation Information Sources:

- Creating More Meaningful Visitor Experiences: Planning for Interpretation and Education
<http://www.usbr.gov/recreation/publications.html>
- Economic Nonmarket Valuation of Instream Flows
<http://www.usbr.gov/pmts/economics/reports.html>
- Estimating future Recreation Demand: A Decision Guide for the Practitioner
<http://www.usbr.gov/recreation/publications.html>
- Impact of Fluctuating Reservoir Elevation on Recreation Use and Value
<http://www.usbr.gov/pmts/economics/reports.html>
- Outdoor Recreation Business Plan Guidebook
<http://www.usbr.gov/recreation/publications.html>
- Public Involvement Manual
<http://www.usbr.gov/pmts/economics/reports.html>
- Recreation Facility Design Guidelines
<http://www.usbr.gov/recreation/publications.html>
- Resource Management Plan Guidebook
<http://www.usbr.gov/recreation/publications.html>
- Sign Guidelines for Planning, Designing, Fabricating, Procuring, Installing, and Maintaining Signs for Outdoor Public Use Areas
<http://www.usbr.gov/recreation/publications.html>
- Social Analysis Manual, Volume 1
<http://www.usbr.gov/pmts/economics/reports.html>

Supporting Reclamation Manual (RM) Policy and Directives and Standards (D&S):

- RM Policy, Concession Management, LND P02
<http://www.usbr.gov/recman/policies.html#LNDI>
- RM Policy, Recreation Program Management, LND P 04
<http://www.usbr.gov/recman/policies.html#LNDI>

- RM Policy, Visitor Centers, LND P13
<http://www.usbr.gov/recman/policies.html#LNDI>
- RM D&S, Concessions Management by the Bureau of Reclamation, LND 04-01
<http://www.usbr.gov/recman/DandS.html>
- RM D&S, Concessions Management by Non-Federal Partners, LND 04-02
<http://www.usbr.gov/recman/DandS.html>
- RM, D&S, Implementation of Cost Sharing Authorities for Reclamation and Fish and Wildlife Enhancement, LND 01-01
<http://www.usbr.gov/recman/DandS.html>
- RM D&S, Recreation Program Management, LND 01-03
<http://www.usbr.gov/recman/DandS.html>
- RM D&S, Visitor Centers, LND 13-01
<http://www.usbr.gov/recman/DandS.html>

U.S. Forest Service Information

- The Built Environment Image Guide for the National Forest and Grasslands
<http://www.fs.fed.us/recreation/programs/beig/>
- Floating Trail Bridges and Docks
www.fs.fed.us/t-d/pubs/pdfpubs/pdf02232812/pdf02232812dpi72.pdf
- Landscape Aesthetics: A Handbook for Scenery Management, Agriculture Handbook
http://library.rawlingsforestry.com/fs/landscape_aesthetics/
- National Survey on Recreation and the Environment (NSRE),
<http://www.srs.fs.usda.gov/trends/Nsre/nsre2.html>
- National Visitor Use Monitoring (NVUM) Data Base
<http://www.fs.fed.us/recreation/programs/nvum/>
- ROS Users Guide
www.fs.fed.us/cdt/carrying_capacity/rosguide_1982.pdf

Other Sources of Information

- National Survey on Fishing, Hunting, and Wildlife Associated Recreation
<http://www.fws.gov/news/NewsReleases/showNews.cfm?newsId=208AD97E-F21E-716D-4E57C4847DFE791B>

Planning Resources Link, National Association of Recreation Resource Planners,
Marienville, Pennsylvania
[http://www.narrp.org/clubportal/ClubStatic.cfm?clubID=1431&pubmenuOptID=16654#
planning_guidance](http://www.narrp.org/clubportal/ClubStatic.cfm?clubID=1431&pubmenuOptID=16654#planning_guidance)

Appendix F Estimating Recreation Demand

Estimating Future Recreation Demand

Prepared by Drs. Glenn Haas and Marcella Wells

The following guidance is excerpted from the Bureau of Reclamation's publication entitled *Estimating Future Recreation Demand: A Decision Guide for the Practitioner* (July 2007). Drs. Haas and Wells were the lead authors. The full Guide is a public document and can be accessed at:

www.usbr.gov/recreation/publications/recreationdemand.pdf.

Section 1 Key Concepts and Terms

A major reason why the concept and practice of measuring recreation demand has been so illusive is the lack of standard terminology and definitions. This section is very important to the practitioner because it provides the perspective and definitions that are the basis of this Demand Guide.

Recreation Demand

Recreation demand is the *estimated number of people* who are projected to participate in a particular *recreation opportunity* at some predetermined *future time* and location. Several terms are highlighted in italics because they need further elaboration or provide choices for the practitioner.

Practitioners do not *estimate* demand with 100 percent certainty. Rather, the estimate is supported by a preponderance of the information considered and may be more appropriately represented by a numeric range. For example, rather than indicating that demand will increase 27 percent in the next 10 years, it would be more helpful to offer a low and high-bound range such as 25 to 30 percent. Furthermore, estimates with one or two decimal points are not recommended because they provide an unrealistic sense of certainty.

The estimated *number of people* is typically expressed as a number or numeric range of individuals or groups (e.g., 10,000 visitors, 120-150 parties). The number of people can also be expressed as a percentage of the population in the market area or as a percentage increase or decrease in participation from some baseline year (e.g., year 2005). Another option is that the estimated number of people refers to some attribute of the visitors such

as vehicles, motorized recreation vehicles, motor boats, horseback groups, boat launches, snowmobiles, campers versus day-use groups, or local versus non-local parties.

Historically, recreation demand has focused on the visitor's primary recreation activity such as hiking, fishing, boating, camping, or skiing. Today, the recreation profession recognizes that not all hiking, boating, or fishing is the same because of the diverse outdoor settings where the activity may be enjoyed. Estimating demand for just activities may be too vague and misleading. Thus, the recreation profession has developed the concept of a *recreation opportunity* which goes beyond the activity perspective. The term recreation opportunity is defined in the next section.

The *future time* period, or future demand target year, is the target time period for which demand is being estimated. It is typically 5, 10, 15, or 20 years into the future. This Demand Guide utilizes a 10-year future time period. Beyond 20 years is considered very tenuous. Furthermore, the future time period can focus on the full calendar year, a portion of the year, such as the summer or hunting season, or even a shorter time in the case of a special event.

Recreation Opportunity

Four decades ago, recreation was viewed principally as an activity, such as boating or skiing. However, in the 1970s, recreation science determined that recreationists are motivated by seeking a particular type of recreation experience and that a recreation activity is a means to an experiential end. It also determined that the condition of the resources and how the recreation setting is managed can influence the kind of experience a person is likely to have. In the 1990s, recreation science further determined that recreation experiences lead to benefits for individuals, families, and communities and provide benefits to the economy and the environment.

Today, it is professionally accepted that recreation managers provide *recreation opportunities*. That is, managers provide opportunities for visitors to participate in a type of recreation activity in a specific setting to realize a particular type of experience and subsequent benefits. Figure 3 depicts the key components of a recreation opportunity and how they are linked to one another.

