CRITERIA FOR EVALUATING THE QUALITY OF WATER BASED RECREATION FACILITIES

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"The work upon which this report is based was supported in part by funds provided by the United States Department of the Interior, Office of Water Resources Research as authorized under the Water Resources Act of 1964."

Office of Water Resources Research Number - A-001-NC
Agreement Number - 14-01-0001-978 FY 1967
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In the opening paragraph of the Outdoor Recreation Resources Review Commission (ORRRC) Study Report Number 5, "The Quality of Outdoor Recreation: as Evidenced by User Satisfaction," Reid and Barlowe stated that their report dealt with a highly complicated aspect of outdoor recreation --the evaluation of recreational quality. The writer, too, shares this view as he concludes his efforts in developing criteria for evaluating quality of water based recreation facilities. There is another reason for calling attention to ORRRC studies in the opening paragraph of this report. It is doubtful that the reader can fully comprehend the role of water based recreation in our society without being well acquainted with "Outdoor Recreation for America," main report of ORRRC, and ORRRC Study Reports Number 4, "Shoreline Recreation Resources of the United States;" Number 5 (above); Number 10, "Water for Recreation--Values and Opportunities;" and Number 17, "Multiple Use of Land and Water Areas." The administrator and the planning team concerned with water based recreation should constantly review these references.

The objectives of this study were:

To establish criteria to aid in determining the quality of water based recreation facilities.

To develop standards for evaluating water based recreation facilities.

To develop standards for the development and operation of water based recreation facilities.

It was decided early in the study to limit the project to day use facilities with emphasis on site selection, design, and construction, and management of swimming, picnicking, and boating facilities.

The procedures for the project were:

To determine existing practices relative to current standards and to determine acceptable practices as performed by practitioners of...
good professional reputation. Once the standards had been established by testing in the field, they were to be refined for practical purposes.

Many resource agencies and organizations, and certain administrators concerned with water oriented recreation research, development, and management were contacted. Most of this was accomplished by personal conferences. However, information and opinions were gathered by correspondence from many local, state, and federal agencies.

A tentative list of factors affecting quality of water based recreation facilities was developed. This list was constantly revised during field trips in fourteen states during the summers of 1965 and 1966. These factors were changed to criteria using question, interpretation, and subjective judgment rating methods. This process resulted in a mushrooming of words and pages. Roger Warren and the writer pretested the criteria in three geographic locations (three states). Naturally, this resulted in deletions, additions, and modifications. Verbal and written requests for the criteria gave some indication of the possible uses that could be made of them. In fact, such information helped to shape the criteria during the pretesting and final refinements.

To whom are the criteria geared, or what are some of their possible uses? They may serve as guidelines for:

1. The new and/or inexperienced park and recreation administrator (agency), private developer, park and recreation planner, landscape architect, engineer, or architect planning water based recreation facilities. During the next decade or two, there will be a tremendous expansion of such facilities. The demand for qualified technical personnel and trained managers already far exceeds the supply. There are many fine top quality water based facilities across the nation, but one does not have to travel far to observe poorly designed and poorly managed facilities and some of
them are relatively new.

2. Researchers and master's and doctoral candidates dealing with recreation demand, economics, and policy as they relate to water oriented recreation and water based facilities. Requests have come from researchers (economists) and doctoral candidates who are attempting to relate quality of facility to user experience as well as quality as an economic factor and user preference in a geographic area. The latter is highly complex, but will be welcomed information by administrators and planners in the years ahead.

3. Existing water based facilities could be rated by these criteria. Increased use, increased demands for new materials, improved methods of construction, and development of better management practices have caused many existing facilities to become outdated. The modern, progressive marina operator is probably successful only because he has taken time to travel, investigate, study, experiment, and stay abreast of trends.

The writer hastens to point out that the criteria contained herein are not complete and final. They hold no magic. Even at best they serve only as a guide or to call attention to a sampling of factors of major concern on this subject. There is no attempt to go into depth or technical aspects of the why or how of the many faceted subject. There are so many variations encountered in the field.

The criteria were developed primarily as standards for inland impoundments and natural water areas; however, little adaptation would be required for use on larger natural lakes, sounds, and ocean shores. The type of use to be made of the criteria will influence considerably the qualifications needed by the person(s) who directs their use. For example, subjective ratings will vary even between experienced park and recreation administrators. Persons attempting to use these criteria in their present
or modified form should team up with a practitioner(s).

Following the Introduction, this report is divided into: (1) Criteria for evaluating quality of vehicular access and parking, (2) criteria for evaluating quality of picnic areas, (3) criteria for evaluating quality of swimming areas, and (4) criteria for evaluating quality of boating areas. Some of the current research projects pertaining to the subject are listed in Appendix A. A summary of legislation enacted in the 89th Congress relating directly or indirectly to water recreation is contained in Appendix B. A pictorial supplement highlighting some of the field observations is in Appendix C. The Bibliography contains some of the references mentioned in the study along with other publications that will be quite valuable to the agency concerned with planning, development, and management of water based recreation facilities.

Grateful appreciation is expressed to the many who have responded to the writer's appeal in agency offices and in the field. Special appreciation is expressed to Thomas W. Morse, who served as a consultant. Mr. Morse was the first Superintendent of Parks, Division of State Parks, North Carolina Department of Conservation and Development. The present state park system in North Carolina was planned, developed and administered by him. He has been with the National Park Service for the past several years. At present (January 1967), he is Assistant Superintendent of Cape Hatteras National Seashore Recreation Area.

Special appreciation is also expressed to Roger Warren, of the Department of Recreation and Park Administration faculty, who also served as a consultant on the project. Mr. Warren had been associated with William and Kate B. Reynolds Memorial Park, "Tanglewood," (a 1,100 acre recreation complex - Clemmons, North Carolina) as Assistant General Manager for eight
years and General Manager for two years. He became a member of the faculty of North Carolina State University in September, 1966.

The writer was Assistant Superintendent of State Parks in North Carolina for several years before becoming associated with North Carolina State University in 1950.

--Charles C. Stott

January, 1967
The objectives of this study were:

To establish criteria to aid in determining the quality of water based recreation facilities.

To develop standards for evaluating water based recreation facilities.

To develop standards for the development and operation of water based recreation facilities.

The study is limited to establishing criteria for day use facilities - roads, parking areas, picnic areas, swimming areas and boating areas. The criteria for each of these facilities is further divided into site selection, design, and construction, and state of maintenance and appearance.

The many factors affecting quality were listed, and checked with practitioners of good professional reputation. These were refined many times and then changed to criteria in the form of questions, followed by interpretation. These were pretested, refined and tested again in the field. The rating scale is as follows:

Excellent = 4 points; Good = 3 points; Fair = 2 points;

Poor = 1 point; Unacceptable = 0. The rating is by subjective judgment.
DEFINITIONS

Criteria: Standards of judgment or criticism; established rules or principles for testing.

Evaluating: Appraising carefully; ascertaining the value or amount of.

Quality: Degree of excellence.

Water Based: Located or occurring on, or by water.

Recreation: Engaging in leisure activities voluntarily for personal satisfaction and not for profit.

Facilities: Structures and areas that make possible the easier performance of daily actions of a recreational nature. (Facility - a resource between people and natural resources.)

User: A visitor to a water based recreation facility.

Day Use: A day as a unit of time. (User returns home or elsewhere for lodging.)

Access Area: A place to launch boats and park cars with trailers attached.

Boating Site (Area): A site developed to provide facilities and services necessary for boating. Such an area usually includes, but not limited to, launching devices, parking areas, boat storage, marina sales and services, boat rental and sanitary facilities. The boating site, of course, includes a water area upon which boats may be operated. Fishing tackle, fishing supplies and food service are often provided.

Administrator: A person responsible for administering water based recreation facilities. This may include planning, development, operation and maintenance.

Practitioner: Same as administrator.

Park and Recreation Planner: A person who plans (Planner - for purposes in this report) water based facilities. The planners might be, but not limited to, engineers, landscape architects or architects.

Planning Team: Those that pool their knowledge and skills in order to arrive at an acceptable solution to a development plan (and implementation thereof) for a water based recreation facility. The administrator is in the pivotal role in the planning process. He coordinates the technicians, staff members and other resource people to achieve the agencies' objectives.
INTRODUCTION
INTRODUCTION

Water - A Key Element

The ORRRC Report, Outdoor Recreation for America, had these comments and recommendations under "Water - A Key Element."

"Water is a prime factor in most outdoor recreation activities. The Commission's National Recreation Survey (ORRRC Report Number 19) reports that 44 percent of the population prefer water based recreation activities over any others. Water also enhances recreation on land. Choice camping sites and picnic areas are usually those adjacent to or within sight of a lake or stream, and the touch of variety added by a pond or marsh enriches the pleasures of hiking or nature study.

Recreation on the water is increasing. This trend is likely to continue as more young people acquire an interest in water sports, new reservoirs are constructed, the boating industry wins new converts, and relatively new forms of water based recreation, such as skin diving and water skiing, become increasingly popular. In fact, Commission studies indicate that by the year 2000 swimming will be the most popular single outdoor recreation activity - exceeding even driving for pleasure, which now holds first place. The trend will be greatly accelerated if pollution control programs are successful in cleaning up streams, lakes, and seashore areas that are presently off limits for recreation, or are now so unattractive as to preclude many activities. (See Bar Graphs at end of Introduction.)

As the population grows and interest in water based recreation increases, the already heavy recreation pressures on water resources will reach critical proportions. The problems stemming from this pressure are among the most difficult in the entire outdoor recreation field.

As with land, the usefulness of water for outdoor recreation hinges on three factors: (1) proximity to population; (2) physical and legal accessibility; and (3) suitability for recreation purposes. There is a generally favorable relationship between most of the large concentrations of people in the United States and the physical location of recreation waters. Many of our great cities are within easy driving distance of the oceans or the Great Lakes, and nearly all of our larger inland cities are within easy driving distance of the oceans or the Great Lakes, and nearly all of our larger inland cities are on major rivers. The requirements of access and suitability are not so easily satisfied. Limitations upon public access and poor quality are serious problems in many places. Public policy at all levels of government should be directed toward eliminating these barriers to outdoor recreation.

Recommendation 13-1: Public agencies should direct particular attention to assuring that adequate opportunities for water based outdoor recreation are accessible to all Americans.

Actions to meet this general objective include:

Acquire access areas and water resources for public use.
Secure public rights to cross private lands.
Control development of lake and river shorelines.
Construct and maintain public roads and access facilities
to take full account of recreation needs and uses.
Review the status of public waters now closed to outdoor
recreation use to determine whether such restrictions
can be modified or removed.

Recommendation 13-2: Public agencies should promote and maintain the suit-
ability and attractiveness of water areas for outdoor recreation activity.

Actions to achieve this objective include:
In programs and projects for pollution control, recreation
should be recognized as a motivating purpose and as a
necessary objective in the allocation of funds therefor.
Soil erosion should be controlled to prevent siltation.
Flood plain zoning should be encouraged.
Public action is needed to resolve conflicts between recreation
and other uses of water, as well as among recreation activ-
ities themselves.
Certain rivers should be preserved in their free flowing condi-
tion and natural setting.

Recommendation 13-3: Recreation should be recognized as a beneficial use
of water.

Recommendation 13-4: Immediate action should be taken by federal, state,
and local governments to acquire additional beach and shoreline areas.

Recommendation 13-5: Outdoor recreation should be considered an important
purpose of federal multipurpose water resource developments, and thus
guaranteed full consideration in the planning, design, construction,
and operation of projects. Federal investments for recreation should
be approved when the recreation opportunities created are an integral
and harmonious element of a state or region recreation plan. Existing
developments should be reviewed under these criteria.

Recommendation 13-6: Reservoir planning should provide for acquisition of
adequate shoreline lands for public access and use.

Research--an Essential Foundation

The need for recreation research has been highlighted by two findings
which have been emphasized in this report. First, pressure on the nation's
natural resources will increase sharply over the next decades--both for
outdoor recreation and other requirements. Second, there is land avail-
able for outdoor recreation, but it is not being effectively used in many
cases. The nation's outdoor recreation demands will be met only through
wise decisions on resource allocation, sound planning, and effective
development of facilities. These all require the support of thorough
knowledge and extensive data--the product of research.

Recommendation 14-1: A systematic and continuing program of research is
needed to provide the basis for wise decisions and sound management."
The President's message to Congress, March 1, 1962, "Our Conservation Program," dealt with some of these recommendations and others in the ORRRC Report. This was a history-making event. The establishment of the Bureau of Outdoor Recreation, January, 1962, passage of the water Resources Research Act, 1964, and the Land and Water Conservation-Fund Act (effective January 1, 1965) are history.

The magnitude of the efforts (legislation, research, planning, and implementation) to improve man's total environment is simply staggering. Outdoor recreation and water development, including pollution control, have become significant issues in America. A review of the conservation measures enacted in Congress (Appendix B) that are related directly or indirectly to water oriented leisure reveals the need for this important action and indicates the broad public support manifested. Many outdoor recreation measures were enacted in the 88th and 89th Congresses that were indirectly concerned with, or affected, water recreation and were of regional and national significance. Several other important measures are pending.

This national effort is not too soon. The demand for water recreation is exceeding the expectations of the researchers. According to a statistical report of the boating industry furnished by the National Association of Engine and Boat Manufacturers and the Outboard Boating Club of America, there were 4,138,140 boats registered with the U. S. Coast Guard in 1966. Here are a few other statistics (1966):

40,370,000 persons participating in recreational boating, making use of the waterways more than once or twice during 1966 (estimate).

Estimated retail sales expenditures on boating increased from $90,500,000 in 1947 to $2,817,000,000 in 1966.

8,074,000 recreational boats (in 1904, there were 15,000; 1950, 3,510,000).

