MISCELLANEOUS PAPER R-80-1

RECREATION CARRYING CAPACITY FACTS AND CONSIDERATIONS

Title	Date
Report 1: Barkley Lock and Dam, Lake Barkley Project Area	Jul 1980
Report 2: Benbrook Lake Project Area	Jul 1980
Report 3: Hartwell Lake Project Area	Jul 1980
Report 4: Lake Ouachita Project Area	Jul 1980
Report 5: Lake Shelbyville Project Area	Jul 1980
Report 6: McNary Lock and Dam, Lake Wallula Project Area	Jul 1980
Report 7: Milford Lake Project Area	Jul 1980
Report 8: New Hogan Lake Project Area	Jul 1980
Report 9: Shenango River Lake Project Area	Jul 1980
Report 10: Somerville Lake Project Area	Jul 1980
Report 11: Surry Mountain Lake Project Area	Jul 1980

Acknowledgements

We gratefully acknowledge the enthusiasm and excellent cooperation of the resource managers, rangers, and other Corps personnel at Lake Shelbyville and the representatives from the St. Louis District Office. Their contributions of practical experience and knowledge, along with their assistance in arranging schedules, have made this carrying capacity research effort possible.

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Miscellaneous Paper R-80-1	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) RECREATION CARRYING CAPACITY FACTS AND CONSIDERATIONS; Report 5, LAKE SHELBYVILLE PROJECT AREA		5. TYPE OF REPORT & PERIOD COVERED Report 5 of a series
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s) Contract No. DACW39-78-C-0096
9. PERFORMING ORGANIZATION NAME AND ADDRESS Urban Research and Development Corporation 528 North New Street Bethlehem, Pa. 18018		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Recreation Research Program
11. CONTROLLING OFFICE NAME AND ADDRESS Office, Chief of Engineers, U. S. Army Washington, D. C. 20314		12. REPORT DATE July 1980
		13. NUMBER OF PAGES 107
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) U. S. Army Engineer Waterways Experiment Station Environmental Laboratory P. O. Box 631, Vicksburg, Miss. 39180		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

A project map of Lake Shelbyville is enclosed in an envelope attached inside the back cover of this report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Carrying capacity	Recreation resource planning	Utilization
Monitoring	Recreational areas	
Overcrowding	Recreational facilities	
Recreation	Shelbyville Lake Project	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides selected recreation carrying capacity-related information for the Lake Shelbyville Project. The information is based upon: 1) user and management surveys conducted at Lake Shelbyville, and 2) Urban Research and Development Corporation's observations and perceptions of the situations at the project's activity areas. The report provides information regarding activity situations, user characteristics, carrying capacity findings, and other findings; it then focuses on selected problem situations and their possible solutions.

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PREFACE

This report presents the findings and recommendations of the Urban Research and Development Corporation (URDC) relative to recreational carrying capacity at the Lake Shelbyville Project Area. Results of site analyses and user surveys are presented as they relate to existing carrying capacity conditions on the project. The study was conducted under Contract with the U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi, (Contract No. DACW39-78-C-0096).

Mr. Donald R. Detwiler, President of URDC, was Principal-In-Charge of this study, assisted by Mr. Martin C. Gilchrist, Executive Vice-President and Mr. David H. Humphrey, Vice-President. Mr. B. Thomas Palmer, Project Director, had the major responsibility for technical project direction; Messrs. Phillip D. Hunsberger and Paul L. Sabrosky were involved in the site analysis, conducting surveys, and the success analysis; and Mr. Timothy A. Fluck was involved in conducting surveys, survey analysis, and development of methodologies.

Mr. R. Scott Jackson, WES was the Project Monitor. Dr. Adolph Anderson, WES, was Program Manager of the Environmental Laboratory (EL) Recreation Research Program. The study was supervised by Dr. Conrad J. Kirby, Chief, Environmental Resources Division, EL, under the general supervision of Dr. John Harrison, Chief, EL.

COL John L. Cannon, CE, and COL Nelson P. Conover, CE, were Commanders and Directors of WES during this study. Technical Director was Mr. F. R. Brown.

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CONVERSION FACTORS, U. S. CUSTOMARY TO METRIC (SI) UNITS OF MEASUREMENT

U. S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	By	To Obtain
acres	4046.856	square metres
Fahrenheit degrees	5/9	Celsuis degrees or Kelvins
feet	0.3048	metres
horsepower (550 foot and pounds per second)	745.6999	watts
inches	2.54	centimetres
miles per hour (U. S. statute)	1.609344	kilometres per hour
miles (U. S. statute)	1.609344	kilometres
square feet	0.09290304	square metres
yards	0.9144	metres

* To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use the following formula: $C = (5/9)(F - 32)$. To obtain Kelvin (K) readings, use $K = (5/9)(F - 32) + 273.15$.

PART 1: INTRODUCTION

RECREATION CARRYING CAPACITY FACTS AND CONSIDERATIONS

LAKE SHELBYVILLE PROJECT AREA

PART 1: INTRODUCTION

This Report

Purpose

This report, prepared as the fifth in a series of the U. S. Army Engineer Waterways Experiment Station's (WES) Recreational Carrying Capacity Design and Management Study reports, provides selected carrying capacity-related information for the Lake Shelbyville Project Area which is based upon: 1) the user and management surveys conducted at Lake Shelbyville and 2) Urban Research and Development Corporation's (URDC) observations and perceptions of the situations at the project's study activity areas. Some observations and suggestions dealing with project area planning, design, and/or management are included, even though they are not specifically carrying capacity related. The report also suggests specific solutions and treatments of specific recreation activity areas.

The report first provides information regarding activity situations, user characteristics, carrying capacity findings, and other findings; it then focuses on selected problem situations and their possible solutions. Although suggestions regarding possible solutions to problems are included, this report is not intended to be a substitute for master planning or to provide answers to all project area capacity problems. Instead, this report should be viewed as a constructive, informative document which points out directions and techniques for consideration by project managers and designers in the near or distant future.

Relationship to Technical Report and Handbook

In addition to this Project Area Report and similar reports on the other ten study project areas,* the overall capacity study effort produced a Technical Report and a Capacity Handbook:

a. The Technical Report describes the overall study process, reports detailed study findings, and suggests and demonstrates methods and techniques for capacity management.

b. The Capacity Handbook is a more graphic, "how-to-do-it" type of report, designed to serve as a useful field tool for determining carrying capacity and applying techniques for capacity design and management.

This project area report is different from the Technical Report and Handbook in several ways: it includes information not found in the Technical Report and Capacity Handbook; it reports and examines user survey information by activity area and project area, rather than from the total survey population; it addresses specific problems and examines possible solutions; and it does not include the methodologies for determining and monitoring social and resource capacity. For these reasons, this report is intended to compliment the Technical Report and the Handbook, and is not intended to substitute for them.

Qualifications

The information in this report is based on the Management/Site Survey conducted on November 12-14, 1978 and the User Survey conducted on July 13-16 by Urban Research and Development Corporation (URDC). (See Appendix B.) The user survey information was collected over a one-weekend period, which may or may not have been representative of a typical or heavy use weekend at Shelbyville. Interviews were limited at some activity areas because of such factors as lack of users and weather conditions. For these reasons and because carrying capacity analysis is dynamic rather than static, this report is not intended to provide the final answers. Rather, it is a foundation for future analysis and carrying capacity progress.

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* See definition of "Study Project Area" in Appendix A for a listing of these project areas.

Summary Project Area Description*

Lake Shelbyville** provides flood control, navigation releases for the Kaskasia River, and domestic and industrial water supply.

The project is located in an agricultural area and is approximately 30 miles§ south of Decatur, Illinois. Chicago is approximately 200 miles to the north and St. Louis is about 110 miles to the southwest.

At the normal recreational pool elevation of 600 feet msl, the lake surface area is 11,100 acres, the shoreline is 172 miles long, and the land area is 23,308 acres. The normal recreation pool extends 20 river miles upstream, and averages about one mile in width. A large number of coves and inlets are present along the shore.

In 1978, 2.9 million recreation days were reported at Lake Shelbyville.

The surrounding topography is relatively flat. The climate is fairly moderate, with normal summer temperatures in the upper 70's (degrees F.) with extremes to over 100 degrees F., and with 38.6 inches of annual precipitation (20 inches of snowfall).

Access from the major population centers to the project is good via numerous state highways.

---

* Appendix C contains a more detailed project area description for your future use.

** See map inside back cover.

§ A table for converting U. S. customary units of measurement to metric (SI) units is found on page iv.

PART 2: SURVEY FINDINGS BY ACTIVITY

BOATING/WATERSKIING

Orientation

Lake Shelbyville is one of the larger of the study lakes. At the normal pool elevation, the lake surface area is 11,100 acres, extends 20 miles upstream, and averages about one mile in width. The lake surface is well-balanced to heavily used in most areas.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 59 responses from boaters and waterskiers at Shelbyville.

User characteristics

Table 1 indicates the characteristics of the boaters and waterskiers surveyed at Shelbyville. The most significant differences in the characteristics of the boaters/waterskiers surveyed at Shelbyville from those of other study project areas are: 1) the fewer young people (<26 years) and 2) the fewer people participating in less than four other activities.

Table 1

Boater/Waterskier Characteristics

Age	Percent of Boaters/Waterskiers	Group Size	Percent of Boaters/Waterskiers
<18	0**	1	0
18 - 25	14**	2	14
26 - 40	42	3 - 4	27
41 - 55	34	5 - 8	46
56 - 65	10	9 - 12	10
>65	0	>12	3

Travel Time to Project Area	Percent of Boaters/Waterskiers	Visit Duration	Percent of Boaters/Waterskiers
<15 minutes	10	1 - 4 hours	9
15 - 30 minutes	8	5 - 8 hours	36
30 - 60 minutes	31	1 day	10
1 - 2 hours	31	2 days	12
2 - 3 hours	10	3 days	12
3 - 5 hours	8	4 days	5
>5 hours	2	5 - 7 days	10
		>7 days	5

No. of Other Activities	Percent of Boaters/Waterskiers	Equipment	Percent of Boaters/Waterskiers
0	0**	Sailboat	6
1	2**	Canoe	4
2	3**	Power Boat (<25 h.p.)	11
3	7**	Power Boat (>25 h.p.)	80
4	22		
5	20		
6	22		
>6	24		

**Significantly lower than total survey sample.

User opinions

Spacing preferences - Tables 2 and 3 indicate the spacing that the boaters and waterskiers surveyed at Shelbyville and elsewhere prefer.

Table 2

Preferred Distance Responses*

Sample	Sample Size	Range	Mean	Median	Mode
All Boaters Surveyed	135	30- a	531	300	300
Shelbyville	29	30- a	379	300	300
All Waterskiers Surveyed	95	30- a	520	300	300
Shelbyville	28	30-900	270	300	300

*In feet; see Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 3

Preferred Distance Responses in Planning Range and Preference Groupings*

Sample	% in Planning Range[1] (100'-1500')	% in A[2] (100'-199')	% in B[2] (200'-450')	% in C[2] (451'-1500')
All Boaters Surveyed	79%	29%	37%	34%
Shelbyville	82	35	39	26
Sample	**% in Planning Range[1] (100'-1500')**	**% in A[2] (100'-199')**	**% in B[2] (200'-400')**	**% in C[2] (401'-1500')**
All Waterskiers Surveyed	91%	22%	50%	28%
Shelbyville	86	42	46	13

*See Appendix A for definitions of terms; see Technical Report for a full development of spacing preference information.

[1]Percentage of all preferred distance responses.

[2]Percentage of all preferred distance responses in the Planning Range.

Spacing in the range of group C is relatively disfavored by boaters and waterskiers at Shelbyville.

Reasons for pleasant/unpleasant experience - Table 4 indicates the impact that different factors had on making the boating/waterskiing experience pleasant or unpleasant for users at Shelbyville. Boaters/waterskiers surveyed at Shelbyville found their experience to be generally pleasant. "Car-parking facilities" was the only factor which was unpleasant in a significant number of cases. None of the users indicated that they would not return.