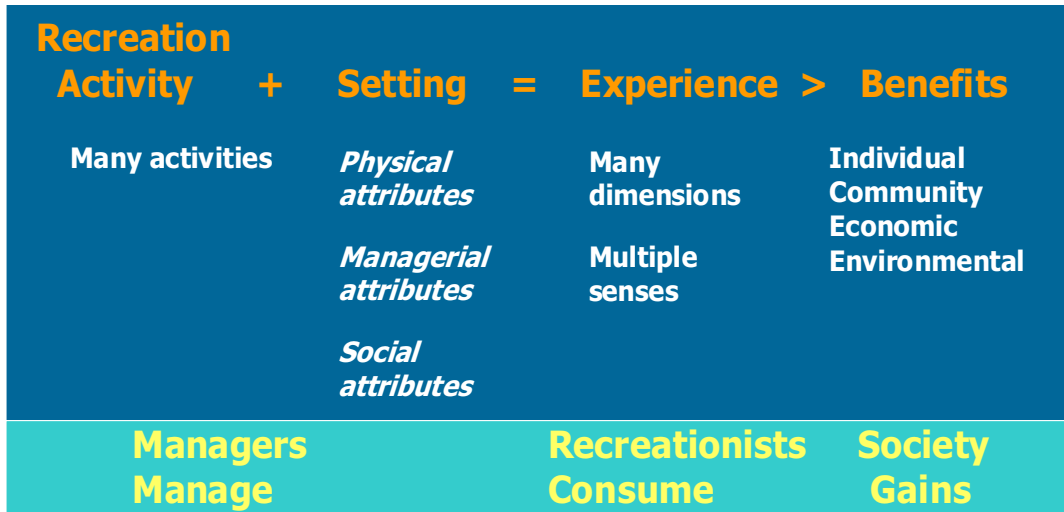


Figure 3.—A recreation opportunity.

In a perfect world, it would be helpful to estimate future demand for activities, settings, experiences, and benefits. The profession needs to move in this direction. In the meantime, it is important to move beyond simply measuring demand for an activity because that level of information is too vague and misleading.

This Demand Guide recommends that demand be estimated for the key “activities and settings.” For example, rather than estimating demand for simply canoeing, it is recommended that demand be estimated for canoeing in a suburban setting or canoeing in a rural natural setting. This Demand Guide will henceforth use the phrase key “recreation opportunity” to mean a key “recreation activity in a particular setting.”

Furthermore, this Demand Guide recommends the use of the settings prescribed in the ROS or WROS systems. Figure 4 displays the six recreation settings used in the WROS system (see WROS User’s Guidebook, 2004, for detailed descriptions of these settings). A less desirable option, but still an improvement over using simply recreation activities, would be to use the setting descriptors such as backcountry versus front country or developed versus natural setting.

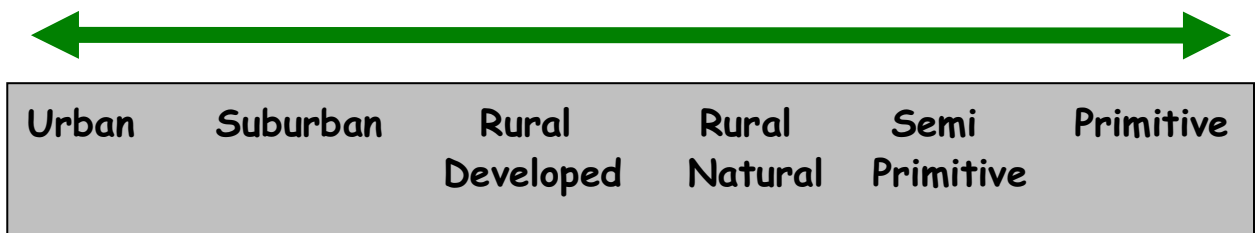


Figure 4.—A spectrum of recreation opportunities.

Demand Assessment

Demand assessment requires conducting an information search, compiling important information, consulting with others, performing analyses, and developing reasonable estimates of the future recreation demand for the key recreation opportunities in question. The demand assessment culminates in an estimate (i.e., a number or numeric range of people) of demand for each of the key recreation opportunities under consideration. These estimates, along with the demand estimates for other relevant goods and services such as water, power, timber, wildlife habitat, grazing, minerals, and cultural resources, serve as input to the inventory stage of a planning process.

Information Atmosphere

Recreation practitioners have access to much information that is useful and may be sufficient to estimate future recreation demand. Unfortunately, recreation professionals often fail to perform the critical step of looking beyond their agency or area of management jurisdiction. In this Demand Guide, the phrase, *information atmosphere*, represents the assemblage of data, studies, plans, community surveys, reports, and other information available from the private, non-private, and public sectors at the local, regional, and national level. Table 1 depicts a potential information atmosphere. By considering each cell in the matrix, practitioners can be more diligent in their information searches.

**Estimating Future Recreation Demand:
A Decision Guide for the Practitioner**

Table 1.—The information atmosphere for estimating recreation demand

	Public sector	Private sector	Non-profit sector
Federal	<p>National Survey on Recreation and the Environment (U.S. Forest Service [USFS])</p> <p>National Visitor Use Monitoring data (USFS)</p> <p>Corps of Engineers visitation data</p> <p>Fish and Wildlife Service 5-year hunting and fishing survey</p> <p>FERC relicensing studies</p> <p>Environmental impact statements</p> <p>General management and resource management plans</p> <p>Federal research publications and websites (USFS SE Experiment Station)</p> <p>Special departmental or congressional reports or commissions (e.g., GAO, CRS)</p> <p>Agency visitor monitoring reports</p>	<p>Corporate market research studies</p> <p>Corporate annual reports (e.g., REI, Winnebago, Bass)</p> <p>Private consultant reports</p> <p>Recreation, tourism, and leisure textbooks</p>	<p>National Recreation and Parks Association</p> <p>Outdoor Industry of America</p> <p>Recreation Roundtable</p> <p>Annual Reports</p> <p>American Camping Association</p> <p>Special reports of recreation industry association</p> <p>Conference proceedings</p> <p>Travel Industry Association</p> <p>Gallup, Roper, Pew, and other national polls</p>
State	<p>Statewide Comprehensive Outdoor Recreation Plans (SCORP)</p> <p>Statewide public surveys</p> <p>Census reports</p> <p>Economic profiles</p> <p>Demographic profiles</p> <p>State tourism reports and data</p> <p>Sales tax generations</p> <p>University research studies</p> <p>Agency visitor monitoring reports</p>	<p>Resort visitation</p> <p>Travel industry visitation reports</p> <p>Private consultant reports</p> <p>Private college reports and studies</p> <p>State park concessionaire reports and studies</p>	<p>State Tourism Boards</p> <p>State recreation and tourism associations</p> <p>State chapters of national recreation organizations</p> <p>Conference proceedings</p>
Local	<p>County and parks, recreation, and open space plans</p> <p>County economic development plans</p> <p>County road counts</p> <p>County tax records</p> <p>Agency visitor monitoring reports</p>	<p>Resort visitation</p> <p>Concessionaire records</p> <p>Sporting goods sales</p> <p>Hotel and restaurant records</p> <p>Outdoor recreation service provider records</p>	<p>Chambers of Commerce</p> <p>Local friends or special interest groups</p> <p>Cooperating organizations</p>

Planning and Market Area

This Demand Guide uses the phrase, planning area, to refer to the geographic location for which the practitioner wants to estimate demand. It may be a site such as a campground or marina, a lake or park, or a larger region of a State. The market area is the geographic area where the visitors to the planning area reside; that is, where do people live who visit the planning area. A reasonable rule of thumb is to define the market area as the geographic area where at least 75 percent of the visitors reside. For example, the market area might be a 10 mile radius for Chatfield Lake State Park near Denver, an 80 mile radius for Folsom Lake State Park near Sacramento, and a 250 mile radius for Lake Mead, Utah.