Although this project did not encompass the study of camping, fishing, and hunting, they certainly must be considered in the overall planning and management of water areas. Space demands for shore and water areas will become increasingly difficult to deal with. Demand for space for water oriented camping is continuing to increase and there is no end in sight. This subject is dealt with in depth in the references in the Bibliography. One cannot overlook the recreational value of water areas to the angler. According to 1965 National Survey of Fishing and Hunting (U. S. Bureau of Sport Fisheries and Water Resources Publication 27 - U. S. Government Printing Office) a mass of some 33 million habitual ("real" or "substantial") anglers and hunters - those folk twelve years or older who participated at least three times or who spent at least $5.00 - devoted 700 million recreational days, traveled 31 billion passenger miles, and spent $4 billion in the process of indulging their favorite outdoor pursuit during 1965. Fresh water supported 426,922,00 recreational fishing days by 23,962,000 anglers. There were 8,305,000 salt water anglers. These statistics appeared in the Sport Fishing Institute Bulletin No. 179, October 1966.
Crowding and conflicts in use will continue to be a problem. C. W. Threinen, of the Wisconsin Conservation Department, has done considerable study and research on space demands for water and shore. He suggests that 25 percent of the shoreline of every lake in public ownership with a large portion of this amount dedicated to fish, wildlife and aesthetic purposes. The National Park Service in its survey of the Great Lakes shoreline recommended reservation of 15 to 20 percent of the shore. Threinen points out that achievement of this goal calls for employment of zoning powers of the state, county, and local community and it requires an acquisition program by a public agency.

What is Area Quality?

Leslie M. Reid and Raleigh Barlowe in ORRRC Study Report No. 5, "Quality of Outdoor Recreation: As Evidenced by User Satisfaction," has this to say:

"The hypothesis is advanced that more is involved in a determination of site quality than a bare reporting of user opinions, preferences, and dislikes.

A more meaningful index of quality - and an objective measure as well - is the extent to which an area provides its intended amounts and kinds of recreation opportunities while being maintained in a long-term productive condition."

"Recreation areas differ tremendously in natural features, in function, and in usage. Because of this, area quality needs to be measured in terms that can be applied to a wide variety of situations. The most general terms in which the quality of an area can be discussed is whether it is capable of meeting specified human recreational needs and desires over an extended period of time. This is an application of the principle of sustained yield management.

A sustained yield management program is based on professional knowledge of the physical capabilities of the resource and a determination of the most needed or wanted uses of the resource within its physical capabilities.

The quality of an area can be stated in terms of the degree to which an agreed-upon sustained yield management program is adhered to. All areas require an individually designed program that takes into account (1) the physical capabilities of the area, (2) the amount and kind of recreation opportunities needed and desired by the affected population, and (3) limitations imposed by alternative opportunities for investment and development.

Physical deterioration of a recreation site can generally be traced back to inadequate agency consideration of one or more of these factors."
The natural resource itself is an element of quality. The word "aesthetic" has found a large and bright spot in the explosion taking place in outdoor recreation. Much has been written and spoken about this. Researchers are attempting to identify and place a value on natural aesthetics.

Schneberger and Threinen - "Land Management for Recreational Uses," 1964, has this to say about aesthetics:

"From what vantage point do the events of nature unfold with the greatest intensity? Over water of course. The esthetics associated with water are one of its greatest uses. No one is restricted from this element of enjoyment by age nor is anyone hampered significantly by economic means.

Aspects of aesthetics associated with water are so numerous it is difficult to mention them all. There is space, motion and setting. The ability to look out across the expanse of water rather than staring at a house or an apartment; the ability to watch waves, babbling brook or ripples dimpling the surface of calm waters; the ability to enjoy contrasts of sailboat and water surface, hill and flat surfaces; all of these are ingredients of this value. The soaring white gull is not nearly so striking over the rough landscape as it is over the flat water scape. The white water lily in summer or tawny bullrush stand in fall would not strike the viewer with the same gorgeous intensity without the blue and green back drop of the water surface. In reality, water and the esthetics values it offers contributes much to the recreational activity on water. It is hard to believe so many would choose to build cottages on the shores of a lake or river if it were not for these values.

These values are, however, not all secure; they can degenerate. Should the water take on foul odors from pollution or excessive algae blooms, the intrinsic enjoyable qualities can disappear. Also if water becomes scummy with algae or too thick with weed growth, its visual attraction will diminish. Many attractions on water are based on natural vegetation and animal life. Their habitat must therefore be protected."

Steven Hastings and George S. Tolley, at the Conference on Water Quality and Recreation in Ohio, June 1966, reported on research work being carried on at North Carolina State University in the general area of hard to measure benefits. One of their fields deal with the scenic value of a reservoir area. They pose the question, "How far will a person go out of their way just to see or pass by a more scenic area?" Another field deals with the quality of the recreation experienced with respect to the mix of individual recreation experiences available at a reservoir site. And, the third is estimating benefits with respect to the quality of crowding or intensity of use of reservoir sites. They mention four broad classifications of what they call Elements of Quality Package. (1) Quality of the water (water quality); (2) Quality of the physical surroundings; (3) Quality of the physical set-up; the mix of recreation facilities;
and the (4) Quality of crowding or intensity of use (the latter two men-
tioned above). This research, when completed, should make a significant
contribution to future planning.

User demand, site adequacy, area size and capacity is beyond the scope
of this study. It should be pointed out that it is imperative that pro-
fessional planners be on agency staffs or be retained to carry out feasi-
bility studies, to design areas and facilities. The total administrative
planning and management process should be concerned with the quality of
the environment, nearness to population, user alternatives, size and
carrying capacity of areas and quality services and management.

More effort is needed in placing park and recreation proposals in the
proper perspective. The Department of Parks and Recreation of the State
of California Resources Agency has conducted extensive park and recreation
studies. In their "Park and Recreation Information System (Paris), Planning
monograph No. 2, November 1966, they have this to say:

......"The time has passed when it can be assumed that recreation
proposals can stand on their own intrinsic merits. Such programs
and proposals must compete with the availability of funds with other
public programs such as education, mental health, water development,
highways and other programs. Programs which stand the best chance
of securing public support are those which are intimately related
to existing and future levels of demand. No meaningful recreation
plan can be developed or justified without this needed infor-
mation."

Rhodell E. Owens, Director-Secretary, Pleasure Driveway and Park District
of Peoria, Illinois had this to say in a paper presented at a University
of Iowa Conference on Community Development for Parks and Recreation, 1966:

......"Long range planning for its own sake is no virtue. Applying
obsolete standards without a full and complete understanding of all
the factors of your particular agency can result in an incomplete
and potentially dangerous plan. Effective planning must be designed
to accomplish specific goals for a specific agency. It must include,
not only the desirable facilities but a financial plan including how
they are to be operated and maintained."

......"Maintenance programs are at the mercy of planners unless we
insist that planners and designers consult with program and mainte-
nance personnel. Without this, the task of carrying on a sound pro-
grain and maintaining the facility often becomes impossible."

User opinions were not considered in this study. It is the concensus
of many progressive administrators that if the principles in the two or
three paragraphs above are ambitiously employed there would be greater
user satisfaction. Your attention is invited to ORRRC Study Report No. 5
for further information on user opinions.
Some Observations

There is considerable evidence of substandard developments (licensees and concessionaires) on public impoundments. Some of these are "shoe string" operations. For example, a concessionaire is permitted to provide a few wet slips, a few buoys (anchorage), and a floating dock. Further development by this concessionaire depends upon volume of business. Often-times these small operations slowly evolve into hodgepodge low quality marinas. Until recent years only a few public agencies provided capital improvements of this type. Therefore, for the public to have access and services it became necessary to permit concessionaire developments as described above. Although there are some very fine marinas, there are far too many substandard ones that blight our public shorelines. These old facilities need upgrading. Since many of these marinas are still rather marginal, improvement in quality will no doubt be slow.

There is need for more funds for personnel, planning, development and management. The picture at the top of Page 73 illustrates this point. This picture depicts a peninsula about 250 feet long and about the same width. Three roads have been bulldozed through this forested peninsula. It is quite obvious that one road would have been adequate. All three roads may not have been developed at the same time. However, the fact remains that the roads are there. Quality has been lowered due to excessive roads. Not only has the natural resource been damaged but quality of the user experience is lowered because of encroachment and dust.

The picture on Page 79 illustrates the need for planning, controls, and maintenance. A more pleasing appearance at the approach to this large marina would improve quality.

More rigid concessionaire and license agreements and higher standards of operation would help improve the quality of facilities and services. Operation and know-how is sorely needed. All of this is a complex problem.

Many managers and marina operators are so close to their scene of operation that they often fail to see their own management and maintenance needs. Only through training and experience can one develop an eye for maintenance, orderliness, and aesthetics. Management and maintenance practices were easily decernable during field observations. The major agencies concerned with much of the nation's public shoreline might consider offering, or co-sponsoring, more training institutes for reservoir and marina personnel. Financing such training is a problem. Trade associations and foundations might be a source for such assistance.

There is need for close cooperation of many agencies when planning impoundments. Such needs are too numerous to mention here. One example is cited to illustrate the point. Too frequently bridges over water areas have been constructed too low. Thus, restricting full potential and recreational water craft (see picture, bottom of Page 87). It is important that the Bureau of Public Roads, state and county road agencies be kept informed of the need for considerations of this type.
Many lakes and reservoirs cover large areas. Some have hundreds of miles of shoreline. Policing and control is a rather difficult job. Unsupervised access areas and oftentimes other water based recreation facilities are abused. Litter and vandalism have a profound effect upon quality. Administrators of water areas should try constantly to improve their own policing as well as strengthen their relationships and working agreements with their concessionaires, marina personnel, nearby law enforcement agencies and highway departments in an effort to reduce vandalism and litter.

Recent Developments

Inclusion of water recreation in planning of U. S. Army Corps of Engineers impoundments was not a major concern until recent years. Only limited funds were provided by Congress for this purpose prior to 1950. In 1960 standards for planning access to Corps of Engineers lakes consisted of 25-acre sites, one site every five miles along the major axis of the reservoir. Every fourth site could be 200 to 300 acres. In March, 1962 access sites on new projects were increased to 50 acres and every third or fourth site could be 500 acres or more and spaced as dictated by anticipated demand. This was changed in October, 1964 to 500 acres or more above the "take line" (minimum - 300 feet from shore) for project purposes. Since 1964 the Corps of Engineers classify proposed new impoundments according to project benefits or justification. Hydroelectric and flood control were the major concerns until 1964. The New Hope Reservoir in North Carolina has been assigned 85 percent to flood control and 15 percent to recreation. The Neuse Lake which will be near more densely populated areas (Raleigh - Durham) in North Carolina has been assigned 50 percent for recreation and 50 percent flood control. Recent changes makes it possible in a river basin containing several impoundments to develop one or more reservoirs solely for recreation purposes. Controls or regulations for private floating facilities at Corps' water resource development projects were greatly upgraded during 1966. Other directives in 1965-66 from Corps dealt forcefully with pollution control, beautification, overlook and vista clearing.

The Division of Health and Safety, Tennessee Valley Authority, Tennessee Stream Pollution Control Board and similar boards in Alabama, Kentucky and North Carolina initiated programs in 1966 to improve water quality in the Tennessee River Basin. The Tennessee Valley Authority quality objectives for surface waters are very comprehensive. The authorities proposed criteria which they consider optimum. They believe that the waters of all impoundments in the Tennessee River Basin physically suitable and available to the public for recreation should be of such quality as to be suitable for water contact recreation. Much progress has also been made in the Tennessee River Basin concerning pollution from boats and floating facilities.

In 1965 the Federal Power Commission developed new criteria and standards for outdoor recreation developments at federally licensed hydroelectric projects. Requirements have been greatly upgraded for projects under its licensing jurisdiction. In 1966 the commission established additional requirements for annual reports and license reviews.
Extensive work is being done by many other Federal agencies in outdoor recreation. The efforts of several of these agencies are closely associated with water resource development.

The following agencies within the Department of Interior are making significant contributions directly or indirectly to water recreation development and management. The Bureau of Reclamation makes arrangements with Federal or non-Federal agencies to manage approximately 225 recreation areas on its impoundments. The Office of Water Resources Research implemented the Water Resources Research Act of 1964 (P.L. 88-379). This office coordinates a vast research effort and maintains close liaison with other agencies engaged in water resources research. Of course, the Bureau of Sports, Fishing and Wildlife is extensively involved in water oriented recreation.

The Water Resources Council (P.L. 89-80, July 1965) which is composed of the Secretaries of the Departments of Interior; Agriculture; Army; Health, Education; and Welfare and the chairman of the Federal Power Commission, administers a program of grants to States and assists them in development of comprehensive water and related land resource plans.

The vast accumulation of knowledge and experience of the National Park Service is being utilized by state park systems and others.

The Bureau of Outdoor Recreation is the Federal focal point in outdoor recreation. According to publication, Federal Focal Point In Outdoor Recreation (P.3), the Bureau's responsibilities are to provide a focal point and leadership in the nationwide effort to meet the demands for outdoor recreation.

The Bureau's functions are authorized principally by three statutes and an Executive order:

Public Law 88-29, the Bureau's Organic Act

Public Law 88-578, The Land and Water Conservation Fund Act of 1965. (as of June 30, 1966 $141,000,000.00 from the Fund had been allocated to Federal agencies and about $104,880,000.00 for Federal matching grants to states.)


Executive Order 11278 of May 4, 1966, establishing the President's Council on Recreation and Natural Beauty and a Citizen's Advisory Committee on Recreation and Natural Beauty.

The Water Resources Division of the Bureau has many responsibilities in water-oriented recreation.

The President's Recreation Advisory Council (P.L. 88-29) is also making a substantial contribution. Its membership consists of Secretaries of Agriculture; Interior; Defense; Commerce; Health, Education and Welfare; Housing and Urban Development and Chairman of the Board of Directors, Tennessee Valley Authority.
The Watershed Division of the Soil Conservation Service, U. S. Department of Agriculture, is including water based recreation facilities in many of its watershed projects.

The Forest Recreation Division of the U. S. Forest Service, U.S.D.A., through its research and planning has gained new insights into forest recreation quality and conservation.

The merger of several professional organizations to form the National Recreation and Parks Association in 1966 was a milestone for the profession. The central office staff and the field personnel of the National Recreation and Park Association will mean much in the years ahead in helping meet leisure demands through its advisory and consultant work and its publications.

The International City Managers Association has published a report on Planning and Management of Municipal Marinas.

The National Association of Counties is extensively involved in research and planning. It has recently published ten monographs on "Water Pollution". It is in the process (Jan. 1967) of preparing a series of ten books on "County Action For Outdoor Recreation". In 1966 the National Association of Counties Research Foundation (a $200,000 Grant) entered an agreement with the Bureau of Outdoor Recreation to conduct a series of thirty park and recreation training institutes with emphasis on County recreation systems and programs.

The citizen's seeking water based recreation in the years ahead will be the recipient of these progressive efforts.