Tables 5 and 6 indicate the changes in the physical condition and people's use of the area reported by boaters and waterskiers from their previous visit.

Table 5

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Boaters/Waterskiers

Area	Positive Changes		Negative Changes	
Lake and Adjacent Areas	"High water"	(1)	"Water not good"	(1)
	"Better facilities"	(1)	"Need more buoys"	(1)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 6

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Boaters/Waterskiers

Area	Positive Changes	Negative Changes	
Lake and Adjacent Areas	(None mentioned)	"More party people"	(1)
		"More people"	(1)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 4

Reasons Making Recreation Experience Pleasant or Unpleasant--Boating/Waterskiing
Lake Shelbyville

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	82	11	4
Distance from other people	88	12	-
Number of people in other visitor groups	80	3	17
Number and type of other activities occurring here	86	3	10
Scenic views	100	-	-
Noise	95	3	2
Accidents or near accidents	97	3	-
Enforcement of rules/regulations	90	8	2
Car parking facilities	85	15	-
Theft	95	3	-
Vandalism	97	3	-
Land-Based Reasons			
Amount of facilities (restrooms, water, etc.)	91	7	-
Convenience to facilities (restrooms, water, etc.)	98	2	-
Maintenance of facilities	95	3	-
Condition of trees and landscape	98	2	-
Condition of grass or soil	95	2	2
Water-Based Reasons			
Water quality	97	3	-
Formal designation of places for your activity	83	7	2
Waiting time to launch boat	89	2	-
People in areas they shouldn't be	90	10	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Acceptability of techniques - Table 7 indicates the acceptability of different techniques for solving problems to the boaters and water-skiers surveyed at Shelbyville.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 10 of the 18 techniques. But even for those techniques which most respondents found to be acceptable, up to 49 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

In general, the more apparent and widespread that a problem of overcrowding or overuse is, the more likely users may accept a technique which addresses it. Thus, remedial techniques (which solve existing problems) are generally more acceptable than preventative techniques (which correct a problem before it becomes readily apparent).

The more users can understand the rationale and operation of a technique, the more likely they will accept the use of the technique. Education, therefore, would seem to be an important method of improving user acceptance of different techniques.

It also seems as though the more directly a technique impacts only the problem, and the less it operates to diminish recreational opportunities generally, the more likely users will accept the use of the technique. Thus, techniques which can be applied in the short-term or selectively to problem areas are favored (particularly if done in a crisis setting).

Techniques which call for reductions in existing opportunities to use recreational resources and facilities are strongly disfavored. User expectations of the opportunities available are critical in this determination. Consideration should be given initially to avoiding overdeveloping an area with the idea that selective cutbacks in services and facilities can be accomplished later. Users expectations will be based on the initial level, and subsequent reductions will be disfavored.

Table 7

User Acceptability of Techniques--Boating/Waterskiing
Lake Shelbyville

Techniques	Levels of Acceptability: Percentage* of Users Responding: Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	58	29	14
Make vehicle access to areas less convenient	15	31	54
Make area's existence less obvious	20	25	54
Site Planning Techniques			
Design for greater distance between people	68	25	7
Reduce number of parking spaces	7	24	66
Management Techniques			
Procedures: Require prior reservations	10	14	73
Require permits	31	15	54
Charge/increase fees	14	14	73
Rules and Regulations: Impose more rules	22	29	49
Provide stricter enforcement of rules	53	13	32
Close areas when natural resource destruction reaches critical point	78	10	12
Close areas when they become "too full"	61	20	19
Reduce number of activities in same area	39	39	22
Keep unnecessary vehicles out	71	14	10
Services: Provide more and better information	69	20	5
Increase maintenance and restoration	60	22	14
Reduce facilities and services	8	15	73

*Percentages may not total 100% because of those responding "Does Not Apply."

BOAT FISHING

Orientation

The numerous coves at Lake Shelbyville are popular with boat fishermen. Fallen trees along the shoreline provide a good fish habitat, but can become hazardous during highwater. Fish cleaning stations are provided at all boat ramps. Highest use comes on the weekends, although the central portion of the lake remains well balanced.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 28 responses from boat fishermen at Shelbyville.

User characteristics

Table 8 indicates the characteristics of the boat fishermen surveyed at Shelbyville. The most significant differences in the characteristics of the boat fishermen surveyed at Shelbyville from those of other study project areas are: 1) the fewer young people (<26 years), 2) the fewer users participating in only boat fishing, and 3) the fewer users with power boats >25 horsepower or more.

Table 8

Boat Fisherman Characteristics

Age	Percent of Boat Fishermen	Group Size	Percent of Boat Fishermen
<18	0**	1	4
18 - 25	4**	2	46
26 - 40	54	3 - 4	50
41 - 55	18	5 - 8	0
56 - 65	25	9 - 12	0
>65	0	>12	0

Travel Time to Project Area	Percent of Boat Fishermen	Visit Duration	Percent of Boat Fishermen
<15 minutes	4	1 - 4 hours	4
15 - 30 minutes	14	5 - 8 hours	39
30 - 60 minutes	46*	1 day	21
1 - 2 hours	7	2 days	11
2 - 3 hours	25	3 days	0
3 - 5 hours	4	4 days	4
>5 hours	0	5 - 7 days	14
		>7 days	7

No. of Other Activities	Percent of Boat Fishermen	Equipment	Percent of Boat Fishermen
0	14**	Rowboat	0
1	21	Power Boat (<25 h.p.)	57*
2	14	Power Boat (>25 h.p.)	43**
3	7		
4	11		
5	11		
6	7		
>6	14		

*Significantly higher than total survey sample.
**Significantly lower than total survey sample.

User opinions

Spacing preferences - Tables 9 and 10 indicate the spacing that the boat fishermen surveyed at Shelbyville and elsewhere prefer.

Table 9

Preferred Distance Responses*

Sample	Sample Size	Range	Mean	Median	Mode
All Boat Fishermen Surveyed	111	30 - 5280	555	200	100
Shelbyville	26	30 - 150	94	75	150

*In feet; See Appendix A for definitions of terms.

Table 10

Preferred Distance Responses in Planning Range and Preference Groupings*

Sample	% in Planning Range[1] (50'-1500')	% in A[2] (50'-199')	% in B[2] (200'-599')	% in C[2] (600'-1500')
All Boat Fishermen Surveyed	91%	49%	27%	24%
Shelbyville	50	100	0	0

*See Appendix A for definitions of terms; See Technical Report for a full development of spacing preference information.

[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses in Planning Range.

Spacing in the range of group A (50'-199' feet) is greatly preferred by boat fishermen at Shelbyville.

Reasons for pleasant/unpleasant experience - Table 11 indicates the impact that different factors had on making the boat fishing experience pleasant or unpleasant for users at Shelbyville. "Catching fish" and "visual privacy" were the factors which made the experience at Shelbyville unpleasant in a significant number of cases. None of the boat fishermen surveyed indicated that they would not return to the area.

Tables 12 and 13 indicate the changes in the physical condition and people's use of the area reported by boat fishermen from their previous visit.

Table 12

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Boat Fishermen

Area	Positive Changes	Negative Changes
Lake and Adjacent Areas	"Paved roads" (1) "Water level" (1)	(None mentioned)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 13

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Boat Fishermen

Area	Positive Changes	Negative Changes
Lake and Adjacent Areas	(None mentioned)	"Need wake zone" (1) "Waterskiers too close" (1) "Waterskiers annoying" (1)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 11

Reasons Making Recreation Experience Pleasant or Unpleasant--Boat Fishing
Lake Shelbyville

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	88	8	-
Distance from other people	88	8	4
Number of people in other visitor groups	65	8	27
Number and type of other activities occurring here	77	12	12
Scenic views	96	-	4
Noise	92	4	4
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	96	-	4
Car parking facilities	96	4	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons			
Visual privacy from other people	69	19	12
Amount of facilities (restrooms, water, etc.)	88	-	12
Convenience to facilities (restrooms, water, etc.)	88	-	12
Maintenance of facilities	96	-	4
Condition of trees and landscape	100	-	-
Condition of grass or soil	100	-	-
Water-Based Reasons			
Water quality	100	-	-
Catching fish	72	28	-
People in areas they shouldn't be	80	12	4

*Percentages may not total 100% because of those responding "Does Not Apply."

Acceptability of techniques - Table 14 indicates the acceptability of different techniques for solving problems to the boat fishermen surveyed at Shelbyville.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 11 of the 17 techniques. But even for those techniques which most respondents found to be acceptable, up to 31 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 14

User Acceptability of Techniques--Boat Fishing
Lake Shelbyville

Techniques	Levels of Acceptability: Percentage* of Users Responding: Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	69	27	4
Make vehicle access to areas less convenient	4	15	81
Make area's existence less obvious	12	12	77
Site Planning Techniques			
Reduce number of parking spaces	16	31	54
Management Techniques			
Procedures:			
Require prior reservations	8	27	65
Require permits	40	31	31
Charge/increase fees	12	-	88
Rules and Regulations:			
Impose more rules	4	40	58
Provide stricter enforcement of rules	46	31	23
Close areas when natural resource destruction reaches critical point	85	16	-
Close areas when they become "too full"	73	16	12
Reduce number of activities in same area	69	20	12
Limit number of people in visitor groups	20	27	54
Keep unnecessary vehicles out	58	16	27
Services:			
Provide more and better information	64	16	20
Increase maintenance and restoration	52	40	8
Reduce facilities and services	8	16	77

*Percentages may not total 100% because of those responding "Does Not Apply."

BOAT LAUNCHING

Orientation

Boat ramps are provided at 15 areas on the lake, three of which are marinas. No private docks are permitted to be developed. Some abandoned roads are also used as informal launch areas. The use levels of these areas vary from underused to heavily used (in some cases resulting in overcrowding).

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 22 responses from boat launchers at Shelbyville (16 at Bo Wood and 6 at Wilborn).

User characteristics

Table 15 indicates the characteristics of the boat launchers surveyed at Shelbyville. The most significant difference in the characteristics of the boat launchers surveyed at Shelbyville from those of other study project areas is the greater number of launchers participating only in boating.

Table 15

Boat Launcher Characteristics

Age	Percent of Boat Launchers	Group Size	Percent of Boat Launchers
<18	0	1	0
18 - 25	17	2	39
26 - 40	57	3 - 4	48
41 - 55	26	5 - 8	13
56 - 65	0	9 - 12	0
>65	0	>12	0

Travel Time to Project Area	Percent of Boat Launchers	Visit Duration	Percent of Boat Launchers
<15 minutes	5	1 - 4 hours	23
15 - 30 minutes	41	5 - 8 hours	50
30 - 60 minutes	36	1 day	9
1 - 2 hours	0	2 days	5
2 - 3 hours	14	3 days	9
3 - 5 hours	5	4 days	0
>5 hours	0	5 - 7 days	5
		>7 days	0

No. of Other Activities	Percent of Boat Launchers
0	35*
1	22
2	13
3	17
4	9
5	0
6	0
>6	4

*Significantly higher than total survey sample.

User opinions

Launch time preferences - The launch times preferred by boat launchers surveyed at Shelbyville ranged from 5 to 15 minutes, with the average time being 6 minutes.

Reasons for pleasant/unpleasant experience - Tables 16 and 17 indicate the impact that different factors had on making the boat launching experience pleasant or unpleasant for users at the two areas surveyed. Boat launchers at both areas found their experience to be generally pleasant. None of the users surveyed indicated they would not return to the area.

Tables 18 and 19 indicate the changes in the physical condition and people's use of the areas reported by boat launchers from their previous visit.