Demand by Whom

The number of “current on-site” visitors is the expression of demand that is the easiest to measure and the most commonly reported. Typically, recreation practitioners will express recreation demand as the number of on-site visitors in a day, season, or year. For example, the recreation demand to Boreas Pass in 2005 was 114,700 on-site visitors.

Current on-site visitation is certainly a major component of estimating future recreation demand, but it alone is not sufficient. The amount of “unmet” demand at a site is more difficult to measure and a less visible type of recreation demand. Unmet recreation demand can be defined as the number of people who would visit a recreation site, but for various reasons, do not. These people need to be considered in estimating future recreation demand. Table 2 provides a taxonomy of people who will influence future recreation demand.

Planning Process

Public resource planning is the process used to make allocation decisions for our public lands and waters. At the Federal level, NEPA provides the regulatory foundation for environmental planning. Most States have adopted a similar approach to NEPA since Federal and State programs and budgets are so intertwined.

Although each agency and organization may have a slightly different planning process (e.g., terminology, review periods), the steps of a rational public planning process are basically the same. Figure 5 shows the steps of a generic public planning model. It also shows that the output of a recreation demand assessment enters into the inventory stage of the process and then is considered in the subsequent steps.

**Estimating Future Recreation Demand:
A Decision Guide for the Practitioner**

Table 2.—A taxonomy of people who will influence future recreation demand

Current on-site demand	Current recreationists who visit the area; may be referred to as visitors, users, guests, customers, audiences, tourists, participants, or consumers.
Unmet demand	<i>Displaced.</i> People who previously used the site or facilities but have been displaced or no longer visit the site because of some undesirable attribute, condition, or situation (e.g., over development; lack of maintenance; infusion of new/different user group; water quality).
	<i>Disenfranchised.</i> People who are aware of the site or facilities but for some reason do not feel welcomed, comfortable, or are unable to visit for accessibility reasons (e.g., income, disability).
	<i>Latent.</i> People who desire, are able, and are planning to visit the recreation site or facilities but who have not done so to date.
	<i>New.</i> People who may be new residents or otherwise are not currently aware of the available recreation opportunities or who are existing residents with changing outdoor recreation interests and are likely to participate as they become more aware.
	<i>Tourists.</i> People who live outside your market area but will travel to the area for a short period of time (e.g., vacation, business trip).

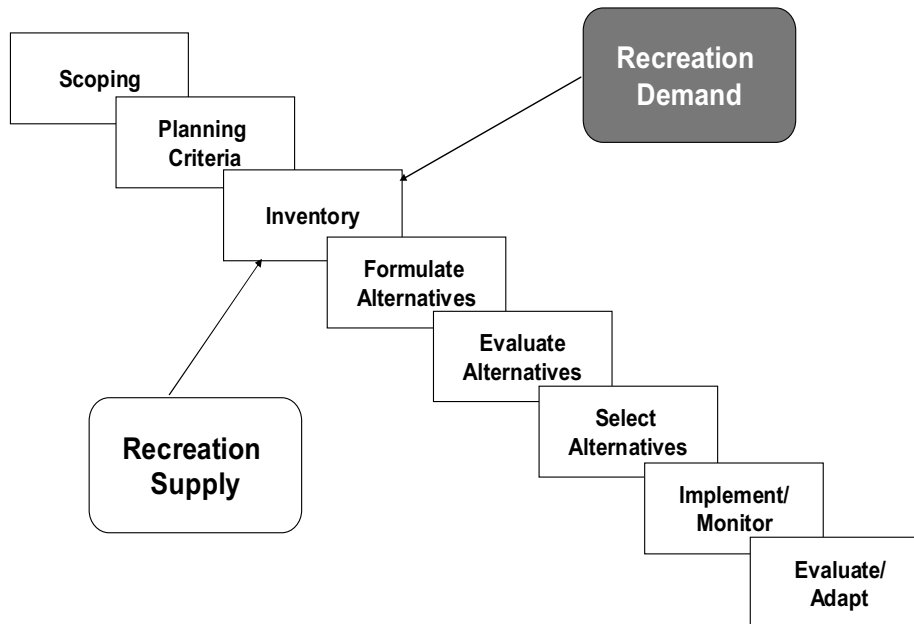


Figure 5.—Integration of recreation demand to a general planning process.

SECTION II

The Process for Demand Assessment

This section describes the recreation demand assessment, defined as conducting an information search, compiling important information, consulting with others, performing analyses, and developing reasonable estimates of future recreation demand for the key recreation opportunities in question. The output of recreation demand assessment is demand estimates. These demand estimates may be used to make routine administrative decisions or serve as inputs to the inventory stage of a planning process along with the demand estimates for other relevant goods and services. Figure 6 depicts the five steps of recreation demand assessment and their linkages to the various steps of a public planning process. The five steps of the recreation demand assessment are discussed below.

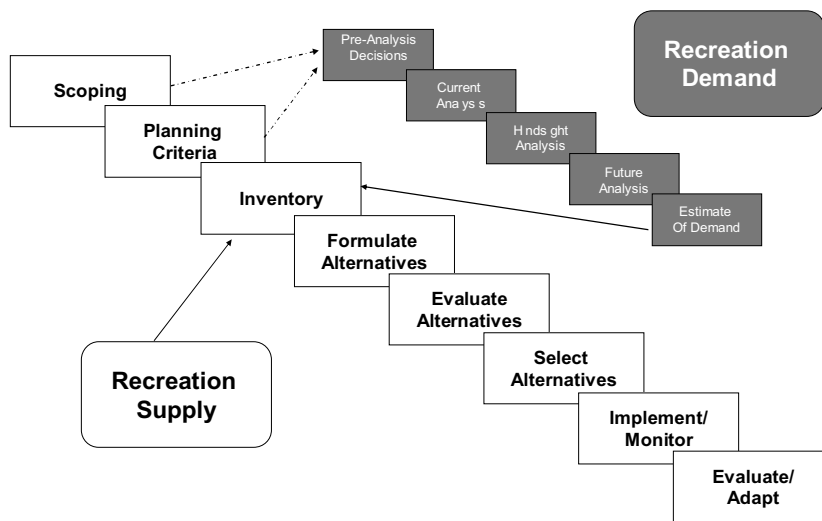


Figure 6.—Linkage of demand assessment to a general planning process.

As previously stated, this Demand Guide is a question-based tool to help ensure that the practitioners challenge themselves to assemble and analyze all available information. It provides a structured-thinking process and a means to be mentally organized. It also provides examples of how to display and record important information so that it is (1) effectively considered in the decisionmaking, (2) retrievable and useful for future planning and visitor monitoring efforts, and (3) included in the administrative record as judicial evidence that the decision was reasonable, logical, reasoned, and trackable.