In conclusion, the writer wishes to point out again the need for coordination, quality planning, development, training and management in the water recreation field.

Using the Criteria

All of the following criteria will not be applicable at any single facility. The score should include only the criteria used. It is suggested that two or more experienced persons rate each facility and then average the score of each criteria. The greater the experience (in the park and recreation field) of the rater, the more effective the criteria.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving for pleasure</td>
<td></td>
</tr>
<tr>
<td>Walking for pleasure</td>
<td></td>
</tr>
<tr>
<td>Playing outdoor games or sports</td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td>6.47</td>
</tr>
<tr>
<td>Sightseeing</td>
<td>5.91</td>
</tr>
<tr>
<td>Bicycling</td>
<td>5.15</td>
</tr>
<tr>
<td>Fishing</td>
<td>4.19</td>
</tr>
<tr>
<td>Attending sports events</td>
<td>3.75</td>
</tr>
<tr>
<td>Picnicking</td>
<td>3.53</td>
</tr>
<tr>
<td>Nature walks</td>
<td>2.70</td>
</tr>
<tr>
<td>Boating (not canoe or sail)</td>
<td>1.95</td>
</tr>
<tr>
<td>Hunting</td>
<td>1.86</td>
</tr>
<tr>
<td>Horseback riding</td>
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</tr>
<tr>
<td>Camping</td>
<td>1.86</td>
</tr>
<tr>
<td>Ice skating</td>
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<tr>
<td>Sledding or tobogganing</td>
<td>0.51</td>
</tr>
<tr>
<td>Hiking</td>
<td>0.42</td>
</tr>
<tr>
<td>Water skiing</td>
<td>0.41</td>
</tr>
<tr>
<td>Attending outdoor drama, concerts, etc.</td>
<td>0.39</td>
</tr>
<tr>
<td>Canoeing</td>
<td>0.12</td>
</tr>
<tr>
<td>Sailing</td>
<td>0.11</td>
</tr>
<tr>
<td>Mountain climbing</td>
<td>0.09</td>
</tr>
<tr>
<td>Snow skiing</td>
<td>0.07</td>
</tr>
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</table>
...and here is a projection of the total effect by the summer of 2000.

**NUMBER OF OCCASIONS OF PARTICIPATION IN OUTDOOR SUMMER RECREATION**

1960 COMPARED WITH 1976 AND 2000 (BY MILLIONS)

<table>
<thead>
<tr>
<th>Activity</th>
<th>1960</th>
<th>1976</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving for pleasure</td>
<td>872</td>
<td>1,182</td>
<td>2,215</td>
</tr>
<tr>
<td>Swimming</td>
<td>472</td>
<td>564</td>
<td>2,307</td>
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<tr>
<td>Walking for pleasure</td>
<td>544</td>
<td>856</td>
<td>1,569</td>
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<tr>
<td>Playing outdoor games or sports</td>
<td>876</td>
<td>826</td>
<td>1,466</td>
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<tr>
<td>Sightseeing</td>
<td>327</td>
<td>456</td>
<td>925</td>
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<tr>
<td>Picnicking</td>
<td>279</td>
<td>418</td>
<td>700</td>
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<tr>
<td>Fishing</td>
<td>260</td>
<td>521</td>
<td>510</td>
</tr>
<tr>
<td>Bicycling</td>
<td>258</td>
<td>417</td>
<td>102</td>
</tr>
<tr>
<td>Attending outdoor sports events</td>
<td>172</td>
<td>252</td>
<td>146</td>
</tr>
<tr>
<td>Boating other than sailing or canoeing</td>
<td>159</td>
<td>246</td>
<td>157</td>
</tr>
<tr>
<td>Nature walks</td>
<td>283</td>
<td>262</td>
<td></td>
</tr>
<tr>
<td>Hunting</td>
<td>95</td>
<td>174</td>
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<tr>
<td>Camping</td>
<td>113</td>
<td>235</td>
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</tr>
<tr>
<td>Horseback riding</td>
<td>55</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Water skiing</td>
<td>39</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>Hiking</td>
<td>34</td>
<td>125</td>
<td></td>
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<tr>
<td>Attending outdoor concerts, drama, etc.</td>
<td>27</td>
<td>46</td>
<td>92</td>
</tr>
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**ALL ACTIVITIES**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>4,377</td>
</tr>
<tr>
<td>1976</td>
<td>6,926</td>
</tr>
<tr>
<td>2000</td>
<td>12,449</td>
</tr>
</tbody>
</table>

Orrrc Report
January, 1962
CRITERIA FOR EVALUATING QUALITY OF VEHICULAR ACCESS AND PARKING FOR WATER BASED RECREATION FACILITIES
CRITERIA FOR EVALUATING QUALITY OF VEHICULAR ACCESS
AND PARKING FOR WATER BASED
RECREATION FACILITIES

Access Road and Internal Park Road System

Site Selection

1. Does the recreation area have safe and convenient public access?

Interpretation--The recreation area should be readily accessible to the public via modern public highways. In considering convenience, distance is not as important a factor as is driving time. Thus, considered solely in terms of driving time, a ten-mile winding access road becomes less desirable than fifteen miles of Interstate travel. The volume of traffic generated by a significant water based recreation development will often render existing state and county roads inadequate to serve this new demand.

If access is necessary across lands that are not in the project, consideration should be given to acquiring right-of-way or a zoned easement so as to afford control on both sides of the access road. Two-hundred or more feet may be needed for such a right-of-way. No egress or ingress along such access road would also be a quality factor. When entrances to recreation lands are on, or near, the highway sufficient land would be acquired on both sides of the highway to afford control - thus preventing future negative developments.

Rating: 1

2. Are the natural qualities of the area through which the access road passes aesthetically pleasing?

Int - The aesthetic qualities of the landscape along the access road within the boundaries of the recreation area and along the road leading to the area are an important quality consideration. An access road that leads through a mature forest or past interesting geological formations immediately gives the user a pleasing impression of the recreation area.

Rating:

3. Are negative surroundings found along the access road?

Int - The access road should avoid negative surroundings such as dilapidated buildings and unattractive commercial establishments. Where these

1Excellent = 4 points; Good = 3 points; Fair = 2 points; Poor = 1 point; Unacceptable = 0 points.
undesirable situations exist, local or county zoning ordinances should be established in an effort to eliminate the problem.

Rating:

Design and Construction of Access and Internal Roads

4. Have the aesthetic qualities of the access road been preserved as a result of location, design and construction, and roadside treatment?

Int - The access road should be located and constructed so that the aesthetic qualities of the area are enhanced and accentuated and not impaired or destroyed. Clearing of right-of-way and adjacent areas should be rigidly controlled in order to keep construction scars to a minimum. Construction scars should be obliterated by appropriate grading, by seeding and plantings. Embankments created by cuts should be given special consideration. Vista clearing overlooks (observation-points), open meadows, or planting of extensive open or barren areas when appropriately applied will enhance quality.

Rating:

5. Is access road adequate to serve the area?

Int - Access roads connecting with major road systems are important to the development and successful operation of a park area. Such roads are usually 20 to 24 feet wide with four-foot shoulders and 10 percent maximum grade.

Rating:

6. Is the access road hard-surfaced?

Int - Access roads are usually all weather paved surfaces.

Rating:

7. Does the entrance to the recreation area give a pleasing appearance?

Int - The entrance to a recreation area should receive special attention. The entrance should be functionally planned to maintain good traffic flow. It need not be elaborate, but should have a pleasing design which will make a good impression on the visitor.

Rating:

8. Are the circulation and spur roads suitable for all weather uses?

Int - Many resource based use areas may not need (or justify) paved internal roads net. In fact, too light use will cause asphalt road surfaces to
deteriorate. Properly designed and constructed gravel surfaced roads will suffice in many areas where there is moderate or limited traffic.

Rating:

9. Do all roads within the recreation area have a good circulation pattern?

Int - Circulation patterns of traffic within the recreation area should be carefully planned to avoid bottlenecks and to maintain smooth traffic flow even during hours of peak use.

Rating:

10. Do circulation and spur roads adequately serve use areas?

Int - Public use areas such as beaches, marinas, picnic areas, and camp grounds should be located when possible so that they may be reached by spur road leading from the circulation or collector road. Spur roads are usually 18 to 20 feet in width, with 4-foot shoulders and a maximum grade of 12 percent. A good functional layout will provide a minimum of conflict between vehicles and pedestrian movement.

Rating:

11. Are the road direction and information signs adequate?

Int - Information signs should be attractive, properly located, easy to read and clearly understood.

Rating:

12. Have adequate safety precautions been taken?

Int - Visibility should be good with no overhanging branches to block the driver's vision. The main road should be well marked with a centerline and turning lanes indicated. Danger areas should be well marked and safety barriers installed where needed.

Rating:

13. Are service roads adequate?

Int - Service roads are needed to adequately service the various public use areas and facilities. Their proper location will contribute to both function and safety, thus adding another dimension of quality to the outdoor recreation area.

Rating:

14. Are service roads closed to public use?
Int - Service roads should be closed to the public. Sometimes it is not practical to keep them locked or closed. Signs that read "Service Vehicles Only" are necessary at entrances to all service roads.

Rating:

15. Do service roads and service entrances to buildings and other facilities detract from the over-all appearance?

Int - The optimum in appearance of these facilities is achieved through proper location, design, construction, screening, landscaping and top-flight maintenance practices.

Rating:

16. Are parking areas properly located in relation to use areas?

Int - A parking area must be convenient to the recreation areas it serves. A parking area can often be located so it will serve more than one recreation facility. One parking area might, for example, serve both a swimming beach and a picnic area. Although design criteria for parking areas are covered below, function and safety must be considered in site selection. This is especially true if the area is to serve two or more facilities that are separated from each other. The planner should make every effort to keep pedestrian movement across the driving lanes at an absolute minimum. This may be partially achieved by locating the parking area out of a direct line between the use areas.

Rating:

17. Are the parking areas located so that they do not detract from the natural beauty of the area?

Int - Whenever possible parking areas should be out of view of users in the picnic area or on the beach. Oftentimes terrain and forest help the planner in achieving this objective. However, the initial effort in site selection is the key to this factor of quality.

Rating:

Design and Construction

18. Are the parking areas functionally designed?

Int - Parking areas must be functionally designed and constructed. Parking spaces should be lined off or otherwise designated. Ample aisle and turning space should be provided to insure good traffic flow. Parking spaces
should have a minimum width of 9 feet. For 45-degree angle parking, the desirable minimum distance for two rows of cars and drive-between is 55 feet and for 90-degree (head on) parking, the desirable minimum width is 60 feet. A turning radius of 30 feet should be provided at the end of aisles. Parking areas should not be designed so cars must back into spur or collector roads. Through traffic should also be avoided in parking areas.

Rating:

19. Are grades and drainage structures such as to drain parking areas properly?

Rating:

20. Have the proper methods and materials been used in constructing the base and surface courses?

Int - Soil conditions, subgrade standards, and type of materials used will vary somewhat--subjective judgment.

Rating:

21. Do the parking areas have curbs or parking barriers?

Int - The quality of a parking area is increased considerably by adding curbs or parking barriers. The conventional concrete monolithic curb and gutter has proven to be the most satisfactory of all permanent auto barriers. Parking barriers are a must if optimum vehicular control and protection of vegetation is to be achieved.

Rating:

22. Are pedestrian safety aisles provided?

Int - Including pedestrian aisles as a safety measure adds to the quality of a parking lot. If the parking area is landscaped with green belts, these can serve this purpose. These grassy strips should be filled to the top of the curb, where a curb is used. This not only provides a more aesthetically pleasing design, but it eliminates the awkwardness and hazard of pedestrians having to step over and behind a curb.

Rating:

23. Are the parking areas and adjacent areas designed and landscaped so they are aesthetically pleasing?

Int - The same aesthetic considerations mentioned in connection with the access road are applicable to parking areas. A wide expanse of concrete or asphalt is not very attractive. The appearance of a large parking area can be improved by terracing and by leaving green strips or creating green islands within the parking area. Screening and landscaping can do
much to help make a parking area blend into the natural setting. These green areas within a parking area naturally increase the area needed for the parking area. A one-acre parking area with no trees or landscaping will accommodate 150 cars. A one-acre parking area with green strips or trees in malls between each two rows of parking will accommodate 110 cars. The administrator and his planning team must often decide whether the additional 40 parking spaces or the landscaped area within the parking area are more important. These are but a few of the considerations that will help achieve greater aesthetic quality in a parking area.

Rating:

24. Are directional signs provided for vehicles and/or pedestrians?

Int - Parking areas should be designed and constructed so that supervision of parking will be unnecessary. To assure self-operating efficiency and pedestrian safety, directional signs are often needed.

Rating:

25. Is an overflow parking area available?

Int - When possible, an overflow parking area should be provided for peak hours or peak days. A nearby open meadow or a turf area adjacent to the regular parking area are often available for this purpose. The overflow area relieves parking on roadsides thus reducing serious traffic hazards.

Rating:

State of Maintenance and Appearance of Access Road and Parking Area

Well designed and aesthetically pleasing and well constructed access roads and parking areas can be ruined by poor maintenance and management practices. It is indeed unfortunate when the quality of a recreation area is thus impaired.

26. Is the surface of the access road and the parking areas adequately maintained?

Int - The surface of the access road and parking areas should be maintained in good condition. The surface should be smooth, free from potholes and broken edges. Grass and/or weeds growing through asphalt and concrete surfaces should be poisoned on a routine basis.

Rating:

27. Are the access road, parking areas, adjacent areas, and pedestrian walks adequately maintained?

Int - The roadside and its adjacent area, the parking areas and their adjacent areas, and pedestrian walks should be completely litter free. Litter
should be picked up daily from these areas and even more often during periods of peak use. In areas where grass is maintained, it should be cut regularly. If the access road into a project is excessively long refuse containers, appropriately placed, may be considered. Refuse containers may also be useful in parking areas.

Rating:

28. Are drainage ditches and culverts kept free from siltation, refuse, and litter?

Int - This question is incorporated in the criteria because these areas are more often overlooked in routine maintenance.

Rating:

29. Are signs properly maintained?

Int - Directional and information signs should be maintained so they are attractive and easy to read. A program of sign maintenance, usually during the off-season, will add an important touch of quality to any recreation area.