Table 16

Reasons Making Recreation Experience Pleasant or Unpleasant--Boat Launching
Bo Wood

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons Characteristics and behavior of other people	100	-	-
Distance from other people	100	-	-
Number of people in other visitor groups	75	-	25
Number and type of other activities occurring here	88	-	13
Scenic views	100	-	-
Noise	88	6	6
Accidents or near accidents	94	6	-
Enforcement of rules/regulations	94	6	-
Car parking facilities	81	19	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons Amount of facilities (restrooms, water, etc.)	100	-	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Steepness of slopes	81	6	13
Maintenance of facilities	100	-	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	81	6	13
Water-Based Reasons Water quality	100	-	-
Formal designation of places for your activity	100	-	-
Waiting time to launch boat	100	-	-
People in areas they shouldn't be	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 17

Reasons Making Recreation Experience Pleasant or Unpleasant--Boat Launching
Wilborn

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	100	-	-
Distance from other people	100	-	-
Number of people in other visitor groups	100	-	-
Number and type of other activities occurring here	83	17	-
Scenic views	83	-	17
Noise	100	-	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	100	-	-
Car parking facilities	100	-	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons			
Amount of facilities (restrooms, water, etc.)	100	-	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Steepness of slopes	100	-	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	33	17	50
Condition of grass or soil	33	17	50
Water-Based Reasons			
Water quality	100	-	-
Formal designation of places for your activity	83	-	-
Waiting time to launch boat	100	-	-
People in areas they shouldn't be	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 18

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Boat Launchers

Area	Positive Changes	Negative Changes
Bo Wood	"Cleaner" (4)	(None mentioned)
Wilborn	(None mentioned)	(None mentioned)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 19

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Boat Launchers

Area	Positive Changes*	Negative Changes*
Bo Wood	"Less rowdy" (1)	(None mentioned)
Wilborn	(None mentioned)	"Inconsiderate people" (1) "People not educated in launching" (1)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 20 indicates the acceptability of different techniques for solving problems to the boat launchers surveyed at Shelbyville.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 13 of the 19 techniques. But even for those techniques which most respondents found to be acceptable, up to 35 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 20

User Acceptability of Techniques--Boat Launching
Lake Shelbyville

Techniques	Levels of Acceptability		
	Percentage* of Users Responding:		
	Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	26	39	35
Make vehicle access to areas less convenient	9	17	74
Make area's existence less obvious	21	17	63
Site Planning Techniques			
Redesign area to accommodate fewer users	36	41	23
Design for greater distance between people	41	32	27
Reduce number of parking spaces	4	21	75
Management Techniques			
Procedures:			
Require prior reservations	-	-	74
Require permits	5	27	68
Charge/increase fees	13	25	63
Rules and Regulations:			
Impose more rules	8	21	71
Provide stricter enforcement of rules	17	50	33
Close areas when natural resource destruction reaches critical point	91	9	-
Close areas when they become "too full"	79	8	13
Reduce number of activities in same area	29	38	33
Limit number of people in visitor groups	5	23	73
Keep unnecessary vehicles out	50	41	9
Services:			
Provide more and better information	100	-	-
Increase maintenance and restoration	68	32	-
Reduce facilities and services	-	23	73

*Percentages may not total 100% because of those responding "Does Not Apply."

CAMPING

Orientation

The Corps provides six campgrounds at Lake Shelbyville and the State of Illinois provides an additional two campgrounds. The level of development of the Corps campgrounds is moderate to high, while the degree of control is typically high (e.g., gate attendants are provided). Most of the Corps areas are well balanced, with the exception of Coon Creek which is heavily used. A single overflow area of 300 undesignated sites is used only when all other sites are filled.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 120 responses from campers at Shelbyville (33 at Bo Woods, 54 at Coon Creek, 20 at Lone Point, nine at Oppossum, and four at Wilborn).

User characteristics

Table 21 indicates the characteristics of the campers surveyed at Shelbyville. The characteristics of the campers surveyed at Shelbyville are similar to those of the campers surveyed at other study project areas.

Table 21

Camper Characteristics

Age	Percent of Campers	Group Size	Percent of Campers
<18	1	1	0
18 - 25	13	2	21
26 - 40	46	3 - 4	38
41 - 55	28	5 - 8	34
56 - 65	7	9 - 12	4
>65	6	>12	3

Travel Time to Project Area	Percent of Campers	Visit Duration	Percent of Campers
<15 minutes	2	1 - 4 hours	2
15 - 30 minutes	13	5 - 8 hours	1
30 - 60 minutes	17	1 day	3
1 - 2 hours	29	2 days	20
2 - 3 hours	18	3 days	23
3 - 5 hours	18	4 days	15
>5 hours	3	5 - 7 days	19
		>7 days	17

No. of Other Activities	Percent of Campers	Equipment	Percent of Campers
0	3	Tent	34
1	8	Tent Camper	11
2	13	Truck Camper	11
3	10	Trailer	25
4	16	Van	9
5	26	Motor Home	9
6	13		
>6	10		

User opinions

Spacing preferences - Tables 22 and 23 indicate the spacing (as measured on center of each site) that campers surveyed at Shelbyville and elsewhere prefer.

Table 22

Preferred Distance Responses* - Camping

Sample	Sample Size	Range	Mean	Median	Mode
All Campers Surveyed (11 projects)	511	10 - a	79	60	75
Shelbyville	84	10 -1320	55	60	50
Bo Wood	19	25 -1320	60	60	75
Coon Creek	40	10 - 200	47	45	50
Lone Point	20	50 -1320	74	60	50,60
Oppossum	5	25 - 200	83	75	-
Wilborn	-	-	-	-	-

*in feet; See Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 23

Preferred Distance Responses in Planning Range and Preference Groupings*

Sample	% in Planning Range[1] (20'-120')	% in A[2] (20'-39')	% in B[2] (40'-59')	% in C[2] (60'-79')	% in D[2] (80'-120')
All Campers Surveyed	90%	20%	28%	31%	21%
Shelbyville	73	26	26	30	18
Bo Wood	89	12	29	47	12
Coon Creek	85	41	21	18	15
Lone Point	40	0	25	38	38
Oppossum	40	0	0	50	50
Wilborn	-	-	-	-	-

*See Appendix A for definitions of terms; See Technical Report for full development of spacing preference information.
[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses within the Planning Range.

While the preferences of campers at the recreation areas differ from each other, the preferences of all of the campers surveyed at Shelbyville are similar to those of the total sample.

Reasons for pleasant/unpleasant experience - Tables 24, 25, 26, 27, and 28 indicate the impact that different factors had on making the camping experience pleasant or unpleasant for users at the five areas surveyed. Campers at Wilborn found their experience to be generally the most pleasant, followed by those at Lone Point, and those at Bo Wood, Coon Creek and Oppossum. One user indicated that he would not return (see Table 29).

Tables 30 and 31 indicate the changes in the physical condition and people's use of the areas reported by campers from their previous visit.

Table 24

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping
Bo Wood

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	100	-	-
Distance from other people	91	9	-
Number of people in other visitor groups	94	-	6
Number and type of other activities occurring here	87	6	3
Fees charged	97	3	-
Scenic views	97	3	-
Noise	100	-	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	94	6	-
Car parking facilities	82	18	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons			
Visual privacy from other people	85	5	-
Amount of facilities (restrooms, water, etc.)	94	6	-
Convenience to facilities (restrooms, water, etc.)	70	27	3
Nearness to the water body	91	9	-
Steepness of slopes	73	27	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	94	3	3
Water-Based Reasons			
Water quality	-	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 25

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping

Coon Creek

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	93	-	6
Distance from other people	87	9	2
Number of people in other visitor groups	76	6	11
Number and type of other activities occurring here	91	4	6
Fees charged	100	-	-
Scenic views	98	2	-
Noise	94	6	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	94	2	2
Car parking facilities	78	22	-
Theft	98	2	-
Vandalism	100	-	-
Land-Based Reasons			
Visual privacy from other people	85	13	2
Amount of facilities (restrooms, water, etc.)	89	11	-
Convenience to facilities (restrooms, water, etc.)	94	6	-
Nearness to the water body	83	17	-
Steepness of slopes	69	22	4
Maintenance of facilities	100	-	-
Condition of trees and landscape	96	4	-
Condition of grass or soil	87	13	-
Water-Based Reasons			
Water quality	83	4	7

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 26

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping

Lone Point

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	95	5	-
Distance from other people	90	10	-
Number of people in other visitor groups	90	5	-
Number and type of other activities occurring here	100	-	-
Fees charged	100	-	-
Scenic views	100	-	-
Noise	90	10	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	100	-	-
Car parking facilities	100	-	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons			
Visual privacy from other people	95	5	-
Amount of facilities (restrooms, water, etc.)	95	5	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Nearness to the water body	95	5	-
Steepness of slopes	85	15	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	100	-	-
Water-Based Reasons			
Water quality	90	10	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 27

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping

Oppossum

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	100	-	-
Distance from other people	89	11	-
Number of people in other visitor groups	78	11	11
Number and type of other activities occurring here	89	11	-
Fees charged	56	-	-
Scenic views	100	-	-
Noise	78	22	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	100	-	-
Car parking facilities	100	-	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons			
Visual privacy from other people	100	-	-
Amount of facilities (restrooms, water, etc.)	67	33	-
Convenience to facilities (restrooms, water, etc.)	78	22	-
Nearness to the water body	78	22	-
Steepness of slopes	100	-	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	100	-	-
Water-Based Reasons			
Water quality	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 28

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping
Wilborn

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	100	-	-
Distance from other people	100	-	-
Number of people in other visitor groups	100	-	-
Number and type of other activities occurring here	100	-	-
Fees charged	25	-	-
Scenic views	100	-	-
Noise	100	-	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	100	-	-
Car parking facilities	100	-	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons			
Visual privacy from other people	100	-	-
Amount of facilities (restrooms, water, etc.)	100	-	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Nearness to the water body	25	75	-
Steepness of slopes	100	-	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	75	25	-
Condition of grass or soil	33	67	-
Water-Based Reasons			
Water quality	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 29

Number and Percent of Users That Indicated They Would Not Return to the Activity Area and Their Reasons

Area	Number and percent of users surveyed who indicated they would not return #	%	Reasons for not wanting to return
Bo Wood	0	0	(None mentioned)
Coon Creek	1	2%	"Sites too close"
Lone Point	0	0	(None mentioned)
Oppossum	0	0	(None mentioned)
Wilborn	0	0	(None mentioned)

Table 30

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Campers

Area	Positive Changes*	Negative Changes*
Bo Wood	"More experienced campers" (1) "More tent campers" (1) "Quieter" (1)	(None mentioned)
Cook Creek	"More people" (1)	"Too many dogs" (1) "More people" (1)
Lone Point	"More with recreation vehicles" (1) "Fewer tents" (1)	(None mentioned)
Oppossum	"Friendlier" (1)	(None mentioned)
Wilborn	(None mentioned)	(None mentioned)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 31

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Campers

Area	Positive Changes*		Negative Changes*	
Bo Wood	"Cleaner"	(8)	"Banks steeper"	(1)
	"Grass mowed"	(7)	"Underbrush too thick"	(1)
	"New restrooms"	(1)		
	"New shower"	(1)		
	"More programs"	(1)		
	"Road paved"	(1)		
	"Gate attendant"	(1)		
Coon Creek	"Road paved"	(4)	"Bridges collapsed on paths"	(1)
	"General improvement"	(1)		
	"Restrooms"	(1)		
	"Better roads"	(2)		
	"Fish cleaning stations"	(1)		
	"Grass cut"	(1)		
	"Pads better"	(6)		
Lone Point	"More facilities"	(2)	"Water not as good"	(1)
	"More improved"	(1)		
Oppossum	"Flat tent site"	(1)	"Low water"	(1)
	"Cut grass"	(1)	"Took out grills"	(1)
Wilborn	(None mentioned)		(None mentioned)	

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 32 indicates the acceptability of different techniques for solving problems to the campers surveyed at Shelbyville.

