MANAGEMENT OF MUNICIPAL LAKES FOR OUTDOOR RECREATION

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The purpose of this study was to develop management guidelines for the successful operation of municipal lakes for outdoor recreation. Officials of 33 municipalities which operate 44 lakes were interviewed to obtain data on characteristics of the lakes. Some type of fee is charged for use of facilities at the lakes by 29 of 33 municipalities. Daily fees ranged from $0.25 to $2.00, depending on the type of activity. A key question facing city management personnel is who are the clientele. In view of federal cost sharing on many of these facilities, cities may have an obligation to serve nonresidents as well as residents.

INTRODUCTION

The United States is experiencing change that affects our lifestyle, the way we relate to our work, our families, and ourselves. An expanding population which is more affluent, has more leisure time, and is more mobile than in the past is contributing to the increase in the demand for outdoor recreation facilities and areas. This increasing demand for outdoor recreation has stimulated government officials responsible for the management of outdoor recreation complexes, to seek more effective methods of managing these natural resources. Initial economic research efforts to provide information for more effective management of outdoor recreational facilities and areas focused on the national or state level. In Oklahoma, only a study by McNeely specifically dealt with recreational complexes operated by municipal governments (1). In 1975, the authors initiated a study to update information on municipal lake recreational enterprises in Oklahoma (2).

METHODS

An inventory of municipal recreational lakes was developed with the assistance of Soil Conservation Service representatives and county extension agents. Operational data on municipal lake recreational enterprises was obtained from interviews with city officials in 33 Oklahoma cities which operated a total of 44 lakes. The types of operational data obtained included: (a) recreational uses; (b) facilities available; (c) operation and maintenance labor requirements; (d) fee schedules; (e) attendance; and (f) methods of advertising the lake. The analysis of the above information was a process of collection, tabulation, and comparison of primary data from the questionnaires. Recommendations were developed that provide guidelines for management of city-owned lakes.

TABLE 1. *Facilities and services available at municipal lake recreational enterprises, based on 1975 Oklahoma survey.*

Facilities and services	Number of municipal governments providing facility
Trash barrels	33
Dirt roads	33
Hard surfaced road	30
Boat ramp	28
Location and directional signs	26
Tent campsites	24
Boat docks	22
Pit-type toilets	17
Convenience store	17
Auto/RV campsites	16
Toilet with running water	16
No designated campsites	7
Rental boats	6
Showers	5
Swimming area	3
Sun bathing beach	2
Rental cottages, cabins	2

RESULTS

Recreational facilities typically provided by the cities included access roads to the recreational areas, boat ramps, boat docks, campsites, picnic sites, and restrooms (Table 1). With this set of facilities the recreational use most frequently permitted by the municipalities was fishing, followed

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by picnicking, boating, camping, hiking, hunting, water skiing, and swimming (Table 2). Although 16 municipalities permitted water skiing only six cities allowed swimming. The city officials indicated that the health factor associated with the use of the lake as the municipal water supply precluded permitting the public to swim in the lake.

TABLE 2. *Recreational uses permitted by municipal governments at lake recreation enterprises, based on 1975 Oklahoma survey.*

Recreational uses	Number of municipal governments permitting activity
Fishing	33
Picnicking	32
Boating	31
Camping	29
Hiking	25
Hunting	23
Water skiing	16
Swimming	6

To determine the labor requirements for operation and maintenance, the city officials were asked to estimate the labor required for operations such as mowing, repair of damage by vandalism, trash collection, spraying for insect pests, and general clean-up of litter. Half of the city officials were unable to provide estimates owing to the interrelated roles of the various city maintenance departments which provided the labor for these operations. However, 17 city officials were able to estimate the operation and maintenance labor requirements (Table 3).

When the estimates of annual operation and maintenance costs for 17 cities providing cost data are related to population of the municipality, the costs per resident range from $0.06 to $5.63. Although there may be some inconsistencies in the data due to overestimates of actual costs by one or two city officials, the method will provide such officials a means to evaluate operation and maintenance expenditures for their particular case.

City officials at 29 of the 33 municipalities indicated that some type of fee was charged for the use of the lake by recreationists. Twenty-two cities charged fishing fees. Daily fees per person ranged from $0.25 to $2. Annual fishing permits were sold by 19 cities ranging from $2.50 to $15 per person. Boating permits were sold by 18 cities. Daily boating permits ranged from $0.50 to $3 per boat. Annual boating permits cost $2.50 to $20 per boat. Thirteen cities charged hunting fees. Daily fees ranged from $0.50 to $2 per hunter and annual permits were $3 to $7.50 per hunter. Camping fees ranging from $0.75 to $2.50 per vehicle per day were charged by 12 cities. Electrical hook-ups cost an additional $0.50 to $2 per day. Nine municipalities sold permits for water skiing. Daily permits

TABLE 3. *Labor costs for operation and maintenance at municipal lake recreation enterprises, based on 1975 Oklahoma survey*