**Estimating Future Recreation Demand:
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Each of the five steps of demand assessment includes a series of questions. These questions, listed in this Demand Guide, are intended to serve as prompts or suggestions and are not absolute requirements for estimating demand. Practitioners should tailor and refine these questions to ensure relevance to the situation, as well as to add questions deemed important.

In addressing the questions, there are two very important items to remember:

- First, it is important to realize that not all the questions can be answered and that the level of certainty in answering the questions will range from zero to 100 percent. The practitioner’s responsibility is to consider the best available information to make a reasonable decision.

- Second, it is not appropriate to eliminate a question simply because a practitioner does not know the answer. This action can invite allegations of being arbitrary and capricious. It is better, both legally and managerially, to disclose all important questions and be transparent in reporting when insufficient information is available. Furthermore, the demand assessment is not a one time isolated event, but part of a learning process that is on-going. Identification of questions with insufficient information to answer can be helpful to justify and design a visitor monitoring program.

Sample Recreation Demand Table Follow

Current Year: 2005		Future Target Year: 2015		
Desired sliding sale of analysis: Level 2		Market Area: within 100 miles		
Planning Area: Armistead Regional Park				
Analysis	Overall level of importance	Overall Level of confidence	Overall level of adequacy	Comments
Hindsight	Moderate	Moderate	High	Provides good insights
Current situation	Moderate	Low	Low	Need to improve visitor monitoring effort
Future	High	Moderate	Moderate	Changing energy prices and ethnicity in the market area are the big unknowns
Is the available information adequate to estimate the recreation demand for 2015?	Notations: Yes, given the intended level 2 analyses and that both the county and regional tourism council will be conducting public surveys in 2007 in which additional data will not be collected. Furthermore, the State office has allocated additional monies for 2007 so Armistead can get a more accurate and more detailed count of the current visitation to Armistead for all key opportunities.			

**Estimating Future Recreation Demand:
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Table 8.—A sample summary table for a recreation demand assessment

Key activities	Recreation setting	Estimated percentage change in annual participation in 2015 from 2005		Level of confidence	Special Notations for the Administrative Record: Data from NSRE, 2005 State SCORP, 2002 County Open Space master plan, and 1999 KOA marketing plan were very helpful in these estimates
		Low-end (%)	High-end (%)		
Picnicking	Suburban	20%	25%	High	Increasing population growth, increasing development, and growing Hispanic population
	Rural Developed	10%	15%	Moderate	Recent facility improvements, lighting, and improved concession operations and security
Horseback riding	Rural natural	5%	8%	Low	Growing number of ranchettes in region, creation of backcountry horse group, improving trails, three new horse trailheads
Camping	Rural natural	25%	30%	Moderate	Aging population, more motorized recreation tourists from upstate, increased percent of full hookups
	Semi Primitive	3%	8%	Moderate	Aging population, semi-primitive campers declining and changing to recreation opportunities with more comforts
Backpacking	Primitive	-2%	+2%	High	Local area becoming more of a day-use attraction, area receiving heavy use, backpackers being displaced

**Estimating Future Recreation Demand:
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Table 9.—A sample template for displaying the projected visitation of a recreation demand assessment

Title: The estimated range of projected annual visitors for the year 2015 (projected in 2005)				
Key activities	Recreation settings	Low range estimate of visitation	High range estimate of visitation	Level of confidence
Picnicking	Suburban	14,000	18,000	High
	Rural developed	10,000	12,000	Low
	Rural natural	4,000	6,000	Low
Motorboating	Rural developed	25,000	35,000	Moderate
Fishing	Rural developed	20,000	25,000	Moderate
	Rural natural	25,000	30,000	High
	Semi primitive	15,000	18,000	High
Backpacking	Semi primitive	2,000	4,000	Moderate
	Primitive	8,000	10,000	Low

Notes:

END OF Excerpt -----

Appendix G

Visitor Capacity

Visitor Capacity on Public Lands and Waters: Making Better Decisions

Excerpted from: Haas, G. E. **Visitor Capacity on Public Lands and Waters: Making Better Decisions.** A report of the Federal Interagency Task Force on Visitor Capacity on Public Lands for the Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of the Interior. Published by the National Recreation and Park Association, Ashburn, Virginia, October, 2002. www.nrpa.org

2. Task Force Perspectives: An Evolving Tool

Management concepts and tools evolve over time with new science, information, and experience. Recent examples of evolving tools include ecosystem management, collaborative planning, and adaptive management. Similarly, the concept of visitor capacity has and will continue to evolve. Section Two describes how the Task Force views visitor capacity and provides an important foundation for those new to the concept or unfamiliar with public land planning.

Task Force Perspectives

Definition of a Visitor Capacity. Visitor capacity is defined as the supply, or prescribed number, of appropriate visitor opportunities that will be accommodated in an area.

The Task Force adopted the phrase visitor capacity because of its clarity, its brevity, and the public's familiarity with the concept in everyday life (e.g., restaurants, golf courses, special events, hotels, airlines).

The terms in the definition were chosen carefully. *Supply* means the quantity or amount available; *prescribed* means a decision by a person of authority; *number* means a specific number or numeric range; *appropriate* means in accordance with management direction; *visitor opportunity* refers to the integrated package of activities, settings, experiences, and benefits; *accommodate* recognizes that there are conditions and considerations that influence a decision and implies that the use of public resources is a privilege and has responsibilities; and *area* is an inclusive term that can refer to a facility, program, recreation system, or any geographic scale such as a site, unit, or region.

Purposes of a Visitor Capacity. A capacity is a concept and tool with widespread application and purpose in our everyday lives restaurants, airports, golf courses, concerts, classrooms, low-income housing, hotel occupancy, lobster harvests, annual timber cuts, ozone alerts, air-travel operations, water storage, mortgage loans, insurance

policies, power grids, military response, landfills, welfare benefits, prison facilities, urban housing density, emergency medical response, sport hunting, sport fishing, museums, amusement parks, group tours, and countless other manifestations.

Excerpt Figure 1
Definition of a Visitor Capacity

The supply, or prescribed number, of visitor opportunities that will be accommodated in an area.

The overarching function of a visitor capacity is to serve as one tool to help sustain natural and cultural resources, as well as the recreation opportunities and other benefits these resources afford the public. More specifically, the Task Force recognizes nine purposes of a visitor capacity (see Figure 2).

Excerpt Figure 2. Multiple Purpose of a Visitor Capacity

Supply measurement: a numeric capacity is a measurement of the supply of available recreation opportunities that will be accommodated in an area.

Trigger for actions and resources: a capacity is a trigger point (i.e., a number or numeric range), whereby as current use approaches or exceeds the available supply, predetermined management responses can be activated or resources allocated. A numeric capacity is, in effect, a trigger or signal to justify and activate a suite of management responses. In some instances, use exceeding capacity may justify the expansion of the supply of appropriate recreation opportunities, and in other instances, it may justify the alteration or limitation of use or demand.

Public and resource risk management: a numeric capacity is a reasonable and responsible risk management tool for situations where nature or human activity creates a high-risk environment for the public, or where human behavior might put the natural or cultural resources at risk.

Private sector and community predictability: a numeric capacity provides clarity for business people to act and plan accordingly. By comparing current demand with available supply, private sector permittees and communities can anticipate their growth trend and potential, plan appropriate investment opportunities or divestiture steps, or take collaborative actions with land managers to mitigate negative consequences of demand approaching or exceeding capacity.