Rating:

Total Points: ________
CRITERIA FOR EVALUATING QUALITY OF PICNIC AREAS
CRITERIA FOR EVALUATING QUALITY OF PICNIC AREAS

Although this point is elementary it seems appropriate because of the author's field observations to indicate that the criteria below are based on the policy of having the picnic area serve only this function and not serve as a combination picnic area and tent and trailer camp ground. The administrator who chooses to plan and operate a multi-use picnic area must be prepared to grapple with the many public relations and management problems that may accompany such a practice.

Site Selection

1. Is the parking area properly located, and is it of adequate size to serve the picnic area?

Int - Accessibility is an important consideration if the picnic area is to be used. It should be within reasonable walking distance of the parking area by trail in order to permit carrying supplies without fatigue. There is no fixed limit, but most picnic units should be only a few hundred feet, at most, from the parking area. It should be located so that users do not have to cross heavily traveled roads to get to the picnic area.

The size of the parking area site should be adequate to take care of current parking needs and should provide for future expansion. One parking space should be provided for each picnic table.

Rating:

2. Is a potable water supply available at or near the picnic area?

Int - In a proposed picnic area where a public water supply is not accessible, authorities should determine, during the early planning stages, whether or not an adequate supply of potable water can be developed in the area. In remote areas with good watershed protection, springs may be approved for use by state or local health departments.

Rating:

3. Can adequate sewage disposal facilities be developed at the picnic area?

Int - As in the case of the water supply, it should be determined during the early planning stages whether or not the site is suitable for the installation of an adequate sewerage system. Recreation and/or park authorities should consult a sanitary engineer on problems involving sewage disposal facilities. State and local health department should always be consulted regarding applicable laws or regulations relating to these facilities.

A sewerage system that will carry liquid wastes by gravity is desirable, since the pumping of wastes increases the installation, operation, and maintenance costs.
4. Is the picnic area site free from unusual construction problems?

Int - The site should be free from any unusual construction problems such as steep grades that would require extensive grading or a marshy area which would require filling. A site containing rock outcroppings that would have to be removed should be avoided. If outcropping should exist they may become an asset as natural features. The site should be able to be developed at a reasonable cost.

5. Does the picnic area site have attractive scenic value?

Int - The site for the picnic area should be in an attractive natural setting, preferable with good visual contact with the water resource. However, terrain, forest growth on limited space may not permit visual contact with the water. The single most attractive area, if such an area exists, should not be developed as a part of the picnic area, but should be developed in such a way that all visitors can enjoy its scenic attraction. Too often the choice shoreline scenic areas are incorporated in picnic areas, thus depriving most of the users access while they are in the general area. This should be given serious study by the administrator and his planning team.

6. Does the picnic area site have shade?

Int - Field observations indicate that shade is desired by most picnickers. There are some exceptions such as at high elevations (possibly above 6,000 feet), shorelines on high elevation (unusually cold winds) or ocean shores with cold winds.

Natural shade may not only provide comfort from the sun but might serve also as a windbreak. Shade varies with the season and time of day. The percent of shade and height of canopy would be factors of quality. For example, shade from low (under 25-30 feet) loblolly pines will not provide the comfort that a canopy of high oaks and hickories would. An area with 50 to 100 percent high shade may be considered excellent (4). Only 10 to 15 percent shade (high, low or combination) may render an area unacceptable. Alternatives, local, or regional, factors and correction feasibility (artificial shade or shelter) are a few of the factors the planning team or rater must consider in arriving at a judgment concerning shade as a factor in evaluating quality.

7. Is the picnic area site reasonably free from obstacles to use?

Int - The picnic site should be reasonably level so the user does not have to climb or descend steep hills going to or from the picnic area to parking
or other use areas. There should be a minimum of obstacles such as deep ravines in the area.

Rating:

8. Is the picnic area site free from encroachment?

Int - The picnic area site should be located so that it is free from encroachment by unattractive commercial developments, undesirable industrial developments, excessive noise, air pollution, or other negative surroundings.

Rating:

Design and Construction of the Picnic Area

9. Has there been a minimum disturbance of the natural values of the site during the construction of the picnic area?

Int - The aesthetic value of the area should be preserved during construction of the picnic area. Excessive clearing should not take place, but the area should be left in as close to its natural state as possible. Good design of the picnic area will help prevent deterioration from overuse. Much thought should be given to clearing and thinning, rotations of use areas, planting and replanting - nurturing of shade trees and ground cover, to assure the user during the next generation a picnic in the shade.

D. P. Duncan, How to Avoid Picnic Area Deterioration (P. 34), suggested that care should be taken not to locate tables and fireplaces under the outer crown of trees because of the potential damage to the feeder roots of the tree. He also suggested that placing the picnic table on a gravel pad is a great help in reducing compaction. He further suggested blacktopping heavily used paths to reduce soil erosion and vegetable deterioration.

Thomas H. Ripley, in his study Recreation Impact on Southern Appalachian Campgrounds and Picnic Sites, indicated that a very heavy overhead canopy in the picnic area may have a negative effect on ground cover. He stated:

"Although no absolute values were obtained in this study, it was evident that dense tree canopies adversely and importantly limit growth of ground level species that protect the site. It might be inferred, then, that for most areas canopy reduction could produce important understory regrowth and decrease area soil losses."

Rating:

10. Does the picnic area have a functional design?

Int - The picnic area should have good pedestrian access and a good circulation pattern within the picnic area. The pedestrian access to the picnic area should be clearly defined by steps and/or walks leading into the area. Circulation within the area should be such that people going to and from
the picnic tables do not disturb other picnickers. Restrooms should be located within easy walking distance of all tables within the picnic area.

In general, tables should be spaced or grouped so that they can be used both by small groups of picnickers who may require two or three tables and yet these individual tables may afford family use at other times. Tables oftentimes are grouped 10 ft. to 20 ft. apart so that grills and refuse containers are convenient to several tables. The normal ratio of refuse containers and grills per table (as indicated by the AIPE Management Aid Bulletin, Picnic Facilities Survey) is one grill to four or five tables.

Picnic tables may be constructed from a variety of materials, including wood, concrete, and fibreglass or combinations of any of the three. Tables should be placed in a fixed location. Thus, a wooden or fibreglass table should be anchored to the ground so it cannot be moved. Concrete tables are normally heavy enough that they do not need to be anchored.

The trend in most picnic areas being constructed today is away from fireplaces and toward either charcoal grills or a combination of wood and charcoal grills. Industry has developed in recent years a number of excellent grills.

Water fountains should be spaced throughout the area so they are accessible to all picnickers. These too should be attractive. They should be constructed with good drainage so the area around the base is not muddy even during heavy use. A good quality drinking fountain will provide a sanitary bubbler and a low tap for filling buckets above a gravel-filled pit. A step-up or a lower level fountain should be provided for children.

Rating:

11. Are adequate group picnic areas provided?

Int - Group picnicking should not be allowed in a family picnic area. Group picnic areas should be provided and used on a permit or reservation basis. These group picnic sites may be adjacent to but should be isolated from the family picnic area. Group picnic shelters are used by groups such as civic clubs, family reunions, church groups, industrial outings, etc.

A picnic shelter should be provided and should include one or more grills or fireplaces, refuse containers, water, lights, toilets, serving tables or counters, and picnic tables for seating a large number of people.

Rating:

12. Are shelters provided in the general or family picnic area?

Int - Shelters should be provided in the general picnic area for use in inclement weather. The practice of placing picnic tables under these shelters is questionable because the practice encourages picnickers to use the sheltered area. The shelter can serve many more people during an unexpected shower if tables are omitted. Oftentimes shelters provide all or much of the shade in picnic areas.
Rating:

13. Are tables adequately screened to give privacy to picnickers?

Int - The entire picnic area should be screened from other recreation facilities, roads, and parking areas. The quality of a picnic area is also improved when some screening is provided between individual picnic sites. There are several factors which affect screening in a picnic area. One factor is the density of tables. A large number of tables in a small area makes screening virtually impossible. Terrain is another factor. A hilly area provides a measure of natural screening.

Screening can be accomplished during the construction phase in a picnic area by leaving the area as natural as possible and not cutting undergrowth. If the undergrowth presents a serious problem it can be thinned later. Where very little undergrowth exists, artificial, but natural, screening can be used.

Rating:

14. Is a potable water supply available to picnickers?

Int - Public Health standards should be met during construction. Environmental Health Practices in Recreation Areas (P. 16) states:

"An adequate supply of water under pressure which meets the bacteriological chemical, physical, and radiological requirements of the Public Health Service Drinking Water Standards or equivalent is essential for the convenience, comfort, safety, and health of visitors and resident staffs at outdoor recreation areas."

Rating:

15. Has an adequate sewerage disposal system been installed?

Int - Public Health Standards should be met during construction. Environmental Health Practices in Recreation Areas (P. 31) states:

"Safe disposal of human and domestic wastes in recreation areas is necessary for the preservation of the surface and ground waters and the restoration of such waters to the best possible condition consistent with the public health and welfare. Sewerage systems and sewage treatment facilities must have adequate capacity, be capable of providing sufficient treatment, and be economical to construct, operate, and maintain."

Rating:

16. Are restrooms serving the picnic area conveniently located?
Int - Restrooms should be centrally located to serve the greatest possible number of picnickers. Where the toilet structure cannot be seen, directional signs should be provided. Picnic tables should not be located more than 400 feet from a restroom nor should a table be nearer than 75 feet to a water carrier type comfort station.

Rating:

17. Do the refuse containers detract from the over-all aesthetic quality of the area?

Int - Refuse containers are a necessity and they are seldom attractive. The type of containers, their placement, method of mounting, and their condition contribute to quality. Refuse containers should be fastened in such a manner that dogs or wild animals cannot overturn them. Lids should be provided and should be fastened with a chain so they will not be carried away. Refuse containers should be as attractive as is possible. The 25-33 gallon containers are widely used. An unpainted 55-gallon drum is an example of poor quality.

Rating:

18. Is garbage being regularly collected and disposed of in a safe and sanitary manner?

Int - The best system of garbage collection and disposal is to have the service provided by municipal or county sanitary disposal department. In the more remote areas, this is not possible, and the service must be provided by the recreation or park agency.

Collection vehicles should have watertight bodies with metal or heavy canvas covers. They should be constructed to facilitate thorough cleaning.

Disposal sites must be isolated from recreation facilities but should be located in relation to the areas served to maintain as short a haul as possible. The two most generally accepted methods of disposal are the sanitary landfill and incineration. In a sanitary landfill, the refuse is spread, compacted, and covered with a layer of dirt. Incineration is the process of burning combustible refuse to ash at high temperatures in enclosures designed specifically for the purpose. Incinerators are expensive to construct and this method of disposal is generally only used where land suitable for landfilling is unavailable.

Rating:

19. Does restroom construction meet all Public Health Standards and minimum requirements of the National Plumbing Code?

Rating:

20. Are the restrooms functionally designed, and are they constructed of quality materials?
Int - A clean well-constructed restroom provides a recreation or park agency with one of the best public relation tools at its disposal. Poor restroom facilities leave a bad impression which cannot be erased by the most beautiful scenic attractions and finest recreation facilities.

Construction of restroom floors, walls, partitions, and other interior surfaces should be impervious to water and easy to clean. The use of materials such as brick, terazzo, ceramic tile, and stainless steel fixtures significantly reduces maintenance costs and discourages vandalism.

Where men's and women's toilets are in the same building it is important that their entrances be well separated and the arrangement of separate entrances be screened from each other. The approaches and entrances should be clearly marked. Stall partitions with doors should be provided for all toilets. Sanitary maintenance can be facilitated with well mounted fixtures, and stall partitions suspended from the ceiling. A maintenance chamber in the center of the building where all plumbing is easily accessible is a desirable maintenance feature.

Restroom floors should be sloped to an adequate number of floor drains. Mirrors, soap, and towel dispensers should be provided. Attractive refuse containers should be located near towel dispensing units.

All exterior openings should be screened. Windows should be placed above eye level or translucent glass should be used.

Rating:

21. Are the restrooms well-ventilated, either naturally or artificially with forced air?
Rating:

22. Are the restrooms well-lighted?
Rating:

23. Is the design of the total picnic area aesthetically pleasing, and does it enhance rather than detract from the natural setting?
Rating:

24. Are the buildings in the picnic area architecturally pleasing? Do they have an architectural style which is carried throughout the recreation area? Do the buildings blend into the natural setting?
Rating:

25. Are interpretative facilities available?
Int - It is recognized that an interpretative center and self-guided trail may not be included in some projects. However, where facilities and programs of this type are provided there is an added element of quality for many users.

Rating:

26. Are game kits available for users?

Int - In some instances such services are warranted. This service is especially helpful to groups that have made reservations for an area.

Rating:

State of Maintenance and Appearance:

How well a picnic area is maintained is a vital quality consideration. A poor picnic site which does not have well constructed facilities but which is well maintained may be a more desirable area to the public than a beautiful site which is well constructed but poorly maintained. Patrons of a picnic area have every right to expect to find a clean, neatly kept area for their outing. Poor maintenance is a sign of poor management.

27. Are restrooms clean and well maintained?

Int - Cleaning schedules for restrooms should be planned on the basis of need. Routine daily efforts in cleaning most often will not suffice. Peak loads place a heavier demand on such facilities. The length of time that users remain in a park will greatly effect these demands. When patrons remain in a park two and one-half hours or more, naturally, the demand is greater on the sanitary facilities. During peak loads in such areas, often-times, it is necessary to check restrooms at thirty or sixty minute intervals. Some park systems provide attendants in comfort stations during peak hours. Paper containers, toilet tissue and towels and conditions of closets and lavatories should be checked each time the restroom is cleaned. Soap containers should also be checked each time the restroom is cleaned. The maintenance staff should check for burned-out lightbulbs and replace when needed.

Rating:

28. Are refuse containers properly maintained?

Int - Containers should be kept clean and odor-free at all times. A routine schedule of scrubbing or steam-cleaning should be maintained. Many recreation and park agencies have found disposable plastic liners for garbage cans to be very desirable. The plastic liners have several advantages. They keep the containers clean, they make the job of emptying containers easier for maintenance crews, and they provide a sealed package which is desirable when transporting refuse in an open truck or trailer. Again, user load during peak season will determine the frequency of emptying refuse containers. Once a day may not be sufficient. Overflowing containers certainly
lowers quality. It may be more economical in some instances to arrange an extra pickup during peak hours than to clean up the litter the next morning.