The acceptability of many techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 11 of the 22 techniques. But even for those techniques which most respondents found to be acceptable, up to 44 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 32

User Acceptability of Techniques--Camping
Lake Shelbyville

Techniques	Levels of Acceptability: Percentage* of Users Responding: Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	72	15	13
Make vehicle access to areas less convenient	25	13	61
Make area's existence less obvious	23	15	58
Site Planning Techniques			
Redesign area to accommodate fewer users	61	16	22
Design for greater distance between people	76	14	9
Reduce number of parking spaces	44	21	35
Change natural surface by hardening	48	7	44
Change natural surface by paving	51	25	24
Provide landscaped buffers	71	13	16
Management Techniques			
Procedures:			
Require prior reservations	29	27	44
Require permits	45	17	39
Charge/increase fees	26	18	55
Rules and Regulations:			
Impose more rules	24	20	55
Provide stricter enforcement of rules	50	17	32
Close areas when natural resource destruction reaches critical point	90	7	3
Close areas when they become "too full"	92	3	3
Reduce number of activities in same area	50	22	28
Limit number of people in visitor groups	57	14	29
Keep unnecessary vehicles out	71	13	16
Services:			
Provide more and better information	72	14	10
Increase maintenance and restoration	68	20	12
Reduce facilities and services	19	18	62

*Percentages may not total 100% because of those responding "Does Not Apply."

HIKING

Orientation

Hiking trails are provided at Bo Wood and Coon Creek. The Coon Creek trail is an interpretative nature trail. While the Bo Wood trail is underused to well balanced, the Coon Creek trail is heavily used (resulting in some overuse).

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 13 responses from hikers at Shelbyville (8 at Bo Wood and 5 at Coon Creek).

User characteristics

Table 33 indicates the characteristics of the hikers surveyed at Shelbyville.

Table 33

Hiker Characteristics

Age	Percent of Hikers
<18	8
18 - 25	15
26 - 40	54
41 - 55	0
56 - 65	8
>65	0

Group Size	Percent of Hikers
1	0
2	8
3 - 4	31
5 - 8	62
9 - 12	0
>12	0

Travel Time to Project Area	Percent of Hikers
<15 minutes	15
15 - 30 minutes	15
30 - 60 minutes	31
1 - 2 hours	8
2 - 3 hours	23
3 - 5 hours	0
>5 hours	8

Visit Duration	Percent of Hikers
1 - 4 hours	0
5 - 8 hours	0
1 day	8
2 days	8
3 days	23
4 days	0
5 - 7 days	54
>7 days	8

No. of Other Activities	Percent of Hikers
0	0
1	0
2	11
3	0
4	0
5	22
6	0
>6	67

User opinions

Spacing preferences - The spacing preferred by hikers at Shelbyville ranged from 100 feet to "isolated," with the average being approximately 2500 feet.

Reasons for pleasant/unpleasant experience - Tables 34 and 35 indicate the impact that different factors had on making the hiking experience pleasant or unpleasant for users at the two areas surveyed. None of the hikers indicated that they would not return to the area.

Table 36 indicates the changes in the physical condition of the areas reported by hikers from their previous visit. No changes in people's use of these areas were reported.

Table 34

Reasons Making Recreation Experience Pleasant or Unpleasant--Hiking
Bo Wood

	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	100	-	-
Distance from other people	100	-	-
Number of people in other visitor groups	63	-	36
Number and type of other activities occurring here	88	13	-
Scenic views	100	-	-
Noise	100	-	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	88	13	-
Car parking facilities	75	36	-
Theft	100	-	-
Vandalism	88	13	-
Land-Based Reasons			
Visual privacy from other people	100	-	-
Amount of facilities (restrooms, water, etc.)	100	-	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Nearness to the water body	100	-	-
Steepness of slopes	75	25	-
Maintenance of facilities	88	13	-
Condition of trees and landscape	88	13	-
Condition of grass or soil	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 35

Reasons Making Recreation Experience Pleasant or Unpleasant--Hiking
Coon Creek

	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons Characteristics and behavior of other people	100	-	-
Distance from other people	80	-	20
Number of people in other visitor groups	60	20	20
Number and type of other activities occurring here	80	20	-
Scenic views	100	-	-
Noise	80	20	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	80	-	20
Car parking facilities	100	-	-
Theft	100	-	-
Vandalism	100	-	-
Land-Based Reasons Visual privacy from other people	100	-	-
Amount of facilities (restrooms, water, etc.)	100	-	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Nearness to the water body	100	-	-
Steepness of slopes	60	40	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 36

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Hikers

Area	Positive Changes*		Negative Changes*
Bo Wood	"Cleaner"	(1)	(None mentioned)
	"Better maintenance"	(2)	
Coon Creek	"Gravel on paths"	(1)	(None mentioned)
	"Paved roads"	(1)	

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 37 indicates the acceptability of different techniques for solving problems to the hikers surveyed at Shelbyville.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 15 of the 22 techniques. But even for those techniques which most respondents found to be acceptable, up to 36 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 37

User Acceptability of Techniques--Hiking
Lake Shelbyville

Techniques	Levels of Acceptability		
	Percentage* of Users Responding:		
	Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	45	45	9
Make vehicle access to areas less convenient	9	18	73
Make area's existence less obvious	-	27	73
Site Planning Techniques			
Redesign area to accommodate fewer users	64	18	18
Design for greater distance between people	64	18	18
Reduce number of parking spaces	45	27	27
Change natural surface by hardening	27	-	73
Change natural surface by paving	45	18	36
Provide landscaped buffers	82	18	-
Management Techniques			
Procedures:			
Require prior reservations	9	27	64
Require permits	36	9	56
Charge/increase fees	-	9	91
Rules and Regulations:			
Impose more rules	36	36	27
Provide stricter enforcement of rules	73	9	18
Close areas when natural resource destruction reaches critical point	73	27	-
Close areas when they become "too full"	64	-	36
Reduce number of activities in same area	27	36	36
Limit number of people in visitor groups	45	27	27
Keep unnecessary vehicles out	73	18	-
Services:			
Provide more and better information	73	18	-
Increase maintenance and restoration	73	18	9
Reduce facilities and services	18	18	64

*Percentages may not total 100% because of those responding "Does Not Apply."

PICNICKING

Orientation

Picnic areas are provided at eight Corps areas and two State-operated areas. Shelters are available on a reservation basis and are very popular. Most of the picnic areas receive moderate use to under-use, with the exception of the Dam Access Area which receives heavy use.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 48 responses from picnickers at Shelbyville (28 at Bo Wood and 20 at Dam West).

User characteristics

Table 38 indicates the characteristics of the picnickers surveyed at Shelbyville. The most significant differences in the characteristics of the picnickers surveyed at Shelbyville from those of other study project areas are the fewer users from nearby locations and the few users who are only picnicking.

Table 38

Picnicker Characteristics

Age	Percent of Picnickers	Group Size	Percent of Picnickers
<18	4	1	0
18 - 25	15	2	0**
26 - 40	54	3 - 4	31
41 - 55	13	5 - 8	52
56 - 65	13*	9 - 12	6
>65	2	>12	10

Travel Time to Project Area	Percent of Picnickers	Visit Duration	Percent of Picnickers
<15 minutes	0**	1 - 4 hours	17
15 - 30 minutes	15**	5 - 8 hours	50
30 - 60 minutes	35	1 day	6
1 - 2 hours	23	2 days	10
2 - 3 hours	17	3 days	13
3 - 5 hours	10	4 days	0
>5 hours	0	5 - 7 days	4
		>7 days	0

No. of Other Activities	Percent of Picnickers
0	2**
1	19
2	28
3	26
4	11
5	11
6	0
>6	4

*Significantly higher than total survey sample.
**Significantly lower than total survey sample.

User opinions

Spacing preferences - Tables 39 and 40 indicate the spacing that picnickers surveyed at Shelbyville and elsewhere prefer.

Table 39

Preferred Distance Responses*

Sample	Sample Size	Range	Mean	Median	Mode
All Picnickers Surveyed	190	1 - a	62	50	50
Shelbyville	43	20 - a	54	50	50
Bo Woods	24	20 - a	60	50	100
Dam West	19	20 -120	46	50	50

*In feet; See Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 40

Preferred Distance Responses in Planning Range and Preference Groupings*

Sample	% in Planning Range[1] (20'-100')	% in A[2] (20'-39')	% in B[2] (40'-59')	% in C[2] (60'-79')	% in D[2] (80'-100')
All Picnickers surveyed	93%	23%	42%	20%	15%
Shelbyville	91	18	49	15	18
Bo Woods	88	29	24	14	33
Dam West	95	6	78	17	0

*See Appendix A for definitions of terms; See Technical Report for a full development of spacing preference information.

[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses in the Planning Range.

Reasons for pleasant/unpleasant experience - Tables 41 and 42 indicate the impact that different factors had on making the picnicking experience pleasant or unpleasant for users at the two areas surveyed. Picnickers at both areas found their experience to be generally pleasant. The "steepness of slopes" and "condition of grass or soil" were the factors which most often made the respective experience at Bo Woods and Dam West unpleasant. None of the users surveyed indicated that they would not return to the area.

Tables 43 and 44 indicate the changes in the physical conditions and people's use of the areas reported by picnickers from their previous visits.

Table 41

Reasons Making Recreation Experience Pleasant or Unpleasant--Picnicking
Bo Wood

	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	100	-	-
Distance from other people	89	4	7
Number of people in other visitor groups	82	-	14
Number and type of other activities occurring here	86	4	11
Scenic views	100	-	-
Noise	93	7	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	100	-	-
Car parking facilities	86	14	-
Theft	96	4	-
Vandalism	96	4	-
Land-Based Reasons			
Visual privacy from other people	82	11	7
Amount of facilities (restrooms, water, etc.)	89	11	-
Convenience to facilities (restrooms, water, etc.)	82	18	-
Nearness to the water body	100	-	-
Steepness of slopes	64	36	-
Maintenance of facilities	96	4	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	96	4	-
Water-Based Reasons			
Water quality	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 42

Reasons Making Recreation Experience Pleasant or Unpleasant--Picnicking
Dam West

	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons Characteristics and behavior of other people	100	-	-
Distance from other people	100	-	-
Number of people in other visitor groups	100	-	-
Number and type of other activities occurring here	100	-	-
Scenic views	100	-	-
Noise	95	5	-
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	100	-	-
Car parking facilities	95	5	-
Theft	95	5	-
Vandalism	100	-	-
Land-Based Reasons Visual privacy from other people	100	-	-
Amount of facilities (restrooms, water, etc.)	95	5	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Nearness to the water body	100	-	-
Steepness of slopes	100	-	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	42	58	-
Water-Based Reasons Water quality	-	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 43

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Picnickers

Area	Positive Changes*		Negative Changes*	
Bo Wood	(None mentioned)		"More erosion"	(1)
Dam West	"Cleaner"	(2)	(None mentioned)	
	"Garbage can closes"	(1)		
	"More tables"	(1)		
	"Trees"	(1)		
	"More development"	(1)		
	"Low water"	(1)		
	"Mowed grass"	(1)		

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 44

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Picnickers

Area	Positive Changes		Negative Changes
Bo Wood	(None mentioned)		(None mentioned)
Dam West	"Friendlier"	(1)	(None mentioned)
	"More families"	(1)	
	"More party people"	(1)	

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 45 indicates the acceptability of different techniques for solving problems to the picnickers surveyed at Shelbyville.

The acceptability of some of the techniques is clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 5 of the 22 techniques. But even for those techniques which most respondents found to be acceptable, up to 43 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 45

User Acceptability of Techniques--Picnicking
Lake Shelbyville

Techniques	Levels of Acceptability Percentage* of Users Responding: Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	39	35	26
Make vehicle access to areas less convenient	17	26	57
Make area's existence less obvious	17	30	52
Site Planning Techniques			
Redesign area to accommodate fewer users	30	39	22
Design for greater distance between people	35	26	39
Reduce number of parking spaces	43	22	35
Change natural surface by paving	48	39	13
Provide landscaped buffers	9	35	9
Management Techniques			
Procedures:			
Require prior reservations	4	26	57
Require permits	39	22	39
Charge/increase fees	26	13	61
Rules and Regulations:			
Impose more rules	13	22	65
Provide stricter enforcement of rules	35	30	35
Close areas when natural resource destruction reaches critical point	61	30	9
Close areas when they become "too full"	52	13	35
Reduce number of activities in seam area	43	13	43
Limit number of people in visitor groups	9	13	78
Keep unnecessary vehicles out	57	30	-
Services:			
Provide more and better information	78	13	9
Increase maintenance and restoration	65	22	9
Reduce facilities and services	13	9	57

*Percentages may not total 100% because of those responding "Does Not Apply."