Visitor trip planning: a numeric capacity, particularly when compared to real-time use levels, can be very helpful information to a discerning recreationist. For example, visitors might find it useful to be informed that a beach, backcountry lake area, or battlefield is at 30%, 90%, or 120% of visitor capacity. This information may result in a “voluntary redistribution” of people across place or time while still allowing freedom of choice, and help the quality of the experience.

Administrative and historic record: complex decisions need to have supporting documentation detailing how and why decisions were made, and the process that was used. This record becomes the historic anchor from which to learn by experience and to compare yesterday with today's new

information, data, and circumstances. It also is vital in responding to judicial inquiries for demonstrable evidence of the sound professional judgment.

Regional recreation planning: numeric capacities are fundamental for regional recreation planning, recreation demand and supply analysis, multi-jurisdictional allocation decisions, coordinated visitor trip planning information systems, identification of recreation facility needs and investment opportunities, and identification of alternate or substitute opportunities reasonably nearby when access is limited at a particular site.

Allocation decisions: a numeric capacity is the supply of available recreation opportunities and is fundamental for making allocation decisions involving where, when, or how many of a particular recreation opportunity can be accommodated (e.g., outfitter and guide permittees, birders, concessionaires, mountain bikes, personal water craft, youth groups). Similarly, a numeric capacity metric is fundamental for making multiple use allocations decisions (e.g., timber harvesting, research closures, reservoir drawdown).

Limiting public use: a numeric capacity can serve as the measurement of allowable use or access that is permissible for a certain time or place.

Types of Capacity Expression. A capacity is the number or numeric range related to the relevant social unit(s) detailed in the management objectives (or desired future conditions) for an area. In some cases a specific number may be appropriate, while in others a range may be more desirable. There are situations where multiple capacities will be decided for an area, or where capacities will vary by the time of year. Examples of capacity expressions include:

- 35 designated backcountry campsites
- 15 permitted wildlife viewers per morning
- 200 camping groups per night
- 10 large groups of horseback riders per summer season
- 15-18 people per interpretive program or walk
- 2,500 permitted use-days per season
- 1 educational permittee per summer season, 3 per winter season
- 2 research permits per year
- 75 boats at one time of less than 25 hp on reservoir X
- 16 motorized OHV groups per day
- 5 PWCs at one time beyond 250 yards of shoreline
- 20 snowmobiles per 45-minute intervals; 240 per weekday
- 15 persons per timed entry to historic home, museum, or cave
- 50 roaded-natural and 15 semi-primitive campsites in unit X
- 80-100 raft launches per weekday; 150-170 per weekend
- 550 boat slips

- 50 shoreline campsites when water level is below 2,550 elevation
- 25 ice fishing groups at one time, 4 holes per party
- 30-40 vehicles at one time at the trailhead
- 200-250 persons at one time on the summit

In any case, the numeric capacity represents supply of appropriate visitor opportunities that will be accommodated in an area beyond which important resources, recreational opportunities, or other important values may be at risk.

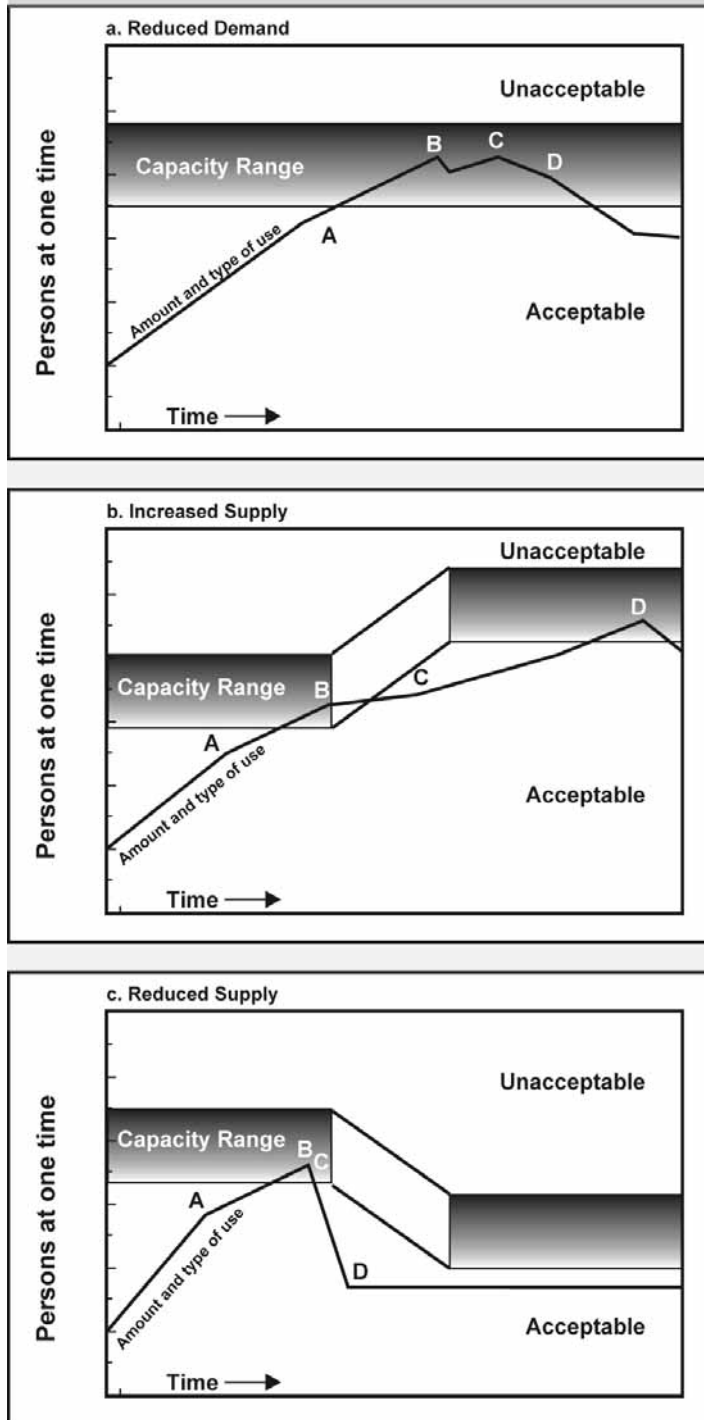
Triggering a Change in Supply or Demand.

A capacity can trigger a change in either the demand for, or supply of, visitor opportunities. During a planning process in which a visitor capacity is established, it would also be helpful to establish one or more trigger points that serve as agreed upon visitation levels for activating a management review. That is, as visitor use (demand) increases towards or is within the capacity range, it would activate a pre-determined trigger(s) to signal consideration of alternative management responses.

Figure 3 graphically depicts how a capacity can trigger a change in the supply or demand in visitor opportunities. Figure 3a depicts a desire to decrease the amount of visitor reducing visitor demand of an area). Figure 3b depicts a desire to increase the amount of visitor opportunity (i.e., increasing the supply or capacity of an area) through one or more management actions, while Figure 3c depicts the desire to reduce the supply of visitor opportunity (i.e., reducing the supply or capacity of an area).