Rating:

29. Are the grounds in the picnic area and adjacent areas well kept?

Int - The grounds in the picnic area should be completely litter free. This clean-up of the area should take place daily, early in the morning before picnickers arrive to use the area. This clean-up should include walks leading to and areas adjacent to the picnic area. Any portion of the picnic area or adjacent areas which are maintained in grass should be cut regularly and fertilized on a scheduled basis.

Rating:

30. Are picnic tables clean?

Int - Type of materials (tops usually) and user practices, and extent of use determine the need for cleaning tables. A tidy, clean table increases the quality of a picnic area.

Rating:

31. Are all structures in the picnic area maintained in good condition?

Int - Picnic shelters, restrooms, and other buildings in the picnic area should be inspected regularly for needed repair and these repairs should be effected immediately. Particular attention should be given to screen doors and other screened openings and the condition of plumbing fixtures.

Rating:

32. Are picnic tables kept in good condition, and are older tables replaced when needed?

Rating:

33. Are picnic grills kept in a good state of repair? Are they repainted when needed?

Rating:

34. Is adequate ground cover maintained in the picnic area?

Int - As much natural ground cover as possible should be maintained in the picnic area. Natural materials can be supplemented by wood chips or
other materials. There is little doubt that concrete or asphalt aprons around picnic tables and grills help reduce wear. Another method being used is to close the picnic area, or portions of the area, for a period of time, sometimes for an entire season or two, to allow the area to recover. Bare, compacted dirt and exposed roots as the result of over use certainly detract from the quality of a picnic area, and an effort should be made to establish and maintain the best ground cover possible.

Rating:

Total Points: ________
CRITERIA FOR EVALUATING QUALITY OF SWIMMING AREAS
CRITERIA FOR EVALUATING QUALITY OF SWIMMING AREAS

Site Selection

1. Is the swimming beach site well located in relation to other recreation facilities?

Int - The swimming beach should be located so that it does not crowd other facilities such as picnic or boating areas; however, it should be within reasonable walking distance of such facilities.

Rating:

2. Is the parking area convenient to the swimming area?

Int - The parking area should be convenient to the beach and bathhouse facilities. It has been observed in the field that patrons will walk farther to a swimming area than to a picnic area because the number and weight of items carried are not as great.

The size of the parking area should be adequate to handle optimum loads. Studies indicate that three and one-half to four passengers per car is the average figure, and the turnover at some beach parking areas runs about four hours per car. Overflow parking should be available for peak load hours.

Rating:

3. Is a potable water supply available at the swimming area?

Int - (See Criteria for Picnic Areas, questions 2 and 14.)

Rating:

4. Can adequate sewage disposal facilities be developed at the swimming area site?

Int -(See Criteria for Picnic Area, question 3.)

Rating:

5. Is the site free from unusual construction problems?

Int - A good quality site for a swimming area should require very few physical changes of the site itself, either above water or underwater. Moving large quantities of dirt or sand is expensive and should be avoided whenever possible.

Rating:
6. Does the swimming area adequately accommodate average and moderately peak loads?

Int - Adequacy in this case is rather hard to define. How much does the quality of the experience decrease as the density on the beach and in the water increase? A partial answer to this may be found in the analysis of user attendance records. At what point in beach density did attendance begin to drop? Did attendance increase at an alternate beach (if available)? The answers to these and similar questions will aid planners. However, the planning team should select sites using great imagination and vision on selecting sites. Opportunity for expansion of the swimming area should be a major consideration.

The American Institute of Park Executives Management Aid Bulletin No. 51, Public Beaches (P. 8), has this comment with reference to the size of beach areas:

"One bather per 100 square feet is the minimum area according to the report, 'The Operation of Public Beaches in the Los Angeles Region.' At the workshop on the design and maintenance of man-made sand beaches, conducted at the Great Lakes Park Training Institute in 1962 at Pokagon State Park, Indiana, it was reported that, 'It is desirable that the area above water-line be twice as wide as the underwater portion since about two-thirds of the bathers will usually be out of the water' (at any given time)."

Rating:

7. Does the area surrounding the beach have attractive scenic value?

Int - The natural resource itself has a certain quality element. Certain improvements increase quality. Each may complement one another.

Rating:

8. Is the swimming area free from encroachment?

Int - The swimming area should be free from encroachment from unattractive commercial developments, undesirable industrial developments, excessive noise, air pollution, or other negative factors. Boating activities should not in any way interfere with swimming activity, and all power boats and small craft should be kept well clear of the swimming area.

Rating:

9. Is the water free of industrial or domestic pollution?

Int - The quality of the water of a swimming area is the most important single consideration in the selection of a site for a swimming area. One of the first steps to be taken in planning a swimming area must be to check for possible pollution. The water should be analyzed by the local
and/or state health department. If the water is polluted, steps can often be taken to correct this problem.

An ideal location for a swimming beach is where prevailing winds and water currents provide continuous circulation of fresh water to the swimming area from the open body of the lake. Where this does not take place, pollution can occur from a large number of swimmers.

Another possible, but expensive, way to solve pollution problems in such swimming areas is by chlorination or other effective disinfectants. This technique is being used successfully in several locations.

In 1959 the U. S. Forest Service used the following criterion for industrial and domestic pollution in its National Forest Recreation Survey:

"Four conditions are recognized and rated from 1 to 4 in order of suitability.

**INDUSTRIAL OR DOMESTIC POLLUTION**

- Uncontaminated 1
- Contaminated 2
- Light pollution 3
- Heavy pollution 4

Terms are defined and applied as follows, subject to local adjustment on the basis of State or county laws and ordinances:

Uncontaminated-----Free of harmful chemicals or bacteria. Fit for human consumption without treatment.

Contaminated------Contains undesirable bacteria and/or chemicals. Not safe for human consumption without treatment. Meets minimum public health standards for bathing and swimming.

Light pollution----In addition to undesirable bacteria and chemicals, contains visually evident traces of objectionable organic matter or other foreign materials. Unsafe for swimming but satisfactory though undesirable for boating.

Heavy pollution----Objectionable foreign matter readily evident to sight, often accompanied by rank odors. Not safe for swimming or water sports, undesirable for boating."

**Rating:**

10. Are the water and beach area free from siltation?

Int - Excessive siltation can be extremely detrimental to a swimming area and oftentimes render it unusable. Much can be done toward reducing or
eliminating siltation on many of the smaller watersheds. The Soil Conservation Service can render valuable assistance in this work. Siltation in large lakes, of course, is related to the erosion problems of the upstream small water sheds that go to make up the total basin.

The U. S. Forest Service used the following criterion with regard to water color and turbidity in its 1959 National Forest Recreation Survey:

"The clarity of water will be ocularly estimated under average conditions on the basis of transparency.

Three conditions are recognized and rated from 1 to 3 in order of desirability.

<table>
<thead>
<tr>
<th>Color and Turbidity</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>1</td>
</tr>
<tr>
<td>Objects distinguishable 24&quot; below surface</td>
<td></td>
</tr>
<tr>
<td>Cloudy to murky</td>
<td>2</td>
</tr>
<tr>
<td>Objects recognized more than 8&quot; but less than 24&quot; below surface</td>
<td></td>
</tr>
<tr>
<td>Muddy</td>
<td>3</td>
</tr>
<tr>
<td>Objects unrecognizable when covered with 8&quot; of water</td>
<td></td>
</tr>
</tbody>
</table>

Water clarity is an important factor in safety - another element of quality to consider. Without reasonable alternatives users will tolerate relatively high degrees of turbidity.

Rating:

11. Is the water in the swimming area free from algae?

Int - Although the degree of algae is a factor in attempting to measure quality, user alternatives, site alternatives and variations of other site criteria will be considerations for the planning team.

Rating:

12. Is the water in the swimming area free from aquatic plant growth?

Int - Same principle as Item 11 above - judgment factor.

Rating:

13. Is the water free from harmful or unpleasant minerals?

Int - Same principle as Item 11 above.

Rating:

14. Does the PH have an adverse effect on swimmers?
Int - Since impoundments, rivers and streams are generally accepted as natural bodies of water by users, it is doubtful that many complain about improper PH and yet too low or too high PH in recirculating swimming pools cause many patrons to complain to the management.

Water is either acid, neutral or alkaline. The acid scale is from 0.0 to 7.0 (See next page). Pure water at room temperature (72°F) has a PH of 7.0 which is neutral. The alkaline scale ranges from 7.0 to 14.0. The PH symbol refers to potential hydrogen concentration. Technically them, it is the measure of acidity or alkalinity of water. The normal PH of the human body (fluids and blood) is 7.35 and 7.45. Therefore, water is least irritating especially to the eyes, when the water is near 7.3 to 7.4. It is generally recognized that optimum conditions exist when the PH range of water is between 7.2 and 7.6. Excessive quantities of algae may raise the PH because they remove carbon dioxide. Thus, algae and PH may be related as factors of quality.

Rating:

15. Is the temperature of the water conducive to comfort during swimming season?

Int - A suitable temperature for swimming is not below 68°F. Quality likewise diminishes as the temperature rises - usually above 75°F. However, judgments would be based on a regional or local basis.

Rating:

16. Is the swimming area free from excessive wave action and/or water currents?

Int - Waves may be caused by wind or may be from water craft. Waves can profoundly affect the comfort and enjoyment of the swimmer. Size and constancy of wave action should be considered in evaluating a site.

River beaches present several problems. The major ones are water fluctuations, unnoticed changes in the underwater surfaces and pollution threat.

Rating:

17. Does the wind velocity and constancy effect suitability for swimming?

Int - The conditions of wind velocity - full season, part of season, probability or frequency of sudden storms are factors that should be reflected in the rating.

Rating:

18. Is the water elevation stable or is it subject to fluctuation?
The pH scale is a measure of the acidity or alkalinity of a solution. The scale ranges from 0 to 14, with 7 being neutral. Values below 7 are considered acid, and values above 7 are considered alkaline. A pH of 6.8 is considered too low, while a pH of 8.4 is considered irritating. A pH of 7.0 is neutral. The scale is used to determine the compatibility of substances with the human body, with neutral pH being the most safe.
Int - A very careful analysis should be made of water elevation and bottom composition during the recreation season. Suitability for swimming is affected by fluctuation. Little or no change in elevation would be given a rating of four; a moderate change in elevation, a rating of three. Beyond this point, other factors such as condition of bottom and slope may influence the rating. (See 19 and 20 below.) A site may be rendered totally unacceptable because of a combination of these factors.

Rating:

19. Is the shoreline above the swimming area suitable for a beach?

Int - The potential beach site should be as level as possible. A maximum of five percent would be desirable for the final grade. A sand beach is preferred although turf for part of the beach area has proven popular. Sand and turf areas should be separated by a permanent physical barrier of stone, brick or treated wood. The width of the beach would be influenced by terrain and scope of project. Fifty to 100 feet would be desirable for most areas, although a more extensive development would require more.

Rating:

20. Is the slope of the underwater portion of the swimming area suitable?

Int - David G. Wright stated in Management Aids Bulletins Number 51 (P. 14):

"At the 1962 Great Lakes Parks Training Institute Workshop, it was generally agreed that underwater portions of beaches have been constructed at slopes varying from three percent to seven percent, the most desirable slope being as flat as possible since this provides the greatest water area possible and reduces maintenance problems."

Where fluctuation is a problem, the desired underwater slope should extend far enough so that there are five feet of water over the outer limits of the bathing beach during the swimming season. The underwater portions of the beach should not have any sudden drop-offs or sudden changes in grade (0-5 foot depth). These conditions are hazardous for bathers. Where the distance from the shoreline to 5 foot depth is 125 or more, a rating of four might be given; 75 to 125 feet, three; 50 to 75 feet, two; and 0 to 50 feet, one.

Rating:

21. Does the underwater portion of the swimming area have a good surface at least up to five-foot depth?

Int - The underwater portion of the beach should be completely cleared of all vegetative growth, stumps, and rocks. Before sand is placed on the area, a stable base must be established. This base can be established by
several methods, depending on the type of base material. On solid soil, a layer or layers of compacted travel can be used. Soil cement has also been used successfully in many areas. Where extremely soft soil is found, it must often be removed and replaced with firmer soil.

A good quality washed sand should be used for the final surface. The depth of the sand should be approximately 12 inches, depending on the quality of the base.

Rating:

22. Is an adequate diving area available?

Int - The quality of a swimming area is enhanced by having a diving area available. A minimum depth of 9 feet is needed for a one-meter board, 12 feet for a three-meter board, and 15 feet for a diving platform. If the slope of underwater portion of the beach is too gentle to provide the needed depth for a diving area, an area can be graded or dredged during construction. This area must be dug large enough to prevent refilling by siltation.

Rating:

23. Does water-level fluctuation during the major use season detract from the quality of the swimming area?

Int - A lake with a stable shoreline is desirable for development of a swimming area. Beaches may be developed on lakes where the fluctuation is not too great; however, excessive changes in elevations often make the development and maintenance of a swimming area impracticable. On impoundments of this type, construction must be adapted to anticipate problems caused by water fluctuation. All stumps and other hazards must be removed to the anticipated low water level. The graded and surface area must also be extended to allow for changes in water level. In some instances floating cribs can be constructed to solve serious water fluctuations.

Rating:

24. If natural swimming areas were not feasible, has swimming pool(s) with recirculating water been provided?

Int - Some water oriented sites may have most of the qualities for a potential park except a natural swimming area. Pollution, waves, currents, or rugged terrain could be the causes of such a condition. A swimming pool has proven to be the answer in many shoreline areas. In fact, both swimming pools and natural swimming areas have been developed in many parks. It appears inappropriate to delve here in criteria for site selection, design, construction, and operation, and maintenance of the modern swimming pools. This is a complex specialized field. However, the bibliography contains several excellent references on the subject.

Rating:
Design and Construction

(The standards of design and construction of the beach area as described under Site Selection should have been met if not present at the site.)

25. Is the bathhouse well located in relation to the parking area and beach area?

Int - The size and scope of the project will cause locations and distances to vary. However, in most moderate size operations the users should not be required to walk more than 300 yards to the bathhouse. Most often the bathhouse opens onto the beach. The water's edge is usually less than 300 feet from the bathhouse.

Rating:

26. Were quality materials used in the construction of the bathhouse?

Int - The bathhouse should be constructed of materials that are durable and easy to maintain. Ceramic tile is an excellent material for walls because it has a hard, durable finish that resists marking and is easily cleaned.