SHORELINE FISHING

Orientation

Shoreline fishing is very popular at the Tailwater area, where concrete bleachers, fish cleaning stations, and other facilities are provided.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 23 responses from shoreline fishermen at the Tailwater area.

User characteristics

Table 46 indicates the characteristics of the shoreline fishermen surveyed at Shelbyville. The characteristics of the shoreline fishermen surveyed at Shelbyville are similar to those of fishermen surveyed at other study project areas.

Table 46

Shoreline Fisherman Characteristics

Age	Percent of Shoreline Fishermen
<18	13
18 - 25	22
26 - 40	13
41 - 55	39
56 - 65	9
>65	4

Group Size	Percent of Shoreline Fishermen
1	13
2	39
3 - 4	39
5 - 8	9
9 - 12	0
>12	0

Travel Time to Project Area	Percent of Shoreline Fishermen
<15 minutes	4
15 - 30 minutes	17
30 - 60 minutes	30
1 - 2 hours	22
2 - 3 hours	17
3 - 5 hours	9
>5 hours	0

Visit Duration	Percent of Shoreline Fishermen
1 - 4 hours	22
5 - 8 hours	48
1 day	4
2 days	9
3 days	4
4 days	0
5 - 7 days	0
>7 days	9

No. of Other Activities	Percent of Shoreline Fishermen
0	14
1	13
2	0
3	0
4	4
5	0
6	9
>6	0

User opinions

Spacing preferences - Tables 47 and 48 indicate the spacing that shoreline fishermen surveyed at Shelbyville and elsewhere prefer.

Table 47

Preferred Distance Responses*

Sample	Sample Size	Range	Mean	Median	Mode
All shoreline fishermen surveyed	106	6 - a	76	35	50
Shelbyville (Tailwater)	21	10 - a	28	25	25

*In feet; See Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 48

Preferred Distance Responses in Planning Range and Preference Groupings*

Sample	% in Planning Range[1] (10'-100')	% in A[2] (10'-19')	% in B[2] (20'-39')	% in C[2] (40'-59')	% in D[2] (60'-100')
All shoreline fishermen surveyed	83%	20%	38%	24%	18%
Shelbyville (Tailwater)	95	25	50	25	0

*See Appendix A for definitions of terms; See Technical Report for a full development of spacing preference information.

[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses in Planning Range.

Closer spacing is preferred more frequently by the fishermen surveyed at Shelbyville than by those at other project areas.

Reasons for pleasant/unpleasant experience - Table 48 indicates the impact that different factors had on making the shoreline fishing experience pleasant or unpleasant for users at the Tailwater area. Fishermen at the Tailwater found their experience to be generally pleasant, with the steepness of slopes being unpleasant in a significant number of cases. None of the fishermen surveyed indicated that he would not return to the area.

Tables 49 and 50 indicate the changes in the physical condition and people's use of the area reported by shoreline fishermen from their previous visits.

Table 49

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Shoreline Fishermen

Area	Positive Changes	Negative Changes
Tailwater	"Fish cleaning station" (1) "Cleaner" (1) "Bleachers" (1)	"Low water" (3) "Dead fish on bank" (1) "Water dirtier" (1)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 50

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Shoreline Fishermen

Area	Positive Changes	Negative Changes
Tailwater	"More working people" (1) "Not as many people" (1)	"Out of town people" (1)

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 48

Reasons Making Recreation Experience Pleasant or Unpleasant--Shoreline Fishing Tailwater

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons			
Characteristics and behavior of other people	96	4	-
Distance from other people	87	13	-
Number of people in other visitor groups	91	-	4
Number and type of other activities occurring here	96	4	-
Scenic views	74	4	22
Noise	74	4	22
Accidents or near accidents	100	-	-
Enforcement of rules/regulations	91	9	-
Car parking facilities	96	4	-
Theft	100	-	-
Vandalism	-	-	-
Land-Based Reasons			
Visual privacy from other people	57	9	4
Amount of facilities (restrooms, water, etc.)	87	13	-
Convenience to facilities (restrooms, water, etc.)	96	4	-
Nearness to the water body	-	-	-
Steepness of slopes	74	26	-
Maintenance of facilities	91	4	4
Condition of trees and landscape	61	4	4
Condition of grass or soil	61	4	4
Water-Based Reasons			
Water quality	87	13	-
Catching fish	87	13	-
Formal designation of places for your activity	81	14	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Acceptability of techniques - Table 51 indicates the acceptability of different techniques for solving problems to the shoreline fishermen surveyed at Shelbyville.

The acceptability of many techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 8 of the 22 techniques. But even for those techniques which most respondents found to be acceptable, up to 43 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 51

User Acceptability of Techniques--Shoreline Fishermen
Lake Shelbyville

Techniques	Levels of Acceptability Percentage* of Users Responding:		
	Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	39	35	26
Make vehicle access to areas less convenient	17	26	57
Make area's existence less obvious	17	30	52
Site Planning Techniques			
Redesign area to accommodate fewer users	32	41	23
Design for greater distance between people	35	26	39
Reduce number of parking spaces	43	26	35
Change natural surface by paving	39	43	17
Provide landscaped buffers	9	36	9
Management Techniques			
Procedures:			
Require prior reservations	4	26	52
Require permits	39	17	43
Charge/increase fees	23	17	61
Rules and Regulations:			
Impose more rules	13	22	65
Provide stricter enforcement of rules	35	30	35
Close areas when natural resource destruction reaches critical point	65	26	9
Close areas when they become "too full"	52	13	35
Reduce number of activities in seam area	43	13	43
Limit number of people in visitor groups	9	13	78
Keep unnecessary vehicles out	57	33	10
Services:			
Provide more and better information	78	9	9
Increase maintenance and restoration	68	23	9
Reduce facilities and services	20	10	65

*Percentages may not total 100% because of those responding "Does Not Apply."

SUNBATHING/SWIMMING

Orientation

The Corps provides swimming beaches at five areas. These areas have bathhouses, buoyed areas, and sandy beaches, and receive moderate to heavy use (resulting in overcrowding in some cases).

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 66 responses from sunbathers/swimmers at Shelbyville (46 at Dam West and 20 at Sullivan).

User characteristics

Table 52 indicates the characteristics of the sunbathers/swimmers surveyed at Shelbyville. The most significant difference in the characteristics of the sunbathers/swimmers surveyed at Shelbyville from those of other study project areas is the greater number of users who are only swimming and sunbathing (1 other activity).

Table 52

Sunbather/Swimmer Characteristics

Age	Percent of Sunbathers/Swimmers	Group Size	Percent of Sunbathers/Swimmers
<18	14	1	9
18 - 25	34	2	27
26 - 40	42	3 - 4	42
41 - 55	5	5 - 8	19
56 - 65	5	9 - 12	3
>65	1	>12	0

Travel Time to Project Area	Percent of Sunbathers/Swimmers	Visit Duration	Percent of Sunbathers/Swimmers
<15 minutes	28	1 - 4 hours	62
15 - 30 minutes	35	5 - 8 hours	31
30 - 60 minutes	34	1 day	0
1 - 2 hours	0	2 days	2
2 - 3 hours	3	3 days	0
3 - 5 hours	0	4 days	3
>5 hours	0	5 - 7 days	3
		>7 days	0

No. of Other Activities	Percent of Sunbathers/Swimmers
0	11
1	74*
2	9
3	0
4	0
5	0
6	0
>6	6

*Significantly higher than total survey sample.

User opinions

Spacing preferences - Tables 53 and 54 indicate the spacing that sunbathers and swimmers surveyed at Shelbyville and elsewhere prefer.

Table 53

Preferred Distance Responses*

Sample	Sample Size	Range	Mean	Median	Mode
All Sunbathers surveyed	161	3- a	30	20	15, 20
Shelbyville	31	10-100	21	20	20
Dam West	24	10-100	23	20	20
Sullivan	7	10- 30	14	12	12
All Swimmers surveyed	120	2-200	25	20	20
Shelbyville	30	2- 50	19	15	15
Dam West	20	2- 50	20	15	15
Sullivan	10	8- 30	18	18	18

*In feet; See Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 54

Preferred Distance Responses in Planning Range and Preference Groupings*

Sample	% in Planning Range[1] (5'-50')	% in A[2] (5'-14')	% in B[2] (15'-20')	% in C[2] (21'-30')	% in D[2] (31'-50')
All Sunbathers surveyed	88%	27%	39%	20%	14%
Shelbyville	97	40	37	10	13
Dam West	96	26	48	9	17
Sullivan	100	86	0	14	0
Sample	**% in Planning Range[1] (5'-50')**	**% in A[2] (5'-14')**	**% in B[2] (15'-24')**	**% in C[2] (25'-34')**	**% in D[2] (35'-50')**
All Swimmers surveyed	90%	25%	41%	19%	15%
Shelbyville	97	24	52	17	7
Dam West	95	21	58	11	11
Sullivan	100	30	40	30	0

*See Appendix A for definitions of terms; See Technical Report for a full development of spacing preference information.
[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses in Planning Range.

Reasons for pleasant/unpleasant experience - Tables 55 and 56 indicate the impact that different factors had on making the sunbathing/swimming experience pleasant or unpleasant for users at the two areas surveyed. Users at both areas found their experience to be generally pleasant. The "condition of grass or soil" was the factor which most often made the experience at Dam West unpleasant; while the "water quality" and "parking facilities" were the factors which most often made the experience at Sullivan unpleasant. None of the users surveyed indicated that they would not return to the area.

Tables 57 and 58 indicate the changes in physical condition and people's use of the areas reported by sunbathers and swimmers from their previous visits.

Table 55

Reasons Making Recreation Experience Pleasant or Unpleasant--Sunbathing/Swimming
Dam West

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons Characteristics and behavior of other people	96	4	-
Distance from other people	96	4	-
Number of people in other visitor groups	96	4	-
Number and type of other activities occurring here	100	-	-
Scenic views	96	4	-
Noise	100	-	-
Accidents or near accidents	96	2	2
Enforcement of rules/regulations	91	9	-
Car parking facilities	91	9	-
Theft	96	2	2
Vandalism	100	-	-
Land-Based Reasons Amount of facilities (restrooms, water, etc.)	98	-	-
Convenience to facilities (restrooms, water, etc.)	93	4	-
Maintenance of facilities	98	-	-
Condition of trees and landscape	98	-	-
Condition of grass or soil	67	31	-
Water-Based Reasons Water quality	-	-	-
Formal designation of places for your activity	-	-	-
People in areas they shouldn't be	-	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 56

Reasons Making Recreation Experience Pleasant or Unpleasant--Sunbathing/Swimming
Sullivan

Reasons	Percentage* of Users Responding:		
	Pleasant	Unpleasant	Not Important
General Reasons Characteristics and behavior of other people	90	10	-
Distance from other people	100	-	-
Number of people in other visitor groups	100	-	-
Number and type of other activities occurring here	100	-	-
Scenic views	100	-	-
Noise	100	-	-
Accidents or near accidents	90	10	-
Enforcement of rules/regulations	100	-	-
Car parking facilities	70	30	-
Theft	90	10	-
Vandalism	100	-	-
Land-Based Reasons Amount of facilities (restrooms, water, etc.)	90	10	-
Convenience to facilities (restrooms, water, etc.)	100	-	-
Maintenance of facilities	100	-	-
Condition of trees and landscape	100	-	-
Condition of grass or soil	100	-	-
Water-Based Reasons Water quality	50	50	-
Formal designation of places for your activity	60	-	-
People in areas they shouldn't be	100	-	-