There are many management actions, and combinations of actions, that can affect the demand or supply of visitor opportunities in an area. Examples would include a change in the design, location, or type of facilities and infrastructure; site hardening; facility or site rehabilitation and restoration; a change in management presence or regulations; an increase in visitor interpretation or stewardship programs such as Leave No Trace, Tread Lightly, and OHV Safety Rider; an increase in interagency marketing efforts to provide better information about the available recreational opportunities in the region; a reallocation or tradeoff of visitor opportunities on nearby lands to mitigate for the change of opportunities on other lands; an alternative transportation system; an inducement for visitors to distribute themselves willingly across time or place of visit; a reservation system; a differential fee program; a real-time intelligent visitation system conveying the current use/capacity level ratio (e.g., 20%, 80%, 120% of capacity); designating location or time of visit (e.g., assigned campsite, climbing route, boat launch time, limited hunting unit, Tuesday mountain biking and Thursday horseback riding); and time or area closures.

Excerpt Figure 3. Capacity Can Trigger



The Task Force wishes to highlight two important cautions. First, public land managers manage an area to provide a particular type of opportunity to the public. Each recreation opportunity is an integrated package of activities, settings, experiences, and benefits (see Figure 4). Thus, to change the setting might also change the type of experience being provided the public. For example, changing the infrastructure and low-site density of a primitive campground to one with paved roads, flush toilets, and high-site density would change the type of recreation experience. Any change in supply or demand must therefore be consistent with the agency's mandate, mission, policy, and management objectives for the area in question. Second, the Task Force embraces adaptive management and recognizes that visitor capacities will change with new science, professional experience, monitoring information, technology, trends, opportunities, and circumstances. Adaptive management embraces the concept that the quality of sound professional judgment is enhanced over time with clear and specific decisions, followed by adequate

monitoring, learning, and adaption. However, any changes must not be arbitrary. A reasonable rule of thumb is that a change in capacity requires a level of information, science, analysis, certainty, and deliberateness that is greater than what was used to make the previous capacity decision.

Excerpt Figure 4. Components of a Recreation Opportunity			
Recreation Activity	+ Setting	= Experience	→ Benefits
<ul style="list-style-type: none"> • Many activities <p>-- agencies provide --</p>	<ul style="list-style-type: none"> • Physical resource • Attributes managerial attributes • Social attributes 	<ul style="list-style-type: none"> • Many dimensions • Multiple senses <p>-- recreationists consume --</p>	<ul style="list-style-type: none"> • Individual • Community • Economic • Environmental <p>-- society gains --</p>

Conserving Resources and Recreation Opportunities. The overarching function of a visitor capacity is to help conserve resources, as well as the opportunities and values they afford. For some, the goal of sustaining recreation opportunities is not viewed as being compatible with the goal of sustaining resources. However, the Task Force sees the relationship as synergistic.

Public land managers provide recreation opportunities to the public. A recreation opportunity can be defined as the opportunity for a person to participate in a particular activity in a specific setting, in order to realize a preferred type of experience and subsequent benefits. Figure 4 depicts that a recreation opportunity is an integrated package of activities, settings, experiences, and benefits.

The setting is further composed of three components: physical resource attributes, social attributes, and management attributes. Managerial attributes affecting an experience might include recreation facilities, roads, power lines, interpretive programs, signage, fees, rules, regulations, patrol, cleanliness, closures, reservation systems, concessions, and O&M activities. Social attributes affecting an experience might include other visitors (recreation and non-recreation) to an area, their behaviors, equipment, group size, sounds, and artifacts of previous visitors. Natural resource attributes affecting an experience might include the type and variety of wildlife, fish, topography, vegetation, water, air, sounds, soils, canyons, coral, cave formations, and colors.

The intersection of natural resources with a recreation opportunity is conveyed in the physical resource attributes. That is, a particular recreation opportunity is dependent upon a variety of physical resource attributes important to that experience. Impairment

of important resources (natural or cultural) is also impairment of recreation opportunities. Conversely, the provision of recreation opportunities contributes to a citizenry that is more knowledgeable, caring, and supportive of resource management and protection. In a society where the public is sovereign, impairment of public support is a tantamount to impairment of natural and cultural resources. Stated otherwise, conserving resources depends upon conserving appropriate recreation opportunities. There are three important considerations in a successful synergistic relationship.

Appropriate Use. Public land managers should favor those recreation opportunities that are dependent upon the important natural or cultural resource attributes for which the area has been designated or is being managed to protect. Other recreation opportunities may not be appropriate and should be given less priority, if provided for at all. For example, the Fish and Wildlife Service has a mandate to focus on six “wildlife-dependent” recreation opportunities for its refuges, beyond which other opportunities are reviewed for appropriateness and compatibility. The Task Force provides an “appropriate use” decision-making protocol later in this report.

Clarity. Public land managers need to develop management objectives, desired future conditions, and standards that are unambiguous and measurable. Qualitative expressions are necessary and helpful to provide contextual understanding, but the precision and clarity offered by quantitative or numeric expressions are also needed. A successful relationship between resources and recreation requires clear operational definitions of such terms as sustainable, impairment, adverse, significant, substantially unnoticeable, unacceptable change, appropriate use, recreation experience, and visitor satisfaction.

Learning and Adaptation. The scientific relationship between resources and recreation is not well understood. In fact, the multiplicity of factors and interactions may be beyond scientific determination and even human comprehension. This possibility adds importance to the process of monitoring, learning, and adapting. Public land managers must prepare to learn and adapt to new knowledge, information, and circumstances. Learning over time requires the ability to look backwards and to understand the details of yesterday in comparison to today. Thus, it is important to maintain an administrative and historic record of unambiguous and measurable management objectives, desired future conditions, standards, and capacity.

The Substantive Standard for Visitor Capacity Decision Making

Sound professional judgment is the substantive standard for decision making by responsible public officials.

Inputs to a Capacity Decision. Sound professional judgment relies on many informational inputs. Those particularly relevant to a visitor capacity decision might include:

- management objectives (including all legislative and policy guidance);
- desired future conditions and quality standards (resource, social, management);
- current and future recreation demand (who, where, what, when, how, why);
- current resources, conditions, uniqueness, capability, and trends;
- current management capability and suitability;
- current type, amount, and design of facilities and infrastructure;
- appropriateness (compatibility) of current or proposed recreation opportunities;
- regional supply of the same and similar recreational opportunities;
- foreseeable changes in recreation and nonrecreational uses;
- existing allocations to permittees and other land uses/users;
- significance of the visitation issues and concerns;
- potential for natural or cultural resource impairment;
- type and amount of best available science and information;
- level of uncertainty and risk surrounding consequences of decision; and the expected quality of the monitoring program.