Rating:

27. Do the floors of the bathhouse have a nonskid surface?

Int - During period of heavy use, it is virtually impossible to keep bathhouse floors dry. It is important that floors do not become slippery. Concrete floors should have a wood trowel finish. Several new products on the market give aid in providing a rough textured floor. If tile is used, careful consideration should be given to type and surface texture.

Rating:

28. Does the bathhouse floor have a sufficient number of floor drains and does the floor have an adequate slope to provide good drainage?

Rating:

29. Is the bathhouse well lighted?

Rating:

30. Is the bathhouse well ventilated?

Rating:
31. Are individual dressing stalls with curtains or doors provided for women?

Rating:

32. Are adequate restroom facilities provided for beach patrons?

Int - Restrooms for swimmers should be provided in the bathhouse if one is available, or they be separate structures. (See criteria for restrooms in Criteria for Picnic Areas, questions 17 through 21.)

Rating:

33. Are restrooms provided for nonswimmers?

Int - Nonswimmers (individuals not using the swimming area) should not have to pay an admission fee to the swimming area to use restroom facilities. If the bathhouse is the admission control point, additional restroom facilities for nonswimmers should be provided. It is not necessary that these facilities be in the bathhouse. Restroom facilities can be in another location which is convenient and accessible to the general public, and will alleviate some of the floor maintenance problems. This reduces confusion in the bathhouse.

Rating:

34. Does the bathhouse have hot showers for both men and women?

Int - Such a service is often provided at natural beaches. It is not a requirement in many areas. However, it is an added quality factor.

Rating:

35. Does the bathhouse have a functional clothes checking system?

Int - There are a number of functional checking systems which can be used in a bathhouse operation, including wire or wooden baskets and plastic hanger bags. There has been a trend in recent years toward the use of coin-operated lockers in bathhouses. They have the advantage of cutting labor costs by reducing the number of attendants necessary. In some instances these lockers are installed directly in the clothing change area itself. Other departments have installed the lockers in a central area, and men and women go to their respective areas to change to swim suits and then place their clothing in the locker before going to the beach.

Rating:

36. Is a first-aid room provided in the swimming area?

Int - A first-aid room should be provided either in the bathhouse or in another structure convenient to the swimming area. The first-aid room
should be well equipped with first-aid supplies. All lifeguards should have first-aid training. A resuscitator and personnel trained in its use would be an added quality.

Rating:

37. Is storage space provided in bathhouses for frequently used janitorial and maintenance supplies and equipment?

Int - Too often supplies and equipment accumulate around the bathhouse and become a detraction. Adequate storage space and good management should prevent this from occurring.

Rating:

38. Is office space provided in the bathhouse?

Int - A manager needs a definitely assigned private place to keep records and carry on business management required.

Rating:

39. Does the bathhouse have a room for lifeguards and other staff personnel to take a break or rest?

Int - For lifeguards and other staff members to perform at their optimum, they should have opportunity to get away from the general public for a few minutes periodically. Staff meetings could also be held in this room.

Rating:

40. Are an adequate number of refuse containers provided on the beach area and are they properly located?

Int - The appearance and sanitary condition of a beach will depend upon practices of users. Users are influenced by existence of rules and the enforcement of such rules. Appropriately placed and maintained refuse containers are essential.

Rating:

41. Has adequate life saving and water safety equipment been provided at the swimming area?

Int - Elevated lifeguard chairs should be provided. At heavily used swimming areas, the number of bathers a lifeguard is expected to watch over, is a better criterion of the number needed. A lifeguard should not be expected to watch over more than 200 bathers. Signs should be placed on lifeguard chairs indicating that patrons should not talk to lifeguards on duty.

The rescue equipment needed at a swimming area will vary somewhat depending on the area itself. A list of the equipment might include: a
power rescue boat, torpedo buoys, heaving lines or ring buoys, a surfboard, and grappling irons.

Rating:

42. Is a restricted swimming area indicated?

Int - The swimming area should be indicated by attractive, colorful buoy lines. A line should be placed at approximately the three-foot depth level for nonswimmers. The restricted swimming area should not be too large. The area should be no larger than the lifeguard staff can safely oversee. In a large swimming area, the beach should be divided into sections so that one or two sections can be opened on slack days and additional sections utilized as needed on heavy use hours or days.

Rating:

43. Has an adequate diving area been constructed?

Int - A diving platform should be constructed of good quality materials using styrofoam for floatation where water fluctuation makes a permanent diving structure impracticable. The diving area should be roped off and isolated from the general swimming area.

Rating:

44. Are necessary items provided for snack bar and/or vending operations?

Int - The refreshment stand should contain adequate equipment to serve the public. Cooking equipment, drink dispensers, drink coolers, vending machines, ice machines, and other equipment should be of good quality and large enough to serve public demand during peak loads. The building which houses the snack bar should be constructed of quality materials and should meet all public health requirements.

Rating:

45. Are refreshment stands located and managed so that they do not present a hazard to the swimming area or beach?

Int - Drinks should be served in paper containers in the swimming area. Bottles present a danger of broken glass and cans present a hazard to bare feet from the "pop-top" tops.

Rating:

46. Are storage facilities, both dry and refrigerated, adequate to handle merchandise and supplies for peak periods?

Rating:
47. Are service and display areas at the refreshment stand adequate?

Int - The serving area should be large enough or designed in such a way that the public can be served without undue delay. Areas should be provided where merchandise for sale can be attractively and appealingly displayed.

Rating:

NOTE: Questions 47 to 51 pertain to small craft and boating as they relate to a waterfront complex, which may include swimming. Row boats, canoes and paddle boats are not usually provided in a marina operation. It was considered important to include these questions as a part of a waterfront complex.

48. Are small craft rental facilities convenient to users?

Int - These activities will attract both beach patrons and the general public if they are in reasonable proximity to the beach and parking area. If users in swimming attire use such craft, a strict rule of no swimming from these craft should be enforced.

Rating:

49. Is the small craft rental and small craft use completely separated from the swimming area?

Int - Under no condition is it safe to permit small craft in a swimming area.

Rating:

50. Were quality materials used in the construction of the boathouse, docks, storage buildings; and was the area functionally designed to allow for good control and supervision of the small craft operation?

Rating:

51. Are rental boats of good quality and design?

Int - Boats for rental purposes should generally be constructed of either fiberglass or aluminum. These two materials have proved to be much more durable and maintenance-free than wooden boats. Design is important when purchasing rowboats and canoes, but it is especially important for paddle boats. A well-designed paddle boat should be extremely stable and it should have a good steering and propulsion system. A poor quality paddle boat can mean many hours of maintenance because of mechanical fracture due to poor design and construction.

Rating:

52. Are the beach area (including small craft rental area) grounds aesthetically pleasing?
Int - A subjective rating here will vary depending upon the knowledge of the water. Experienced park and recreation planners and park and recreation administrators could best apply this criteria.

Rating:

53. Are the buildings in the swimming area architecturally pleasing? Is the architectural style carried throughout the recreation area? Do the buildings fit the site?

Int - Same as question 51.

Rating:

State of Maintenance and Appearance

54. Are the beach and adjacent areas well maintained?

Int - Beach areas should be cleaned daily or more often as needed. Clean-up normally takes place in the early morning; however, some administrators have found late evening or night clean-ups to be advantageous. Swimming areas with large beach areas should consider mechanical beach cleaners if they are not already in use. The cleaners are capable of cleaning one to three acres per hour.

Turf areas should also be well maintained. Turf should be cut regularly and a fertilization program should be carried out.

Rating:

55. Are the bathhouse and toilets well maintained?

Int - The bathhouse should be cleaned daily or more often if necessary. Floors in the bathhouse, showers, and restrooms should be disinfected daily. Paper containers and soap dispensers should be checked at least daily or more often as needed. The area around the bathhouse should be litter-free at all times.

Rating:

56. Is the snack bar and snack bar area well maintained?

Int - The building housing the snack bar should be kept neat and clean at all times. All supplies and food should be stored in orderly fashion and an inventory kept for all items. Special attention should be given to storage of food requiring refrigeration. Constant vigil should be kept to avoid spoilage. All equipment should be thoroughly cleaned at the end of each day. The eating areas should be kept free from litter. For most areas, this means not daily but hourly, or more frequent clean-ups. Table tops should be scrubbed daily and wiped as often as is necessary.

Rating:
57. Are refuse containers on the beach and in the snack bar area properly maintained?

Int - (See maintenance of refuse containers, in Criteria for Picnic Areas, question 28.)

Rating:

58. Is the small craft area well maintained?

Int - The buildings, grounds, docks, boats, oars, and paddles should all be cleaned daily and maintained in first-class condition.

Rating:

Total Points: ________
CRITERIA FOR EVALUATING QUALITY OF BOATING AREA
CRITERIA FOR EVALUATING QUALITY OF BOATING AREA

(Marina and Adjacent Land and Water Area)

Site Selection

1. Is sufficient water space available to support needed services of the boating area?

Int - A good quality boating area must have enough water space available to support the size of the boating area. Edward Schneberger and C. W. Threinen, Wisconsin Conservation Department, suggests in Lake Management for Recreational Uses that lakes of less than 50 acres not part of a connected chain are too small for motorboats. They further state that they have indications that each water skiing unit requires about 20 acres of water surface because these units begin to force each other off the water.

George T. Wilson in Lake Zoning for Recreation, Management Aids Bulletin 44, (P. 12), suggested that a minimum space requirement for mixing boats (water skiing, power boating, sailing, and fishing) should be 5-10 acres per boat. In areas where adequate water space is not available, some regulation of existing space is necessary. There are several ways by which a lake can be zoned for boating:

(1) Area zoning - In this method of zoning, various areas of a lake are established for certain kinds of boating activity.

(2) Time zoning - This method involves setting aside some portion of the day for one activity and a different portion for conflicting activity.

(3) Space zoning - This method is designed to minimize the conflict between fast boats and slow boats by providing a barrier of space around the slow boat. A boat thus approaching a fisherman would be required to slow to a no-wake speed until he is the required distance away from the fisherman. Space limitation may require eliminating fast boating and skiing.

Where lake shores are developed, a no-wake zone 200 feet to 500 feet wide is usually needed.

Rating:

2. Is adjacent shoreline of development quality to support services needed?


"Sufficient land area must be available for (boating) operations. Normally a land area that is one to one and a quarter times as
large as the gross water area of the marina is satisfactory. That amount of land will provide sufficient area for drive-ways, parking of autos and boat trailers, boat storage, service area, buildings, and such accessories as lawns, swimming pools, and exterior displays. Occasionally a site within a built-up community will offer too little land area for these purposes but available parking spaces and other existing facilities will meet requirements."

Buffer strips should be provided where private property borders the development. For economy of administration, it is better to develop one large boating area than several smaller ones. The area should be large enough to provide for future expansion.

Rating:

3. Is water deep enough to accommodate all types of boats that will use the area?

Int - Five to 10 feet of water depth is usually sufficient in inland lakes.

Rating:

4. Is the lake bottom free from all obstructions and hazards and is the entire area free from any unusual construction problems?

Rating:

5. Is the boating area site free from encroachment?

Int - The boating area should be located so it is free from other undesirable boating operations, swimmers, unattractive commercial developments, industrial developments, and environmental conditions that would detract from the quality of the operation.

Rating:

6. Is the water at the boating area site free from pollution?

Int - Although the quality of the water at a boating site is not as vital a factor as in a swimming area, poor water quality detracts from the boating area. Even in a boating area, there is a certain amount of direct contact with the water, particularly where water skiing is actively pursued. During the early planning stages of a boating area, local or state health authorities should be consulted. If pollution exists, steps should be taken to correct the problem.

Rating:

7. Is the boating area free from siltation?
Int - The boating area site should be examined to determine the possibility of shoreline erosion which might result in siltation which could cause continuous maintenance. If this problem exists, assistance should be sought from the Soil Conservation Service. Siltation may be periodic. In whatever degree it exists, it affects quality.

Rating:

8. Is the water of the boating area free from unusual chemicals that might be harmful to boat hulls or docks?

Rating:

9. Is the water of the boating area free from algae and other emerging aquatic growth?

Int - Algae growth on boat hulls presents quite a problem on many lakes.

Rating:

10. Is the water elevation relatively stable during the boating season?

Int - A stable shoreline is extremely desirable for a boating area. When the water elevation fluctuates no more than a few feet, permanent type docks and in-the-water structures can be built.

Rating:

11. Does the boating area site have good protection from wind and waves?

Int - Protection from wind and wave action is an extremely important consideration in a boating area. A cove that is adequately sheltered by trees is desirable. If such a site is not available, steps can be taken to improve the existing site. If it appears that waves or currents are going to be a problem in a boating area site, the services of a competent designer who is familiar with these problems should be secured during the early planning stages. There are many types of breakwater that may be constructed to alleviate the problems caused by wave action.

Rating:

12. Is a potable water supply available at or near the boating area?

Int - (See questions 2 and 14 under Criteria for Picnic Areas.)

Rating:

13. Can adequate sewage disposal facilities be developed at the boating site?
Int - (See question 3 under Criteria for Picnic Area.)

Rating:

14. Are bridges across the water areas (served by the facility being rated) of sufficient height above the water surface to permit passage?

Int - The developer of a marina may have little control over this. This point is raised in order to call attention to this problem. A bridge that would restrict water craft of height over five feet, for example, might seriously effect services to boaters as well as the success of the marina.

Rating:

**Design and Construction**

In addition to the criteria already listed under access road and parking area, there are several points that should be considered in planning parking in the boating area.

15. Is there provision for parking of cars with boat trailers attached?

Int - Space should be provided at the boating area for parking automobiles with boat trailers attached. The AIPE Bulletin, *Parking for Recreation* (1965, P. 9) states:

"Parking for one trailer for each 25 berths should be available."

The size of the parking space should be a minimum of 10 feet by 40 feet. Maneuvering and approach strips in parking areas should have a minimum width of 35 feet for autos with boat trailers attached.

16. Is the parking area for cars with trailers designed with drive-through bays or angled for easy parking and backing?

Rating:

17. Does the design of the entire parking complex provide for efficient traffic flow from access road to boat ramp, thence to parking bays, and from parking bays to ramp and to exit?