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 57

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Sunbathers/Swimmers

Area	Positive Changes		Negative Changes	
Dam West	"Water lower"	(2)	"More rocks"	(1)
	"Cleaner"	(5)	"Rougher sand"	(1)
	"Better facilities"	(4)		
	"General development"	(2)		
	"Better maintenance"	(2)		
	"Depth poles"	(1)		
	"New buoys"	(1)		
	"More sand"	(1)		
Sullivan	"Cleaner"	(1)	"No tables"	(1)
	"Buoys"	(1)		
	"Bathhouse"	(1)		
	"More sand"	(1)		
	"New building"	(1)		
	"Breakwater"	(2)		

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 58

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Sunbathers/Swimmers

Area	Positive Changes		Negative Changes	
Dam West	"More people"	(1)	"Less care of facilities"	(1)
	"More teens"	(2)	"More boats"	(1)
	"More tourists"	(1)		
Sullivan	(None mentioned)		(None mentioned)	

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 59 indicates the acceptability of different techniques for solving problems to the sunbathers and swimmers surveyed at Shelbyville.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 16 of the 18 techniques. But even for those techniques which most respondents found to be acceptable, up to 49 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 59

User Acceptability of Techniques--Sunbathing/Swimming
Lake Shelbyville

Techniques	Levels of Acceptability Percentage* of Users Responding:		
	Very Acceptable	Mildly Acceptable	Unacceptable
General Planning Techniques			
Keep major recreation areas more separated	88	3	9
Make vehicle access to areas less convenient	6	12	82
Make area's existence less obvious	26	2	72
Site Planning Techniques			
Redesign area to accommodate fewer users	63	10	27
Design for greater distance between people	86	8	3
Reduce number of parking spaces	14	10	76
Management Techniques			
Procedures:			
Require permits	16	3	68
Charge/increase fees	35	13	52
Rules and Regulations:			
Impose more rules	19	3	78
Provide stricter enforcement of rules	60	-	40
Close areas when natural resource destruction reaches critical point	87	3	8
Close areas when they become "too full"	63	13	22
Reduce number of activities in same area	45	6	49
Limit number of people in visitor groups	18	3	72
Keep unnecessary vehicles out	83	5	13
Services:			
Provide more and better information	91	3	6
Increase maintenance and restoration	82	-	18
Reduce facilities and services	27	6	73

*Percentages may not total 100% because of those responding "Does Not Apply."

PART 3: ANALYSIS OF SELECTED PROBLEMS/SITUATIONS

PART 3: ANALYSIS OF SELECTED PROBLEMS/SITUATIONS

This final section identifies and examines selected problems and situations at Lake Shelbyville. The section is not intended to provide provide solutions to all project area problems. Nor is it a substitute for project area master planning. The solutions/techniques are intended to be only suggestions for further consideration by project area personnel, for they are most familiar with the intricacies associated with these problems.

In many cases, the project area staff is already aware of these problems or situations and is in the process of dealing with them. And in some cases, the solutions/techniques listed in Table 60 may not be practical or possible because of management, budget, or other constraints.

Table 60

Analysis of Selected Problems/Situations

Area/Subject	Problem/Situation	Possible Solutions/Techniques
Bo Wood Camping	Overuse--specifically on the campsites.	• install impact sites or harden sites where sites are worn, especially those in deep shade.
	Overuse--campers have worn a path from the campsites to the bathroom/shower building.	• harden paths leading to bathroom/shower building.
Bo Wood and Other Camping areas	Overcrowding and Overuse--Between adjacent sites occupied by members of the same group or family.	• provide double or group sites in the more popular areas. • harden areas. • use impact sites.
Coon Creek Camping	Overuse--Some campsites have received severe overuse.	• continue to rehabilitate sites & monitor others to prevent severe overuse from reoccurring.
	Overcrowding--Campsites designated by painted strips along the outside eight feet of road surface are hazardous both to traffic & to the people using the site.	• eliminate this type of site.

Area/Subject	Problem/Situation	Possible Solutions/Techniques
Lithia Springs--Camping	Underuse--The limited level of development may be the cause.	• provide parking closer to entry path. • install better facilities (flush toilets & drinking water).
Coon Creek--G & H legs - Camping	Underuse--These areas are located away from the lake.	• provide more and better signage on highways & within the campground (possibly promoting it as an area away from the water for those who prefer this type of site). • Add facilities such as playground, showers, electric sites, etc.
Picnicking areas	Underuse--In general, picnic areas are underused, except those at beaches.	• provide signs on nearby highways. • increase level of development by adding bathrooms, shelters, etc. • develop other activities near the picnic area, such as a swimming beach. • provide end to end picnic table arrangements for groups to aid in solving underuse.
Boating	Overuse--Random beaching of boats at activity areas is causing shoreline erosion which is difficult to rehabilitate.	• designate and harden boat beaching areas or provide courtesy docks at popular areas.
Wilborn, Bo Wood, and other boat launching areas	Overcrowding--These ramps as well as other ramps are sometimes congested and crowded; sometimes conflicts between users.	• provide someone to direct traffic during periods of peak use to reduce conflicts. • post signs pointing out that boats should be prepared for launching prior to driving onto the ramp. • develop new launches nearby. • encourage non-peak use, discourage peak period use. • provide courtesy docks to reduce overcrowding & conflicts.

Area/Subject	Problem/Situation	Possible Solutions/Techniques
Swimming and boat launching	Overcrowding & Overuse--Parking on grassed areas.	• install traffic control devices to direct traffic to designated areas only. • designate overflow parking; these areas could be hardened (gravel, bituminous) if high use becomes frequent or area becomes more popular.

APPENDICES

APPENDIX A: KEY TERMS

1. Activity area - The specific area where an individual primary activity occurs (e.g., a campground, the lake, a hiking trail, a picnic area, etc.).

2. Capacity, recreational carrying - The capability of a recreational resource to provide opportunity for certain types of satisfactory recreation experiences over time without significant degradation of the resource. Inherent in this view of carrying capacity are resource (biophysical) and social (psycho-social) capacities.

3. Capacity, resource - The level of recreational use of a resource beyond which irreversible biological deterioration takes place or degradation of the physical environment makes the resource no longer suitable or attractive for that recreational use.

4. Capacity, social - The level of recreational use of a resource or area beyond which the user's expectation of the experience is not realized and he/she does not achieve a reasonable level of satisfaction.

5. Carrying capacity guidelines - The levels of use and the methods used to obtain and achieve them which are recommended in this report.

6. Factors - The characteristics and phenomena which influence carrying capacity.

7. Indicators - The phenomena which can be used to identify or measure the degree of overcrowding or overuse, and which can be used in conjunction with a monitoring system to help predict when problems of overuse and overcrowding will occur if preventive measures are not taken.

8. Management/site survey - The initial survey conducted at the study project areas where resource managers, rangers, and maintenance personnel were interviewed and a reconnaissance was made of "overused," "overcrowded," "underused," and "well-balanced" recreation areas. (See Appendix B)

9. Mean - The measure of central value defined as the sum of all observations divided by the number of observations.

10. Median - The measure of central value defined as the point on the scale of observations which is the middle observation (if there is an odd number of cases) or which is the mean of the two central observations (if there is an even number of cases).

11. Mode - The measure of central value defined as the observation with the largest frequency.

12. Monitoring - The periodic assessment of the impact that use levels have on the social capacity or resource capacity of an area.

13. Overcrowding - A condition where the user does not achieve a satisfactory recreational experience because of too many people, inadequate distances between sites, etc.

14. Overuse - A condition where (during the course of a season/year) degradation of the physical environment makes the resource no longer suitable or attractive for recreational use.

15. Planning range - The range of spacing distances for an activity which satisfies the spacing preferences of the majority of recreators participating in that activity, which at the same time accounts for other considerations (e.g., cost, safety, equity, etc.).

16. Preference distribution - The set of preference groupings for an activity which can be modified to develop the social carrying capacity of an area.

17. Preference groupings - The range of spacing distances for an activity which satisfies the similar spacing preferences of a group of recreators participating in that activity.

18. Primary activity - The major recreation activity which brought the visitor to the recreation area.

19. Project area - The land and water area of the total Corps of Engineers Project.

20. Project management - The project area staff, district personnel, and other people involved with project area management.

21. Recreation area - Corps-managed areas specifically identified for recreational use within the total Project Boundary; usually named.

22. Recreation day - A standard unit of use consisting of a visit by one individual to a recreation development or area for recreation purposes during any reasonable portion or all of a 24-hour period.

23. Recreation environment - An activity area together with its various recreation settings.

24. Recreation resource - The land and/or water areas, with associated facilities, which provide a base for outdoor recreation activities.

25. Recreation setting - The physical, development/control, activity/use relationship components of an activity area; taken as a whole, the various settings comprise a particular "recreation environment" for each activity area.

26. Recreation unit - A campsite, picnic table, boat, off-road vehicle, user group, or other unit which when spaced together with other units represents a use level or density.

27. Representative recreation setting - The most typical recreation setting for a particular activity.

28. Secondary activities - Incidental activities; activities which are supplemental to the primary activity.

29. Study activity area - An activity area at which the management/site survey and the user survey was conducted.

30. Study project area - One of the 11 project areas at which the management/site survey and the user survey were conducted. These project areas are: Barkley Lock and Dam, Benbrook Lake, Hartwell Lake, McNary Lock and Dam, Milford Lake, New Hogan Lake, Lake Ouachita, Lake Shelbyville, Shenango River Lake, Somerville Lake, and Surry Mountain Lake.

31. Title 36 - Part 327, Chapter III, of Title 36 of the Code of Federal Regulations which provides rules and regulations governing the public use of water resource development projects administered by the Army Corps of Engineers.

32. Underuse - A condition where use levels are significantly less than their potential service level.

33. User survey - The survey that provided user preference information used in developing social capacity guidelines; information was obtained from users at the study project areas by means of a questionnaire (see Appendix B).

34. Well-balanced use - A condition which exhibits just the right amount of use to satisfy users and protect the resource.

APPENDIX B: EXAMPLE SURVEY FORMS

This Appendix includes on the following pages examples of the survey forms that were used during the Management/Site Survey and the User Survey.

MANAGEMENT/SITE SURVEY

PICNICKING QUESTIONNAIRE

(Resource Manager, Head Ranger, Maintenance Foreman)

Project Area Name _____

Respondent Name _____ Title _____

Interviewer _____ Date _____

1. PICNICKING USE AREA INFORMATION (selected areas)

Recreation Area/Use Area Names	Support Facilities	Fee Charged	Acres: Total Use Area	Acres: Activity Area Only	Total Picnic Sites	List Primary Activities Adjacent to Area	When Started
OVERCROWDED							
OVERUSED							
UNDERUSED							
WELL-BALANCED							

2. VISITOR CHARACTERISTICS RELATED TO OVERCROWDING/OVERUSE

Recreation Area/Use Area Names (same as in #1)	# of picnicking groups on typical recreation season weekend day	Typical Length of Stay	Typical Ages	Typical Group Size	Origin of visitors[1]			Approximate # of miles most visitors travel to use area		Average Frequency of visits per year
					% U	% S	% R	High	Average	
OVERCROWDED										
OVERUSED										
UNDERUSED										
WELL-BALANCED										

NOTES: [1]U = Urban location (city), S = Suburban location, R = Rural

3. CAUSES & EFFECTS OF OVERCROWDING/OVERUSE

Use Area Names (same as in #1 & #2)	Actual Complaints (list in order of frequency)	Causes		Effects	
		Observed	Surmised	Observed	Surmised
OVERCROWDED					
OVERUSED					
UNDERUSED					
WELL-BALANCED					

4. OCCURRENCE OF OVERUSE/DEGRADATION

Picnicking

Use areas which experience overuse (from #1)	Off-season restoration potential: Recovers naturally	Off-season restoration potential: Requires treatment	Off-season restoration potential: Beyond off-season restoration	Approximate Dates of Recreation season (____ to ____)	When signs of degradation first occur: Approx. date	When signs of degradation first occur: Approx. visitor groups to date	When highest degradation is reached: Approx. date	When highest degradation is reached: Approx. visitor groups to date