City	Population[a]	Surface area of lake or lakes (acres)	Annual operation and maintenance expenditures	Operation and maintenance costs per resident
Lawton	74,470	7,468	$26,567	$ .36
Bartlesville	29,683	335	1,884	.06
Ponca City	25,940	805	6,500	.25
Shawnee	25,075	2,436	31,500	1.26
Duncan	19,718	3,342	52,500	2.66
Chickasha	14,194	1,950	15,875	1.12
Guthrie	9,575	184	2,680	.28
Claremore	9,084	470	2,550	.28
Clinton	8,513	335	585	.07
Perry	5,341	689	2,988	.56
Wewoka	5,284	625	4,908	.93
Tecumseh	4,451	127	2,388	.54
Pawhuska	4,238	895	1,548	.37
Marlow	3,995	500	2,500	.63
Chandler	2,529	120	1,560	.62
Stigler	2,347	265	6,000	2.56
Comanche	1,862	201	10,476	5.63

[a] U. S. Bureau of Census, Census of Population: 1970, *General Population Characteristics,* Final Report PC(1)-B38 Oklahoma, U. S. Government Printing Office, Washington, D. C. 1971.

cost $1 to $3 per boat and annual permits were $12.50 to $20 per boat.

Attendance data for 1975, 1974 and the 1971-75 average attendance at the city lake enterprises are presented in Table 4. Recreation attendance for 1975 was 2,000 or more visitors at 21 city lakes. In 1974 recreation attendance totaled 2,000 or more visitors for only 17 lakes. For a five-year average of recreation attendance, 16 lakes had 2,000 or more visitors. Nine city officials indicated that lake attendance had been increasing in recent years. Several of these officials believed the increasing attendance could be attributed to more people vacationing closer to home in the face of the energy crisis.

All 33 municipalities utilized word of mouth advertising by the recreationists. For 15 cities, word of mouth advertising was the only method used. Seventeen cities advertised their lake with road signs. Ten cities used ads in local newspapers and five cities advertised the lake on local radio stations.

DISCUSSION

Some cities develop their basic facilities, allocate resources for operation and maintenance, and then terminate their development program. As use of facilities increases, problems with maintenance may appear, particularly in high-use recreational areas. When additional resources are provided, the condition of the facilities may be such that these facilities are beyond repair. Allocation of funds is between a major repair program for original facilities and adding new facilities and areas.

Prior to making such decisions, city officials responsible for lake management should consider the trade-off between a large quantity of inadequately maintained facilities and a smaller amount of facilities maintained in good operating condition. The development of additional facilities must keep pace with the city's ability to properly maintain such facilities.

If funds are limited, operation and maintenance of fewer areas, kept in excellent condition, are the key for successful municipal recreation management. Although the camping or picnicking areas require frequent mowings, not all areas around the lake do. Regular spraying for insect pests is not required in all recreational areas. Concentration of resources on a few highly used areas permits regular collection and disposal of solid wastes. Control of vandalism is also facilitated by operating fewer, well patrolled areas.

Many city lakes in Oklahoma were built for multiple purposes: flood control, water supply, and recreation. This mix of uses results in some environmental problems. During times of flood waters, temporary loss in some picnicking and camping facilities may occur, especially where facilities have been located near the shoreline to maximize scenic views of the lake and minimize the distance recreationists have to walk to reach the water. Associated with periods of high water is the physical erosion of top soil leading to damage of the vegetative cover and exposing of tree roots. Such damages to the recreational area cause losses in scenic or aesthetic quality and diminish the future usefulness of the area.

Noise from off-road vehicles and early morning boaters, fishermen, and skiers have increased noise problems in recreational areas. Quiet zones and areas for use of off-road vehicles need to be established. Quiet times for evening, night, and early morning hours need to be established and enforced (3).

The key question facing management of a municipal lake is who should be the users of the recreational facilities. Most city officials see the answer to be local residents. Many municipalities financed their lake in cooperation with the Soil Conservation

TABLE 4. *Recreation attendance at municipal lakes, based on 1975 Oklahoma survey.*

Number of recreationists	1975		1974		1971-75	
	Number	Percent	Number	Percent	Number	Percent
999 or less	5	16	5	16	5	16
1,000 - 1,999	6	19	9	29	10	32
2,000 - 4,999	9	28	8	26	7	23
5,000 - 9,999	4	12	1	3	2	6
10,000 or more	8	25	8	26	7	23
Total	32	100	31	100	31	100

Service in one of two programs, Public Law 566 of 1956 or the Flood Control Act of 1944. Other cities financed the building of the lake themselves, but used federal matching funds from the Land and Water Conservation Fund Act through the Bureau of Outdoor Recreation on a 50-50 cost-sharing basis to develop recreational facilities. In view of these federal sources of financing, consideration should be given to providing use of the lake to nonresidents as well as local residents.

The typical fee policy of setting fees at levels which recover only a portion or all of operation and maintenance costs reflects the view of city officials that local residents are the clientele to be served. These city officials argue that local citizens through their tax dollars have paid for the lake and its facilities. However, these costs are borne by all taxpayers in cases where federal monies are involved. Another argument made for catering to local residents is that local residents through their local tax dollars contribute an additional amount of funds to the lake budgets that nonresidents do not pay. However, nonresidents pay local sales taxes on their purchases and a mixed pricing scheme for resident and nonresident users could be implemented.

A number of advantages accrue to the lake enterprise from encouraging use of the lake and its facilities by all recreationists. If fees are charged, a major advantage is less dependence upon city revenues to finance the operation and maintenance of the recreational facilities. Additional funds may permit increases in the operation and maintenance budget, development of an advertising program, and increases in the lake labor force.

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