Rating:

18. Are parking areas well located in relation to the facilities of the boating area?

Int - The parking area should be designed to provide as much convenience as possible for boating area patrons. Parking spaces (not trailer spaces) should be provided near berthing for the convenience of boat owners who
wish to transfer personal possessions and supplies between their cars and boats. At the same time, parking should be convenient for other services of the boating area. In some instances, all parking needs can be met by one large parking area, while other locations will require multiple areas to serve the area adequately.

Rating:

19. Are marina structures built of quality materials?

Int - The structures of a boating area are exposed to move severe weather conditions than generally found at a recreation area. For this reason, the quality of materials used in construction is extremely important. Materials selected for boating area structures should be chosen for appearance, durability, and ease of maintenance.

Rating:

20. Does the boating area show evidence of good quality workmanship in the construction of facilities?

Int - The boating area must be designed to meet public needs for service. If the boating area is crowded and congested, it is obvious that the need is not being adequately met. The boating area should provide the auxiliary services demanded by the affluent boating public. All buildings should be functionally planned to provide the service for which they were intended.

Rating:

21. Are boat repair facilities available and is service area screened from rest of boating area?

Int - Repairing boats should not be allowed in berthing areas unless a special place is provided for this purpose. A separate service area should be provided for boat and engine repair and trained personnel should be available to service boats and motors. Even well-kept service areas are generally unattractive. Boats and engines at various stages of being torn down and repaired, and boats set aside waiting for ordered parts create a sight which should be hidden from public view. Screening the service yard can sometimes be accomplished by location; more often a physical barrier such as an attractive solid fence or tall landscape planting is necessary.

Rating:

22. Is an adequate food service operation available?

Int - Some type of food service is a necessity at even a very small boating area. Food service can vary from a small vending operation to an exclusive restaurant. Regardless of the size of the food operation, good merchandising
techniques are desirable. Bottled drinks should not be allowed in such areas because of the danger of broken glass. Storage facilities should be adequate to handle merchandise and supplies for peak periods. Minimum local or state public health standards should be met. Where extensive restaurant operations are planned, professional kitchen planners should be used.

Rating:

23. Are adequate fueling stations provided at the boating area?

Int - Because of the potential fire hazard it is desirable to have the fueling station located apart from other marina structures. Fueling facilities should be available for dispensing gasoline, mixed fuels, diesel fuel, engine oils, and similar supplies, depending on the types of boats being served. Storage tanks for all types of fuels should be located underground. Bumper guards should be placed on the fueling dock. Fire-fighting equipment should also be provided on the fueling dock.

Rating:

24. Is general fire-fighting and rescue equipment provided at the boating area?

Int - If a water system is provided at the berths, a fire-fighting system designed to hook into this system can be used. It is important that adequate pressure be available in this system. In a large marina, fire hydrants should be spaced throughout the marina and on the docks. These should be equipped with fire hoses and spray nozzles. It is desirable that this system be hooked into the municipal water system.

A fire-alarm system that will make it easy to determine when and where a fire occurs is desirable. If possible, the alarm system should be connected with the nearest fire department.

The boating area should have a large chemical fire extinguisher which can be moved easily from one area to another in case of oil or electrical fires. Hand chemical extinguishers should also be placed where oil or electrical fires are likely to occur.

A fire plan should be coordinated with the nearest fire department.

Rescue equipment such as reaching poles and ring buoys should be provided in the docking areas. Adequate first-aid equipment should be available, preferably in a first-aid room. A rescue boat should be ready to assist with emergencies away from the immediate marina area.

Rating:

25. Is there a sewage pumping station to service boats with holding tanks?

Int - Pumping stations, either mobile or fixed, should be provided for boats with holding tanks. These systems ideally should be connected to a
municipal system for sewage disposal. Where this is not possible, they should be connected to an adequate central sewage disposal system designed to serve the entire marina. Local and state regulations regarding handling of waste should be followed. Untreated sewage should not be allowed to be dumped in any body of water. Where local or state regulations do not prohibit such dumping, legislation should be sought to stop the practice.

Rating:

26. Are adequate sanitary facilities provided in the marina area?

Int - Public Health Service Publication No. 1195, *Environmental Health Practices in Recreation Areas* (1965, P. 103) states:

"Adequate facilities for collection and disposal of domestic sewage, waste oils and fuel, and solid wastes as garbage and refuse should be included in the planning and design of a marina. The collection and disposal of each of these wastes, because of their varying characteristics, must be handled separately. A permanent comfort station with sanitary facilities for both sexes centrally and conveniently located near piers should be a prerequisite in the design of a marina.

The proper collection and disposal of garbage, trash, and other debris is important not only from the standpoint of appearance but for insect and rodent control."

Restrooms should also meet the criteria already described in picnic area and bathhouse criteria.

Rating:

27. Is the boating area well lighted?

Int - One of the most important reasons a marina operator should provide night lighting is to deter vandalism and pilferage. Night lighting also assists boatmen in finding the marina after dark. Lighting from a boating area should be distinctive enough to guide the boatman into the marina. Light fixtures should be located so that they do not cast reflections on the water surface that will constitute a hazard to safe navigation.

Rating:

28. Are good merchandising practices followed in the retail sales area?

Int - The type of retail sales carried on will depend upon the size of the marina and the location. Regardless of the size, merchandise should be neatly and attractively displayed. Current inventories should be kept on all merchandise and good fiscal control is essential. The sales area should be well lighted. Many of the items sold at marina retail sales areas are impulse items and therefore a study of this sales technique should be made by the marina manager or operator.
29. Are short-term docking facilities functionally designed?

Int - Some type of short-term docking facilities should be available in the boating area for transients who wish to avail themselves of marina services. In a small boating area the service dock may be designed large enough to handle this function; however, in a larger marina a separate dock should be provided. These facilities should be designed so they blend harmoniously with other marina facilities. They should be well marked so that transients will not have difficulty in recognizing the area. This is particularly important in a large marina.

Rating:

30. Are short-term docking facilities well-constructed?

Int - Construction of short-term docking facilities should be of durable, quality materials. Bumpers should be provided to protect boats while docking and during the time they are tied up at the dock. Unsightly used rubber tires should not be used for this purpose. There are a number of highly effective and well appearing buffers or guards of rubber composition now being manufactured for marina use. They are made in extended lengths and in numerous sizes and cross sections. When installing bumpers care should be taken that the full area of the bumper section remains available for the resistance of shock and chafing action. This will prevent boat damage through contact with bumper fastenings.

Boat cleats or eyebolts with rings should be provided on the dock to secure boats. The cleats should be of noncorrosive metal and of size sufficient to secure the craft. Eyebolts also should be of noncorrosive metal and both should be bolted to the wood or steel frame.

Rating:

31. Is there an adequate turning area at the boat launching ramp so that an inexperienced driver can easily back his trailer into the water?

Int - A 75 foot turning area is desired.

Rating:

32. Does the boat launching ramp have an adequate slope?

Int - The launching ramp should be constructed with an optimum slope of 12 percent, the minimum slope should be 10 percent, and the maximum slope should be 14 percent. If the slope is too shallow, the trailer will have to be backed far out into the water before the boat itself can be floated free from the trailer. If the slope is too steep, there is danger that the car will not be able to get sufficient traction to pull the trailer back out of the water.
33. Does the launching ramp have sufficient width and length?

Int - Launching ramps should be designed and constructed large enough to enable several boats to be launched or taken out at the same time. A single ramp should have an optimum width of 12 feet and should not be less than ten feet. The ramp should extend from 3 feet above the normal operating pool to at least 4 feet below the permanent pool.

Rating:

34. Is a pier or dock available where the boat can be loaded or unloaded when launching or coming into the launching ramp?

Int - A small dock or pier should be provided near launching ramps where the boat operator can tie up to pick up passengers and equipment, or where he can tie up while he removes his trailer from the launching ramp.

Rating:

35. Is the launching ramp constructed of durable materials and does the ramp provide good traction even when wet?

Rating:

36. Is boat handling equipment provided at the boating area?

Int - The quality of a boating area can be improved considerably with the addition of boat handling equipment. In addition to launching ramps, most boating areas should provide some types of hoists or devices to handle heavier boats in and out of the water. There are many types of equipment which can be used to provide this service, including a monorail which will pick a boat out of the water on a sling and then transport it either to a service building or to an area where it can be loaded on a cradle or trailer; vertical lifts or boat elevators to raise boats in and out of the water; overhead cranes that accomplish the same purpose; fork lifts on wheels that will transport boats from place to place within the marina.

Rating:

37. Is an elevation gauge available? Is it located where boaters can view it easily?

Int - It is important that boaters know the elevation. Many boaters like to develop a "feel" for boating conditions at various elevations. For example, bottom conditions may vary at different elevations especially near shore and other shallow portions of the lake.

Rating:
38. Do the bridges have elevation gauges?

Int - Gauges are particularly helpful to operators of cruisers, houseboats, and sailing craft, especially where heights are marginal.

Rating:

39. Is late weather service provided at the marina?

Int - Information on weather and any unusual weather or lake hazards would be an important quality factor, especially for newcomers.

Rating:

40. Are channel markers and signal beacons attractive and are they properly located to identify easily any danger areas and other restricted areas?

Rating:

41. Is adequate space available in the off-shore area to provide a smooth and safe traffic flow for all boats, and is adequate turning space provided to maneuver all boats?

Int - The entrance to the boating area from a larger body of water should be so located as to permit speedy and safe passage of boats in time of storms or other emergencies. The entrance of the boating area should not be less than 60 feet or four times the beam of the widest boat berthed therein (Chaney, 1961). The channel leading to the marina should be at least twice that width.

Rating:

42. If the marina site does not have adequate natural protection from wind and wave action, have breakwaters been constructed?

Rating:

43. Are buoys which are used for anchoring points attractive, numbered for easy identification, and are they well anchored in the harbor?

Rating:

44. Are wet slip berths adequately designed and constructed?

Int - The individual slips for boats should be 2 feet wider than the beam, or the widest part of the boat, for boats up to 14 feet and 3 feet wider for boats over 14 feet in length. Main walkways providing access to boat slips should be 8 feet wide. Finger docks between the slips should be a minimum of 4 feet wide. Covered slips add to the quality of the boating area.
The docks or piers which make up the berthing area should be constructed of materials that are durable and as maintenance-free as possible. Where wood is used, creosoted timbers should be used for underwater construction. Creosoted timbers should not be used where people will come in contact with them. Pressure-treated lumber should be used where wood comes in contact with people. When floating docks must be used, 55 gallon drums should be avoided for floatation. A number of floatation devices may be used that give a more attractive appearance and in the long run may be more economical. Steel pontoons, fiberglass, plastic, concrete, styrofoam, urethane foam, and polyethylene foams are all good quality materials that can be used for floatation. The closed-cell foams (styrofoam, urethane foam, and polyethylene foam) have become extremely popular materials for marina construction in recent years. All metals used in dock and pier construction should be noncorrosive.

Anchor cleats, electrical and water connections should be provided for each slip.

Rating:

45. Is dry storage available in the boating area?

Int - Dry storage areas also add to the quality of the boating area. Dry storage may take several forms. It may merely be an open area where boats are stored on trailers or cradles and the area enclosed with a fence or otherwise protected. A more elaborate type of dry storage is to construct dry storage buildings having several floors or several tiers of racks (using fork lifts for handling small craft). The latter is a definite trend, especially on stable shoreline lakes.

Dry storage is especially desirable where a limited water area is available or where undesirable water level fluctuations occur. Another desirable feature of dry storage is that when a boat is stored it becomes sheltered from the weather and does not need to be cared for in any other way.

Another type of dry storage is on cradles at the boat slips. These operate by floating the boat over the top of the cradle and then using leverage principles, raising the boat from the water and locking it into position.

Rating:

46. Are lockers for motors and storage available in the boating area?

Rating:

State of Maintenance and Appearance

47. Are sanitary facilities adequately maintained?
Int - Restrooms should be thoroughly cleaned daily or more often during periods of heavy use. Containers for toilet tissue and paper towels should be checked and refilled as needed. Floors should be kept as dry as possible to prevent accidents from slipping.

Rating:

48. Is the service yard well maintained?

Int - In many boating areas the service yard is an eyesore that detracts from an otherwise attractive area. This area should be kept neat and orderly at all times. Trash receptacles should be provided and used for discarded parts, used oil cans, and other materials which if left to accumulate give the service yard a cluttered appearance. Tools used in the shop area should be put away after each use and the floor should be swept daily.

Rating:

49. Are the docking and berthing areas well maintained?

Int - The docking and berthing areas should be kept litter-free at all times. All buildings and docks should be inspected on a routine basis and necessary repairs and painting attended to immediately. All floats should be removed and inspected at intervals of not more than two years. This will permit such maintenance, repair, and replacement as necessary. All marine growth should be removed and all metal and wood parts treated if necessary.

Boat handling equipment should be maintained according to manufacturer's recommendations. A reasonable stock of spare parts should be kept on hand to avoid costly delays in repairing this machinery.

Fire-fighting equipment should be inspected and tested at least once every six months. Testing should include a full demonstration of its use. Chemical extinguishers should be refilled in accordance with manufacturer's recommendations and as required by local fire codes. Extinguishers should be tagged to show the last date of inspection and filling.

Rating:

50. Does the boating area as a whole have an appearance of cleanliness and orderliness?

Int - The entire boating area should be maintained free from trash and litter. Trash cans should be emptied regularly and cleaned when needed. Turf areas should be mowed as needed. Shrubbery should be well cared for with beds clean and well mulched. Boat launching ramps should be free from algae and silt. Boat trailers and other equipment should be stored in an orderly fashion.

Rating:
51. Is there a well-trained rescue squad available in the vicinity?

Int - The presence of Coast Guard Auxiliary, Power Squadrons, and bonafide rescue squads are important around lakes. The presence of capable rescue assistance may be considered a factor of quality.

Rating:  

Total Points: __________
BIBLIOGRAPHY
BIBLIOGRAPHY


These bulletins have been prepared by specialists. Some of these publications are in a survey or manual form and others are based on research or practical experience. They contain much valuable information for park and recreation administrators, park and recreation planners, and park managers for both public and private operations.


Bul. No. 9. The Loss of Park and Recreation Land, Committee chaired by Donald F. Sinn (Present - Associate Professor of Recreation, San Jose State College, San Jose, California) and George D. Butler (retired), National Recreation Association, New York, New York.