5. INDICATORS (SIGNS) OF OVERCROWDING

Indicators	Assign relative importance using a numerical rating on a scale of 1 (least) to 10 (most)	Comments
o Increase in the # of complaints	_____	
o Arguments/conflicts between picnickers	_____	
o Shorter stays	_____	
o Fewer returnees	_____	
o Increase in crime	_____	
o Increase in noise	_____	
o Picnicking, in non-picnic areas	_____	
o Crowded support facilities	_____	
o Increase in litter	_____	
o Increase in resource and facility destruction	_____	
o Occurrence of displacement/succession (changes in visitor characteristics)	_____	
o Increase in number of accidents involving vehicles	_____	
o Increase in use levels	_____	

(Please list others below)

o

6. INDICATORS OF OVERUSE/DEGRADATION

Indicators	Assign relative importance using a numerical rating on a scale of 1(least) to 10 (most)	Comments
o Ground cover wearing away		
o Damaged trees and/or undergrowth		
o Absence/change in wildlife		
o Increased erosion/sedimentation		
o Little deadfall		
o Compacted soils		
o Increased litter/trash		
o Trees cut down		
o Increased runoff		
o Need for replacement of support facilities before normal life period		
o Rodent infestation		

(Please list others below)

o

o

o

o

7. FACTORS AFFECTING RESOURCE CARRYING CAPACITY

Factors	Assign relative importance using a numerical rating on a scale of 1 (least) to 10 (most)	Comments
o Resiliency of vegetation type		
o Resiliency of soils		
o Resiliency of wildlife		
o Degree of normal maintenance applied		
o Degree of off-season restoration applied		
o Site drainage		
o Slope/topography		
o Climate/micro-climate		
o Group size		
o Slope orientation		
o Tree cover		
o Level of development (e.g. paved roads/paths vs. unpaved roads/paths)		

(Please list others below)

o

o

o

8. FACTORS AFFECTING SOCIAL CARRYING CAPACITY

Factors	Assign relative importance using a numerical rating on a scale of 1 (least) to 10 (most)	Comments
o Similarity of visitor groups		
o Slope orientation		
o Distance from highway access		
o Proximity to the water		
o Scenic views or vistas		
o Quality/variety of natural amenities		
o Number, type, and degree of man-made intrusions or disturbances (power lines, buildings, etc.)		
o Visual screening between picnickers		
o Density/type of vegetation		
o Distance between picnic sites		
o Degree of designation		
o Level of support facilities		
o Proximity to support facilities		
o Size of picnicking area		
o Charging of fees		
o Compatibility of nearby primary activities		
o Single purpose or multi-purpose recreation area		
o Distance traveled		
o Frequency of visits		
o Origin of user (urban, suburban, rural)		
o Configuration of area		
o Degree of maintenance		

(Please list other factors)

o

o

9. PRESENT/PAST CAPACITY MANAGEMENT

Picnicking

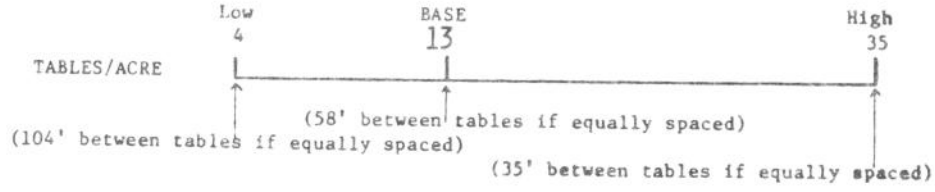
Use areas where capacity management techniques were, or are now, applied (Name)	Past (√)	Present (√)	List capacity management techniques(s) used	Describe level of effectiveness (pros/cons regarding visitor satisfaction and resource protection)	Assessment of managemen feasibility (pros/cons why the technique coul or could not be implemented)

10. POSSIBLE CARRYING CAPACITIES

Use Area Names	Present capacity actual or estimated	Best guess as to what the capacity should be	Principal factors
THE MOST OVERCROWDED AREA:			
THE MOST OVERUSED AREA:			
THE MOST UNDERUSED AREA:			
THE MOST WELL-BALANCED AREA:			

EXAMPLES FROM BUREAU OF OUTDOOR RECREATION CAPACITY RESEARCH:

(Use as a general guide when estimating what the capacity should be)



MANAGEMENT/SITE SURVEY

CAMPING

USE AREA ANALYSIS SHEET

(for URDC staff use)

Project Area Name _____ Field Analyst(s) _____

Recreation Area and/or Use Area _____ _____

_____ Weather _____

Code # _____ Date _____

			ANSWER COLUMN	COMMENT CODE	COMMENTS:
SITE AWARE-NESS	Signage (camping or name)	Between main highway and use area entrance			
		At use area entrance			
	Exposure of Site	Between main highway and use area entrance			
		At use area entrance			
SITE ACCESS	Relation-ship to Main Highway	Distance to area from main highway			
	Road Conditions	Road to site from main highway			
		Paved(P) or Unpaved(U)			
		Condition (E, G, P)			
		Estimated Width			
		Road within use area			
		Paved(P) or Unpaved(U)			
		Condition (E, G, P)			
		Estimated Width			
		Presence of informal roads			
SLOPES & GETATION	Slopes	% of area 0 - 5%			
		% of area 6 - 9%			
		% of area 10%+			
		Existence of unique land form			
	Vegetation	Density of trees			
		% dense			
		% moderate			
		% sparse			
		% little or none			
		Density of understory			
		% dense			
		% moderate			
		% sparse			
		% little or none			
	On the Use Area	Geologic, cultural, archeo-logic features			
		Abundance of wildlife			
		Water feature			

NATURAL AMENITIES	From the Use Area	Visibility to water features (insert) O - outstanding G - good U - undesirable	Severely obstructed		
			Moderately obstructed		
			Mildly obstructed		
			Unobstructed		
		Visibility to other natural areas (insert) O - outstanding G - good U - undesirable	Severely obstructed		
			Moderately obstructed		
			Mildly obstructed		
			Unobstructed		
		Distance to lake			
CONDITION OF NATURAL FEATURES	Vegetation & Soils	Dead or trampled vegetation			
		Evidence of taking			
		Compacted soils			
	Drainage	Wet soils/standing water			
		Erosion			
CILITIES & ERVICES	Facility/ Service Distribution (S - Site D-Distributed C - Centralized)	Electric hook-ups			
		Water hook-up			
		Improved pad			
		Picnic tables			
		Cooking grill			
		Firewood			
		Drinking water (cold)			
		Hot water			
		Showers			
		Flush toilets			
		Vault toilets			
		Pit toilets			
		Dumping station			
		Shelter			
		First aid station			
		Telephone			
		Lighting (R - road, P - Parking W - Walkway, C - Comfort area			
		Recreation area or equipment			
		Convenience store			
	Condition	Excellent			
		Good			
		Need attention			
LANNING DESIGN ASPECTS	Distance between campsites	Minimum			
		Maximum			
		Average			
	Distance between campsites and the facilities	Minimum			
		Maximum			
		Average			
	Space for camper unit maneuverability	Ample			
		Acceptable			
		Restrictive			
	Access Control	Controlled (gate, attendant)			
		Uncontrolled			

Car Parking	Parking space on each camp-site		
	Road parking		
Buffer between Campsites	Man-made		
	Natural vegetation		
	Planted landscape		
	None		

RELATIONSHIP OF CAMPING USE AREA TO OTHER USE AREAS

Use Area Name	Activity	Estimated direct distance from camping use area	Pedestrian accessibility to other use area			Visibility to other use area			Reasons for accessibility and/or visibility situation
			Easy	Moderate	Difficult	Obstructed	Semi-obstructed	Unobstructed	

ANALYST'S PERCEPTION OF ACTIVITY AREA'S CARRYING CAPACITY

List the resource/physical factors you feel most affect carrying capacity on this site

_____

_____

_____

_____

_____

Should resource/physical carrying capacity of this site be: _____ higher _____ lower _____ same

List possible techniques which might be used to increase and/or to limit capacity on this site.

_____

_____

_____

CORPS OF ENGINEERS USER CAPACITY SURVEY

Notations ☐

Date _____ Day _____ OMB Clearance # 49-R0419

Time (hour) _____ Expires October 1983

Weather _____ Project Area Name _____

Interviewer _____ Recreation Area Name _____

Activity _____ Code _____ Activity Area _____ Code _____

We are conducting a survey for the Army Corps of Engineers at selected Corps recreation areas throughout the Country. Through these surveys, we will discover how visitors feel about overcrowding and overuse of these recreation areas. The Corps will use this information to help make decisions about the use and protection of its recreation areas. Would you be willing to take fifteen minutes of your time to answer some questions about your visit here?

BASIC VISITOR CHARACTERISTICS

1. In which category is your age?

- 17 & under ☐
- 18 - 25 ☐
- 26 - 40 ☐
- 41 - 55 ☐
- 56 - 65 ☐
- 66 & over ☐

2. How large is your group?

- 1 ☐
- 2 ☐
- 3- 4 ☐
- 5- 8 ☐
- 9-12 ☐
- 13+ ☐

3. Is this your main destination or a stopover on a trip?

- Main destination ☐
- Stopover on trip ☐

4. How long did it take you to travel here from your home ___ (✓) or last destination (✓)?

- Under 15 minutes ☐
- 15-30 minutes ☐
- 30 min. - 1 hour ☐
- 1 - 2 hours ☐
- 2 - 3 hours ☐
- 3 - 5 hours ☐
- 5+ hours ☐

VISITOR PARTICIPATION

5. How many times did you participate in this activity anywhere last year? (if "0", go to Question 7)

- 0 ☐
- 1 - 5 ☐
- 6 - 10 ☐
- 11 - 20 ☐
- 21 - 30 ☐
- 31+ ☐

6. How many times have you participated in this activity at this Lake?

a) Last year?	b) So far this year?
0 ☐	0 ☐
1- 2 ☐	1- 2 ☐
3- 4 ☐	3- 4 ☐
5- 7 ☐	5- 7 ☐
8-10 ☐	8-10 ☐
11-19 ☐	11-19 ☐
20+ ☐	20+ ☐

7. How long are you staying on this visit?

- 1 - 4 hours ☐
- 5 - 8 hours ☐
- 1 day (overnight) ☐
- 2 days ☐
- 3 days ☐
- 4 days ☐
- 5 - 7 days ☐
- 8 or more days ☐

8. Have you participated in this activity at this specific location anytime before this visit?

No ☐ (go to #9) Yes ☐ Please list any changes you have noticed in the physical condition of this location or in people's use of the area.

Physical condition:

☐ Positive _____

_____

_____

☐ Negative _____

_____

_____

_____

People's use of the area:

☐ Positive _____

_____

_____

☐ Negative _____

_____

_____

_____

9. Would you say the number of people who are now participating in this activity are:

too many ☐ too few ☐ just the right number ☐

10. a) Would you say that the distance between you and other people is:

too far ☐ (to 10c) just right ☐ (to 10c) too close ☐

(Actual or estimated distance to be recorded by interviewer _____)

b) If other people are too close, how far away would you like them to be? ☐ Not Applicable

just a little farther ☐ twice as far ☐ three times farther ☐ more than 3 times ☐

c) What is the closest distance you would accept? _____

d) What distance would you like them to be? _____

11. a) Which of the following reasons are making your present activity at this location pleasant or unpleasant?