Excerpt Figure 5. Sound Personal Judgment

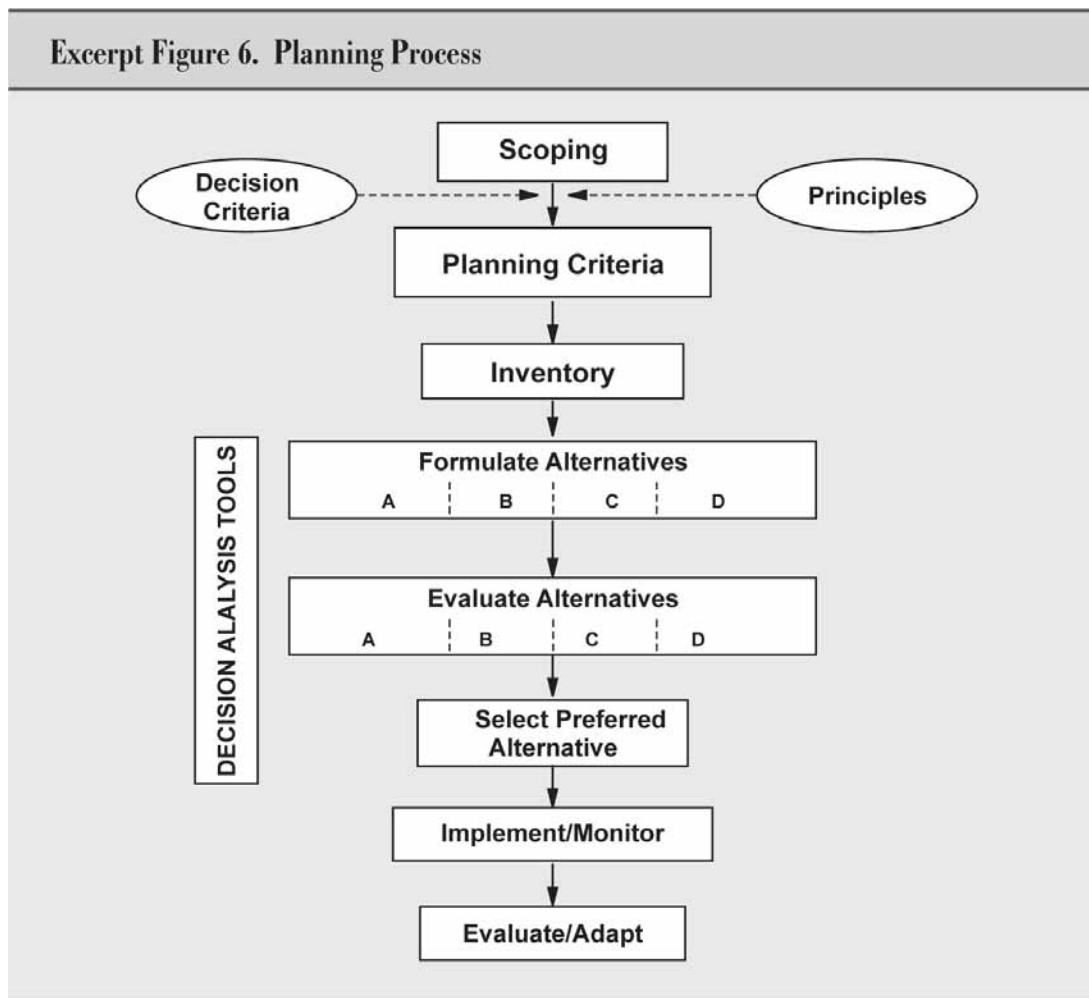
A reasonable decision that has given full and fair consideration to all the appropriate information, that is based upon principled and reasoned analysis and the best available science and expertise, and that complies with applicable laws.

Notes of Clarification: The literature contains reference to many “carrying capacities” such as biological, physical, design, social, recreational, facility, transportation, infrastructure, program, and public safety. The Task Force views visitor capacity as an omnibus metric that gives due consideration to all these factors and others in the decision process listed above. The degree of influence of each factor will vary across situations. For example, in one situation the biological considerations might weigh heavily, while in another they might not be relevant. In another situation, it might be the accumulative effects of the social, transportation, and biological considerations that significantly influences the visitor capacity decision.

The Procedural Standard for Visitor Capacity Decision Making

While sound professional judgment is the substantive standard for capacity decision making, a rational public planning process is the procedural standard for capacity decision making. In addition to the procedural planning guidance provided by the National Environmental Policy Act (NEPA), each agency has tailored the NEPA guidance to their own agency's needs and perspectives to create similar but unique planning processes, terminology, sequencing, and other varying features.

The Task Force does not propose a new planning process, but rather views a capacity decision as simply one decision among many that is made as part of an existing agency's planning process. Thus, rather than including the planning model for each federal agency, a generic planning model (Figure 6) is presented to illustrate the link between the Task Force outputs shaded in white and a public planning process. A narrative description on the following page further clarifies this link.



Generic Public Land Agency Planning Process. The purpose of this generic planning process is to generally show where the products (bolded) of this Task Force fit within a public planning process, and to illustrate where numeric capacities are part of each alternative for due consideration in assessing consequences and selecting a preferred alternative.

Scoping

- identify significant public issues, management concerns, problems, and opportunities
- identify stakeholders and a plan of collaboration
- assess the quality and quantity of scientific data and monitoring information

Planning Criteria

- laws, regulations, agency mission, and policies
- principles (e.g., biodiversity, ecosystem management, visitor capacity, social justice)
- planning horizon, resources, process, and scale
- decision criteria to assess consequences of alternatives
- identification of units that have had similar experiences for consultation (comparables or analogs)
- inventory of the affected planning area
- resources, types, locations, conditions, uniqueness, and ecosystem function
- social use and users, locations, type and quality of experience, regional demand/supply, and trends
- management infrastructure, services, programs, personnel, budget, partners, and expected changes
- recreation opportunities provided by other agencies/private sector within the “visitation” region

Formulate a reasonable range of alternatives, with each containing

- management prescriptions with narrative description and objectives
- desired future conditions and standards for important resource, social, and managerial attributes
- application of prescription(s) to all or part of planning area (zoning)
- selected management tools and actions, budget requirements, and expected level of monitoring
- numeric capacity range(s) and allocations (if and where appropriate)
- decision analysis tools that can help create a reasonable range of alternatives

Evaluate alternatives (see figure 7)

- application of decision criteria to assess consequences
- application of decision analysis tools
- best available science and sliding scale of analysis
- consideration of trade-offs and mitigation actions

Select preferred alternative

- principles and decision criteria
- sound professional judgment

Excerpt Figure 7. Evaluate Alternatives

	A	B	C	D
<ul style="list-style-type: none">• Management Objectives• Desired Conditions• Indicators and Standards• Management Actions• Zones• Capacities• Allocations• Budget Requirement• Other Descriptors				

Implement and monitor

- implement planned management activities/programs
- monitor actual visitation (number and type)
- monitor natural and human-induced change to the natural and cultural resources
- monitor resource, social, and managerial indicators

Evaluate and adapt

- systematically evaluate monitoring data and new information, science, and circumstances
- application of appropriate decision criteria and decision tools to proposed changes
- sound professional judgment

3. Principles and Decision Criteria

This section addresses the first output of the Task Force: principles and decision criteria for visitor capacity decision making.

Principles for Visitor Capacity Decision Making

The Administrative Procedure Act (1946: 60 Stat. 237, 5 U.S.C.A.) set forth the legal standard that decisions must be principled and reasoned; that is, arbitrary decisions are in violation of federal law. Professional principles help meet this responsibility by clarifying institutional values, philosophy, and perspectives. They serve as a guide and rule of thumb for making decisions and taking action, and, very importantly, they help stakeholders understand and meaningfully participate in a planning process.

Below are principles that reflect important and central values for visitor capacity decision making. Full and deliberate consideration of these principles will contribute to a logical, reasoned, transparent, and defensible decision.