Bul. No. 11. Housekeeping Manual for Parks and Recreational Buildings, Charles Libby, Director of Building Operations of Texas Technological College; M. S. Martin, Director, Building Maintenance Training, Industrial Education Department, Division of Extension of the University of Texas; and Sam D. Pecoraro, former Director of the Building and Facilities Operating Section, Chicago Park District.


Bul. No. 22. Interpretation, Harold E. Wallin, Park Naturalist, Cleveland Metropolitan Park District, Cleveland, Ohio.


Bul. No. 32. Park Police, L. B. Houston, Director of Parks and Recreation, Dallas, Texas.


Bul. No. 44. Lake Zoning for Recreation, George T. Wilson, Program Supervisor, Division of Municipal Recreation and Adult Education, Milwaukee Public Schools, Milwaukee, Wisconsin.

Bul. No. 45. Financing--Sources of Income for Parks and Recreation, Thomas I. Hines, Head, Department of Recreation and Park Administration, North Carolina State University, Raleigh, N. C.

Bul. No. 46. Budgeting for Parks and Recreation, Thomas I. Hines, Head, Department of Recreation and Park Administration, North Carolina State University, Raleigh, N. C.

Bul. No. 49. Swimming Pool Management--Personnel, Training and Safety, Charles C. Stott, Associate Professor, Department of Recreation and Park Administration, North Carolina State University, Raleigh, N. C.

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International City Managers' Association, Planning and Management of Municipal Marinas, 1313 East 60 Street, Chicago 37, Illinois.


National Recreation and Park Association, Parking for Recreation, National Park and Recreation Association, Washington, D. C.


Sports Fishing Institute, 719 13th Street, NW, Washington, D. C.


Wildlife Management Institute, Wire Building, Washington, D. C.
APPENDIX A

SUMMARY OF RESEARCH RELATED DIRECTLY OR INDIRECTLY TO WATER BASED RECREATION
Appendix A

SUMMARY OF RESEARCH RELATED DIRECTLY OR INDIRECTLY TO WATER BASED RECREATION

Most of this research was still in progress in 1966. Although the report is limited to day use--picnicking, swimming, boating--there are other valuable water oriented activities that administrators are concerned with. The writer felt that related research efforts would be of interest.

1. RESOURCES

Southern Illinois University, Carbondale, Illinois
RECREATIONAL DEVELOPMENT ON LAKE OF EGYPT
Stanley K. Brickler
Supported by Southern Illinois University

Iowa State University of Science and Technology, Ames, Iowa
COMPETITIVE RECREATIONAL USES OF SELECTED IOWA LAKES
Arnold O. Haugen
Supported by U. S. Department of the Interior

University of Michigan, Ann Arbor, Michigan
ORGANIZATIONAL ARRANGEMENTS IN URBAN RIVER BASINS TO PROVIDE RECREATION AND POLLUTION CONTROL
Spenser W. Havlick
Supported by University of Michigan

University of Michigan, Ann Arbor, Michigan
FACTORS CONTRIBUTING TO MORE EFFICIENT RECREATION PLANNING FOR MICHIGAN'S STATE FOREST CAMPGROUNDS
Charles F. Krebs
Supported by Michigan's Department of Conservation

University of Missouri, Agricultural Experiment Station, Columbia, Missouri
THE CARRYING CAPACITY OF DIFFERENT FOREST SITES FOR DIFFERENT RECREATIONAL USES
R. H. Westveld
Supported by U. S. Department of Agriculture

New York State College of Forestry, Syracuse, New York
PLANNING, IMPROVING, PROTECTING, AND MANAGING FOREST RECREATION IN THE NORTHEAST
Elwood L. Shafer, Jr.
Supported by U. S. Department of Agriculture

Warren, Pennsylvania
PLANNING, IMPROVING, PROTECTING AND MANAGING FOREST RECREATION
Hubert D. Burke
Supported by U. S. Department of Agriculture
Utah State University, Agricultural Experiment Station, Logan
Utah
CHANGES IN CAMPGROUND VEGETATION AND SOILS
S. R. Tocher
Supported by State of Utah

Intermountain Forest and Range Experiment Station, U. S.
Department of Agriculture
PLANNING AND DEVELOPMENT OF RECREATION USE AND THE MANAGEMENT
AND REHABILITATION OF RECREATION AREAS IN THE INTERMOUNTAIN
AND NORTHERN REGIONS
Roscoe B. Herrington
Supported by U. S. Department of Agriculture

2. USER STUDIES

Bureau of Outdoor Recreation, U. S. Department of the Interior,
Washington, D. C.
INTERIM METHOD FOR PROJECTING RECREATION USE
Robert J. Lavell
Supported by U. S. Department of the Interior

University of Michigan, Ann Arbor, Michigan
FACTORS INFLUENCING CAMPGROUND AND CAMPSITE SELECTION
Gene P. Schaaf
Supported by the University of Michigan

University of Nevada, Reno, Nevada
DEMAND FOR WATER BASED RECREATIONAL ACTIVITIES IN NEVADA
J. B. Wyckoff
Supported by U. S. Department of the Interior

New Mexico State University, Agricultural Experiment Station,
University Park, New Mexico
RECREATIONAL VALUES OF WATER IN THE MAJOR RESERVOIRS OF NEW
MEXICO
James R. Gray
Supported by New Mexico State University

3. ECONOMICS

Berkeley, California
DEVELOPMENT OF GUIDES FOR OBTAINING OPTIMUM USE OF FOREST
RECREATION AREAS IN THE PACIFIC SOUTHWEST
Harry W. Camp
Supported by U. S. Department of Agriculture

North Carolina State University, Agricultural Experiment Station,
Raleigh, North Carolina
BENEFIT-COST ANALYSIS OF DECISIONS AFFECTING RECREATIONAL USES
OF LAND
G. S. Tolley
Supported by U. S. Department of Agriculture
Texas A. & M. University, Agricultural Experiment Station, College Station, Texas
AN ECONOMIC ANALYSIS OF THE DEMAND FOR LAND AND/OR WATER BASED OUTDOOR RECREATION IN TEXAS
Ivan W. Schmedermann
Supported by U. S. Department of Agriculture

4. RESEARCH METHODS

University of Massachusetts, Amherst, Massachusetts
LOCATION OF POTENTIAL OUTDOOR RECREATION AREAS FOR AERIAL PHOTOGRAPHS
John J. Lindsay
Supported by University of Massachusetts

St. Paul, Minnesota
COOPERATIVE FOREST RECREATION RESEARCH UNIT WITH THE UNIVERSITY OF MICHIGAN
Hugh C. Davis
Supported by U. S. Department of Agriculture

Oklahoma State University, Agricultural Experiment Station, Stillwater, Oklahoma
DEMAND FOR RECREATION IN THE WILDHORSE CREEK WATERSHED
Daniel D. Badger
Supported by U. S. Department of Agriculture

University of Pittsburgh, Pennsylvania and (North Carolina State University, Raleigh, N. C.)
IMPACT OF WATER RESOURCES DEVELOPMENT ON ECONOMIC GROWTH
C. L. Leven
Supported by U. S. Army Corps of Engineers

The various Experiment Stations of the U. S. Forest Service have completed many valuable Forest Recreation Research Projects too numerous to list here. For information, write to Division of Forest Recreation, Forest Service, U. S. Department of Agriculture, Washington, D. C.

North Dakota State University, Fargo, North Dakota
ECONOMIC IMPACTS OF WATER RESOURCE DEVELOPMENT
North Dakota Water Resources Institute

North Carolina State University, Raleigh, N. C.
RECREATION BENEFITS
Dr. George S. Tolley, Department of Economics (Dr. Tolley has left the faculty of NCSU but research will continue at this institution under his general supervision.)
Brief Description: To develop and improve analytical tools which will be of assistance in evaluating the benefits of outdoor recreation opportunities at Corps of Engineers' reservoirs. The particular purpose is to study the effect on recreation benefits of the location of reservoirs relative to population centers and other recreation facilities.
Completion Date: July 1, 1967

North Carolina State University, Raleigh, N. C.

RURAL ZONING - PROSPECTS AND PROBLEMS
Dr. William J. Block, Department of Politics
Brief Description: An analysis of rural zoning, its uses, misunderstandings, reasons for supporting and opposing, and the roles of laymen and professionals in adopting and administering zoning ordinances. Includes flood plain and recreational zoning.
APPENDIX B

SUMMARY OF WATER DEVELOPMENT LEGISLATION
ENACTED IN 89TH CONGRESS
SUMMARY OF WATER DEVELOPMENT LEGISLATION
ENACTED IN 89TH CONGRESS

WATER PROJECTS RECREATION ACT (P.L. 89-72, July 9, 1965)
This act provided for the following: (1) Established federal policy to give full consideration to recreation and fish and wildlife enhancement in federal water projects. (2) Encourages coordination of recreation agencies and urges non-federal agencies to enter into the recreation management of project areas. (3) Established formulae for sharing of cost for recreation and wildlife benefits.

WATER RESOURCES PLANNING ACT (P.L. 89-80, July 22, 1965)
This act established a Water Resources Council and authorized river basin commissions for coordinated study and planning. It provided for grants to states for the development of water and related land resource plans. The act authorized $300,000 annually for the Water Resources Council, $6 million for river basin commissions, and $400,000 for state programs. Authorization was also given for $5 million for matching grants.

INCREASED PESTICIDE STUDY FUNDS (P.L. 89-232, October 1, 1965)
This act increased the authorization from $2 1/2 million annually to $5 million annually by 1968 for the study of the effects of fish and wildlife.

CLEAN WATER ACT (P.L. 89-234, October 2, 1965)
The Federal Water Pollution Control Act was amended to establish a Federal Water Pollution Control Administration. Grants for sewage and storm water systems, and to redefine standards were increased.

GRANTS AND LOANS FOR WATER DEVELOPMENT AND POLLUTION CONTROL (P.L. 89-240, October 7, 1965)
This act increased the grants and loans available for water development and pollution control under the Farmers Home Administration.

SMALL WATERSHED ACT AMENDMENTS (P.L. 89-337, November 13, 1965)
The size limitations of small watersheds was increased from 5,000 acre-feet to 12,500.

WATER RESOURCES RESEARCH ACT AMENDMENTS (P.L. 89-404, April 19, 1966)
Authorization was increased under this act by steps to $10 million by 1976 for matching grants to educational institutions, private organizations and individual and governmental agencies.

RECREATION AND PUBLIC PURPOSED ACT AMENDMENTS (P.L. 89-457, June 22, 1966)
This act provides for states participation in Land and Water Conservation Fund. The act also permits leasing public lands for 25 years.

CONSERVATION OF ENDANGERED FISH AND WILDLIFE SPECIES (P.L. 89-669, October 15, 1966)
This act authorized $15 million for the protection of endangered fish and wildlife.
CLEAN RIVERS RESTORATION (P.L. 89-753, November 3, 1966)
This act provides for grants to states and municipalities of $3.4 million over a four year period. It authorized $305 million for research and development. It provided $3 million for an estuarine study and for cost sharing with industry.
These two pictures show some fine quality in covered wet slips. The picture at the top shows construction of galvanized steel, lightweight concrete supported by closed cell styrofoam. The dock at the bottom is constructed of pressure treated lumber. Note the electrical and water connections, the attractive tie cleats and bumper material.
This bulkhead and ramp idea is an excellent way to cope with fluctuating water level.

Does this have a pleasing appearance?
Here is a peninsula about 250' wide and about the same length. Three roads extend to the end of the peninsula. The road on the right is rather near the shore, thus affording very little privacy or protection from the dust. Trees along the shore, especially on the point, are dying due to abuse and soil compaction. See picture below.
Empty bottle cartons, miscellaneous signs, and coils of wire, etc. on roof detracts from the overall appearance in an already difficult situation caused by fluctuating water level.

Fluctuating water level effects quality in many ways.
This is an example of an attractive picnic area with low canopy of shade. Note the quality of the picnic table, the concrete apron and the spacing of the tables in the area.

Shade or Sun - Which would you choose?
This information shelter above and the sign below reflect quality.
Here is an example in a conveniently located, well marked and adequately lighted parking area.

This illustrates how a small marina operator provided excellent covered wet slips without prefabricated manufactured materials. Other facilities at this marina had excellent quality.
An example of excellent quality dry storage and mechanized equipment. Hydraulic fork lifts are used to handle the boats in these racks.
These two pictures depict the entrance and first impression of a very heavily used marina. Note the commercialized sign (beverage company), overhead power lines and unkept trash barrel tied to the oak tree.
Contrast the quality of appearance and maintenance of these two fueling docks.
In spite of the fine ramp and top quality covered slips, the writer turned and faced the opposite direction and took the picture below.
A screening device for this vending operation (such as a wall of architectural concrete block) could improve the entrance to this otherwise very high quality shoreline facility.

This attractive toilet facility is constructed of quality materials. Landscaping with native plants enhance the quality in this natural setting.
Examples of excellent launching ramps. The width of the ramp and presence of loading piers are important quality features.
This is not only hazardous, it also detracts from the overall appearance.

A poor quality launching ramp. The picture shows an old roadbed being used as a launching ramp. Note the lack of a turning area and the badly eroded bank.
These two pictures indicate a very obvious difference in the quality of marina structures. The top (1) is typical of structures erected by some marina operators and concessionaires. Control in the design and type of materials is the solution to this.
Two examples of good quality public beaches. The top shows a well constructed retaining wall needed to stabilize the shoreline (for fluctuating water level). The bottom shows a well developed beach area. Note three sections on beach. One or two sections could be closed during small attendance hours.
Excellent accessibility (Interstate Highway and connecting road), high quality floating facilities (in a protected cove) and top quality sales and repair building. Note crowding of shore. Another solution in a situation like this might be to place buildings 100' to 200' further from shore. (Photos furnished by Harborlight Marina, Lavonia, Georgia.)

The lack of clearance at this bridge for wider variety of water craft affects overall quality at this lake for recreational boating and sailing. Note water depth gauge, it provides information for the boater, a consideration in evaluating quality.

(Photos furnished by Harborlight Marina, Lavonia, Georgia.)
Trailers scattered across the landscape, eroded slope, marina sign by beverage company, power pole and transformer silhouetted against the sky. Is all of this aesthetically pleasing to the eye?

Shoreline condition like this lowers quality. This was actually on a heavily used shore. Strict clearing specifications, policing or control, to see that the job is done will prevent this from happening.