	Pleasant	Un-pleasant	Not Important	Does Not Apply
GENERAL REASONS				
1. Characteristics and behavior of other people	☐	☐	☐	☐
2. Distance from other people	☐	☐	☐	☐
3. Number of people in other visitor groups	☐	☐	☐	☐
4. Number and type of other activities occurring here	☐	☐	☐	☐
5. Fees charged	☐	☐	☐	☐
6. Scenic views	☐	☐	☐	☐
7. Noise	☐	☐	☐	☐
8. Accidents or near accidents	☐	☐	☐	☐
9. Enforcement of rules/regulations	☐	☐	☐	☐
10. Car parking facilities	☐	☐	☐	☐
11. Theft	☐	☐	☐	☐
12. Vandalism	☐	☐	☐	☐
Others _____	☐	☐	☐	☐
_____				
LAND-BASED REASONS				
13. Trees/natural landscape	☐	☐	☐	☐
14. Visual privacy from other people	☐	☐	☐	☐
15. Amount of facilities (restrooms, water, etc.)	☐	☐	☐	☐
16. Convenience to facilities (restrooms, water, etc.)	☐	☐	☐	☐
17. Nearness to the water body	☐	☐	☐	☐
18. Steepness of slopes	☐	☐	☐	☐
19. Maintenance of facilities	☐	☐	☐	☐
20. Condition of trees and landscape	☐	☐	☐	☐
21. Condition of grass or soil	☐	☐	☐	☐
Others _____	☐	☐	☐	☐
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐
WATER-BASED REASONS				
22. Water quality	☐	☐	☐	☐
23. Catching fish	☐	☐	☐	☐
24. Formal designation of places for your activity	☐	☐	☐	☐
25. Waiting time to launch boat	☐	☐	☐	☐
26. Waiting time to retrieve boat	☐	☐	☐	☐
27. People in areas they shouldn't be	☐	☐	☐	☐
Others _____	☐	☐	☐	☐
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐

b) Will any of the above reasons prevent you from coming here again?

No ☐ Yes ☐

If yes, which reasons (selected from reasons checked "unpleasant" above)?

_____ _____ _____

_____ _____ _____

12. If recreation areas have too many people for each to enjoy the activity or if areas become damaged by too much use, there are some solutions for reducing that overcrowding or overuse. Please indicate which of the following possible solutions you would find very acceptable, mildly acceptable, or unacceptable for reducing crowding and/or natural resource destruction in this location. (If this location is not overcrowded or overused, assume that it is for this question.)

POSSIBLE SOLUTIONS FOR OVERCROWDING OR OVERUSE	Very Accept-able	Mildly Accept-able	Un-accept-able	Does Not Apply
PUBLIC AWARENESS/EASE OF ACCESS SOLUTIONS				
1. Make vehicle access to areas less convenient	☐	☐	☐	☐
2. Make the area's existence less obvious to the general public (fewer signs and directions)	☐	☐	☐	☐
3. Provide more and better information on how to use the area	☐	☐	☐	☐
ACTIVITY RELATIONSHIPS & USE DENSITY				
4. Keep major recreation activities more separated from one another	☐	☐	☐	☐
5. Reduce the number of different activities occurring in the same area	☐	☐	☐	☐
6. Design for greater distance between people	☐	☐	☐	☐
7. Limit the number of people in each group	☐	☐	☐	☐
8. Change natural surfaces by hardening them to withstand more use	☐	☐	☐	☐
9. Increase maintenance and restoration to allow more use	☐	☐	☐	☐
PLANNING & DESIGN SOLUTIONS				
10. Reduce the type and number of facilities and services provided	☐	☐	☐	☐
11. Keep unnecessary vehicles out of areas	☐	☐	☐	☐
12. Reduce number of parking spaces to limit number of users	☐	☐	☐	☐
13. Provide landscaped buffers between visitor groups to increase privacy	☐	☐	☐	☐
14. Redesign area to accommodate fewer users	☐	☐	☐	☐
RULES & REGULATIONS SOLUTIONS				
15. Have stricter enforcement of regulations	☐	☐	☐	☐
16. Impose more rules and regulations	☐	☐	☐	☐
17. Require prior reservations to use areas	☐	☐	☐	☐
18. Require permits to use areas	☐	☐	☐	☐
19. Close down areas when natural resource destruction reaches critical point	☐	☐	☐	☐
20. Charge fees or increase fees now charged	☐	☐	☐	☐
21. Close gates when areas get "too full"	☐	☐	☐	☐
OTHERS				
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐

13. Please answer the following questions about your other recreation activities on this visit.

	a) What are your other recreation activities on this visit?	b) Are they within walking distance or driving distance from this location? (use launching location for boat activities) (1) Walking distance	(2) Driving distance	c) What is your main recreation activity on this visit?
1. Camping	☐	☐	☐	☐
2. Boating	☐	☐	☐	☐
3. Waterskiing	☐	☐	☐	☐
4. Swimming	☐	☐	☐	☐
5. Sunbathing	☐	☐	☐	☐
6. Picnicking	☐	☐	☐	☐
7. Shoreline fishing	☐	☐	☐	☐
8. Boat fishing	☐	☐	☐	☐
9. Hiking	☐	☐	☐	☐
10. Horseback riding	☐	☐	☐	☐
11. Off-road vehicle riding	☐	☐	☐	☐
12. _____	☐	☐	☐	☐
13. _____	☐	☐	☐	☐
14. _____	☐	☐	☐	☐
15. _____	☐	☐	☐	☐
16. None	☐	☐	☐	☐

RECREATION EQUIPMENT RECORD

Camping

- Tent ☐
- Tent camper ☐
- Truck-mounted camper ☐
- Travel trailer ☐
- Van ☐
- Motor home ☐
- _____ ☐
- _____ ☐

Boat Activities

- Day sailer ☐
- Sailer (cabin) ☐
- Canoe ☐
- Row boat ☐
- Power boat (less than 25 hp) ☐
- Power boat (25+ hp) ☐
- Houseboat or cruiser ☐
- _____ ☐
- _____ ☐

Off-Road Vehicle Riding

- Trail bike ☐
- Motorcycle ☐
- ATV ☐
- Dune buggy ☐
- 4-wheel drive ☐
- _____ ☐
- _____ ☐

COMMENTS:

REPLACEMENT QUESTIONS TO ASK DURING BOAT LAUNCHING INTERVIEWS

(Write answers and comments directly on the User Survey Interview Sheet)

10. a) Would you say that the time it takes you to launch your boat at this ramp is:

too long ☐ long, but tolerable ☐ just right ☐

(Approximately how long does it take to launch your boat at this ramp? Actual or estimated time to be recorded by interviewer _____)

b) How long would you prefer it to take:

just a little faster ☐ twice as fast ☐ three times faster ☐ more than three times faster ☐

c) What could be done to expedite boat launching at this ramp:

_____

_____

_____

APPENDIX C: PROJECT AREA DESCRIPTION

Shelbyville

Location

Lake Shelbyville (St. Louis District) is located on the Kaskasia and West Okaw Rivers at Shelbyville, Illinois, approximately 30 miles south of Decatur. Springfield lies about 60 miles to the northwest. Chicago is about 200 miles to the north, and St. Louis, Missouri is about 110 miles southwest.

Authorization and purpose

The Lake Shelbyville Project was authorized by the Flood Control Act of 1944. Project purposes include flood control on the Kaskasia and Mississippi Rivers, navigation releases for the Kaskasia River, and domestic and industrial water supply.

Project area size and features

The drainage area above the Lake Shelbyville Dam is 1030 square miles. The normal recreational lake (at an elevation of 600 feet msl) holds 11,100 acres, extends for 20 river miles upstream, and averages about one mile in width.

There are a large number of coves and inlets along the shore, due to the many swales and feeder stream valleys which were inundated when the lake was raised. The average water depth is 19 feet; the deepest portion is 67 feet deep. The water level is drawn down about five feet in the fall to accommodate the anticipated spring runoff.

Because few high or steep banks exist, much of the 172-mile shoreline is usable. Campers, picnickers, and fishermen can gain lake access from many places; however, the designated boat launching ramps and beaches offer the safest and most convenient water access.

The project area contains a total of 23,308 acres of land above the normal lake level. The Corps manages 12,656 acres; the State of Illinois manages 10,349 acres (wildlife areas and two State parks). Three commercial marinas cover 303 acres at the project.

The nearly 50 full-time and part-time Corps employees assigned to the project area include: a Resource Manager, Recreation Manager, Wildlife Manager, Maintenance Foreman, several patrolling rangers, and clerical and maintenance personnel. Gate attendant responsibilities and many maintenance functions are handled on a contract basis.

Topography

The generally flat landscape around Lake Shelbyville is interrupted by the rolling and occasionally steep topography of the Kaskasia River Valley. The topography changes from a streambed elevation of about 535 feet msl to an elevation of 650 to 660 feet msl at the bordering uplands. Many small tributaries enter the river above the damsite, and the resulting ravines and valley form a very irregular lake shoreline.

Climate

Normal temperatures in the vicinity of Lake Shelbyville range from the upper 70 degrees F. (with extremes to over 100 degrees F.) in summer, to the lower 30 degrees F. (with extremes to below 0 degrees F.) in winter. The average annual temperature is about 55 degrees F. The average annual precipitation over the drainage area is 38.6 inches, of which about 22 percent falls in May and June. The average annual snowfall is approximately 20 inches. Prevailing winds come from the southwest at about nine mph in summer, and from the northwest at about nine mph in winter. Throughout the year, 63 percent of the days are sunny,

Soils and vegetation

Portions of former agricultural fields and pasture bordered by treelined fence rows are found throughout the project area. Most of the area, however, consists of oak-hickory woodland.

Fish and wildlife

The southern portion of the lake has limited land available for intensive wildlife enhancement programs, due primarily to the high degree of public usage of the project there. However, the two State-operated wildlife management areas in the northern portions of the lake have highly developed wildlife management programs. Hunting is generally allowed throughout the area, and numerous species of rodents, fur bearers, white-tailed deer, predatory mammals, and birds are found in the area.

Approximately 50 species of fish live in the lake. The major species are white and black crappie, bluegill, walleye, largemouth bass, drum, and carp.

Population areas
served and accessibility

The area surrounding Lake Shelbyville is mostly rural farmland with a decreasing population. The nearest urban areas are Mattoon and Decatur. Other urban communities located in the area of influence are Peoria, Springfield, Champaign-Urbana, and Bloomington, Illinois, Terre-Haute, Indiana, and St. Louis, Missouri. Most of the project's visitors reside within 75 road miles from the lake.

Access from the major population centers to the lake area is relatively good. Illinois State Highways 16, 32, 121 and 128 provide access to the project.

Recreation areas

The Corps manages 12 developed recreational areas and two fishing access points, accounting for about 1450 acres. The State of Illinois manages Wolf Creek State Park, Eagle Creek State Park, West Okaw River Fish and Wildlife Management Area, and Kaskasia River Fish and Wildlife Management Area. Three concessionaire marinas also operate on the lake.

Some of the activities offered at the recreation areas are boating, waterskiing, swimming, several types of camping, picnicking, hiking, shore and boat fishing, hunting, an ecological study area, and interpretive and amphitheater programs. Some of the Corps support facilities include picnic shelters, comfort stations, showers, boat launching ramps, fish cleaning stations, sanitary dumping stations, and electrical hook-ups at campgrounds.

Visitation

In 1978, 2,937,200 recreation days were reported at Lake Shelbyville. July was the month of greatest visitation, with 540,900 recreation days.

In accordance with letter from DAEN-RDC, DAEN-ASI dated 22 July 1977, Subject: Facsimile Catalog Cards for Laboratory Technical Publications, a facsimile catalog card in Library of Congress MARC format is reproduced below.

Urban Research & Development Corporation.
Recreation carrying capacity facts and considerations; Report 5: Lake Shelbyville Project Area / by Urban Research and Development Corporation, Bethlehem, Pa. Vicksburg, Miss. : U. S. Waterways Experiment Station; Springfield, Va. : available from National Technical Information Service, 1980.
iv, 91, [25] p. ill. ; 27 cm. (Miscellaneous paper - U. S. Army Engineer Waterways Experiment Station; R-80-1, Report 5)
Prepared for Office, Chief of Engineers, U. S. Army, Washington, D. C., under Contract No. DACW39-78-C-0096.
Project map of Lake Shelbyville in pocket at end of report.

1. Carrying capacity. 2. Monitoring. 3. Overcrowding. 4. Recreation. 5. Recreation resource planning. 6. Recreational areas. 7. Recreational facilities. 8. Shelbyville Lake Project. 9. Utilization. I. United States. Army. Corps of Engineers. II. Series: United States. Waterways Experiment Station, Vicksburg, Miss. Miscellaneous paper ; R-80-1, Report 5.
TA7.W34m no.R-80-1 Report 5