- Management direction principally defines the visitor capacity, regardless of whether the management direction or visitor capacity is explicitly stated or not stated at all.
- A visitor capacity helps to sustain the integrity of natural and cultural resources, as well as the important recreational and nonrecreational benefits they afford to local, regional, and national publics.
- A visitor capacity is a complex decision that is based upon sound professional judgment; i.e., defined as a decision that has given full and fair consideration to all appropriate information, that is based upon principled and reasoned analysis and the best available science and expertise, and that complies with applicable laws.
- A visitor capacity decision is made by a responsible official as part of a public planning process; and in some instances, may benefit from the thoroughness and legal sufficiency afforded by a NEPA-compliant planning process.
- A visitor capacity quantifies the supply of available visitor opportunities that an area can accommodate, and may also address the allocation of opportunities across the variety of affected visitors types of recreationists, commercial operators, educational programs, scientists, and others.
- A visitor capacity decision considers the larger regional landscape and system of opportunities affecting the particular area of recreation concern.

- A visitor capacity provides clarity for focused dialogue and an analysis of consequences across the proposed management alternatives under consideration in a planning process.
- A visitor capacity decision uses a sliding-scale rule, in which the level of analysis is commensurate with the potential consequence of the decision.
- A visitor capacity serves as a trigger or signal for managers, permittees, the general public, and all stakeholders.
- Visitor use approaching a capacity triggers a consideration of a full range of reasonable management responses.
- A visitor capacity decision needs to be adaptive to new science, information, uses, technology, trends, conditions, and other circumstances of importance.
- The effectiveness of a visitor capacity depends on an adequate program of monitoring that is commensurate with the level of potential consequences, risk, and uncertainty.

Decision Criteria for Visitor Capacity Decision Making

Arbitrary decisions are those made without principle and reason. In natural resource planning nomenclature and in this report, reasons for decisions are referred to as decision criteria.

Making Complex Decisions Less Complex. A capacity decision is a complex decision. The field of decision science provides many insights into making decisions. For example, one reason why decisions are complex is because while one person approaches a situation from one perspective and set of concerns, another person approaches the same situation from another perspective and set of concerns. Individuals will also view a situation differently because each carries their own “suitcase” of biases, prejudices, perceptions, stereotypes, backgrounds, knowledge, past experiences, and other mental artifacts.

Another reason why decisions are complex is because humans have a limited mental capacity and memory to consider the multiple factors that are important. This limitation works against a full and comprehensive analysis. Thus, an explicit list of decision criteria can serve several important functions in rational public planning. First, an explicit list of decision criteria, developed early in the planning process with public input, helps to make a decision process transparent and trackable to stakeholders. These criteria help to establish the *ground rules*, the *rationale* in a rational process, and *the pieces of the puzzle* to be considered in the decision. Second, decision criteria can help in creatively developing a full set of reasonable alternatives.

In the formulation of the alternatives, the decision criteria will identify important content areas to be included in the description of the alternatives. Third, an explicit list of decision criteria helps assure a full, fair, adequate, and deliberate evaluation and assessment of the consequences of each alternative. Fourth, decision criteria can improve communications and increase meaningful public participation, understanding, and support. Fifth, an explicit list of criteria is important when more advanced decision analysis is desired such as weighting, ranking, or mathematical computations. Sixth, an explicit list is demonstrable evidence for the administrative record. And finally, criteria are important for adaptive management because they help us understand and learn from past decisions and experiences.

Choosing Decision Criteria. A decision maker has a responsibility to use sound judgment, which is defined as “full and fair consideration” of the important issues and concerns expressed by managers and stakeholders. The number and selection of criteria used to evaluate and assess the consequences of each alternative need to fully reflect and duly consider the circumstances at hand, as well as being commensurate with the potential consequences of the decision to be made. A reasonable rule of thumb is that as the magnitude of the potential consequences of the decision increase, the number of criteria needed to adequately assess the situation also increases.

Sample Decision Criteria. As previously discussed in the planning section, a visitor capacity is one feature among many that can define and discriminate proposed alternatives. The following list illustrates a wide variety of decision criteria that can be used to evaluate alternatives. It is not intended to suggest that every criteria be used for each planning effort, nor is it intended to suggest that a special set of criteria is needed for a capacity decision.

Excerpt Figure 8. Sample Decision Criteria
<p data-bbox="245 1268 1317 1304">Effects Ecological Integrity. The degree to which each alternative:</p> <ul data-bbox="305 1331 1317 1535" style="list-style-type: none"> • affects unique or sensitive resources locally, regionally, or nationally • affects the ecological integrity of site, local vicinity, or bio-region • impacts the desired future conditions or quality standards (i.e., extent of physical/audio footprint, duration, timing, reversibility, cumulative effects) • affects the important or priority resources or values the area is being managed to protect • helps build or connect a larger regional system of resources • has irreversible effects on resources, or effects that cannot be restored or recovered <p data-bbox="245 1562 1317 1598">Supported by Science. The degree to which each alternative:</p> <ul data-bbox="305 1619 1317 1850" style="list-style-type: none"> • is supported by scientific study and expert consensus • is supported by agency professionals, advisors, and consultants • has a level of analysis that is commensurate with potential consequences • is based upon reasonable assumptions and trends • may involve highly uncertain risks or consequences • is based on unavailable or incomplete scientific information • will secure needed scientific information in the future • has an adequate monitoring program involving resource, social, and managerial attributes

Level of Public Support. The degree to which each alternative:

- is controversial among visitors, locals, regional and national publics
- is supported by visitors, locales, regional and national publics
- contributes to the desired welfare of stakeholders (e.g., local communities, the tourism industry, adjacent landowners, educational/research institutions, private operators, concessionaires, and special interest groups)
- builds meaningful and appropriate partnerships with collaborators
- causes harm or an unfair negative consequences to less advantaged people
- allows for options and opportunities for future generations

Effects Integrity of Recreation Experience. The degree to which each alternative:

- affects the integrity of the recreation experience that the area is being managed for
- is appropriate and consistent with the management objectives for the area
- may compromise desired future conditions or quality standards (i.e., extent of physical/audio footprint, duration, timing, reversibility, cumulative effects)
- affects unique or rare recreation opportunities locally, regionally, or nationally
- provides for unique or rare recreation opportunities locally, regionally or nationally
- contributes to a large regional system of recreation opportunities
- is based upon reasonable future social trends and assumptions
- makes recreation opportunities more available to less advantaged publics
- attracts visitors who otherwise would not visit
- considers the latent or unmet demand of those publics not visiting
- provides an appropriate recreation experience by the least intrusive means
- allows for personal choice, freedom, and spontaneity among visiting publics

Management Suitability and Capability. The degree to which each alternative:

- affects the commemorative integrity or legislated purpose of the area
- affects public health and safety or contributes to public risks
- addresses consequences of delaying or not taking action
- can be changed or adapted, given new science, information, or circumstances
- complements other important resource uses, users, or values (e.g., educational, commercial, research, extractive, restoration)
- establishes a precedent for future action
- represents a future decision or commitment in principle
- has cumulative effects that are likely to be significant
- requires reallocated or increased resources in services, personnel, facilities, programs, or equipment
- is administratively feasible (e.g., budget, personnel, equipment, facilities, O&M standards)
- affects other management programs and services
- has consequences that can be mitigated (i.e., avoid, minimize or limit extent, compensate, restore, rehabilitate, reduce, or eliminate)

End of Excerpt



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