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GREAT RIVER ENVIRONMENTAL ACTION TEAM

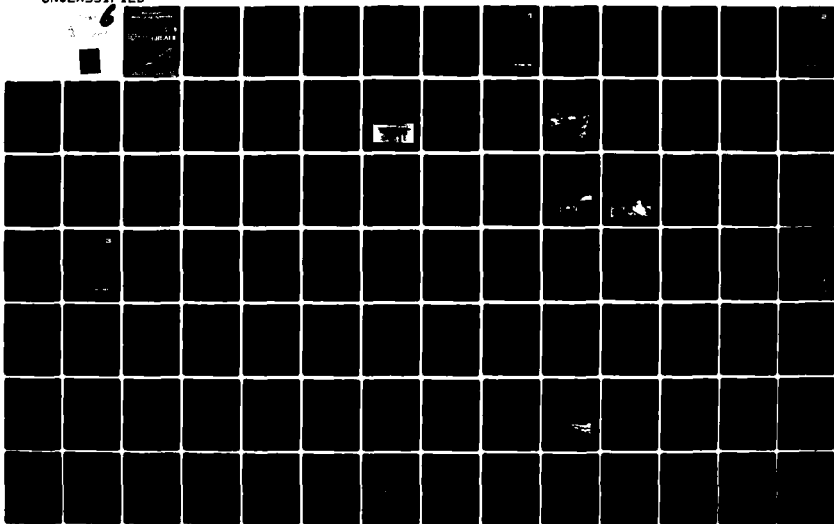
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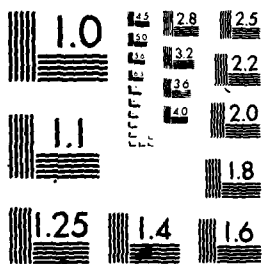
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Recreation Work Group Appendix LEVEL II

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GREAT II

Upper Mississippi River
(Guttenberg, Iowa to Saverton, Missouri)

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Great River Environmental Action Team

RECREATION APPENDIX

TO

9

FINAL REPORT.

OF

(GREAT II)

GREAT RIVER ENVIRONMENTAL ACTION TEAM II.

Upper Mississippi River (Mott, ... & ... , Missouri).

RECREATION WORK GROUP II.

Appendix.

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Illinois Dept. of Conservation - IDOC
U.S. Fish & Wildlife Service - MTNWR
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FOREWARD

This report has been prepared by the Great River Environmental Action Team (GREAT II) Recreation Work Group. The opinions and recommendations stated in this Appendix are those of the Recreation Work Group and do not necessarily reflect the views and recommendations of the GREAT II Team or any of the member agencies associated with GREAT II.

CONTENTS

I. INTRODUCTION

| | |
|--|------|
| A. Study Authorization and Development | P. 1 |
| B. Study Purpose and Scope | P. 1 |
| C. Study Participation and Organization | P. 2 |
| D. Recreation Overall Objective | P. 2 |
| E. Recreation Management Work Group Organization | P. 3 |
| 1. Participants | |
| 2. Meetings and Procedures | |
| 3. Voting Procedures | |
| 4. Public Input | |

II. A. Problem Identification Process P. 5

B. Existing Conditions P. 6

1. existing recreation resources
2. existing recreation use
3. existing means of maintaining recreation
4. relationship of recreational use to commercial transportation
5. existing relationship of recreation to areas economy
6. existing relationship of recreation to environmental concerns
7. public concerns

C. Projected Conditions Without Action - 2025 P. 12

1. projected state and federal regulations and their relation to recreation
2. projected maintenance of recreation areas
3. projected safety of recreation users
4. projected recreation resources
5. projected recreation use

D. Statement of Problems P. 14

E. Recreation Work Group Sub-Objectives P. 28

F. Recreation Work Group Plans-of-Action P. 29

III. WORK GROUP ACTIVITIES/ACCOMPLISHMENTS

| | |
|--|--------|
| A. Legal Institutional Framework Study | P. 34 |
| B. Facility Inventory | P. 35 |
| C. Use Projection/Population Projections | P. 42 |
| D. Recreation Needs Analysis | P. 49 |
| E. Recreation Use Survey | P. 82 |
| F. Recreation Monitoring Study | P. 85 |
| G. Boating Safety Report | P. 86 |
| H. Beach Maintenance and Enhancement | P. 89 |
| I. Literature Search | P. 91 |
| J. Marina Operators Study | P. 93 |
| K. LAWCON Listing | P. 95 |
| L. Meetings with Levee District | P. 96 |
| M. Disposal Site Selection | P. 98 |
| N. Annual Recreation Benefits of Dredge Material Beaches | P. 100 |
| O. Campsite Survey Sponsored and Conducted by the Mississippi River Campsite Preservation Assn. | P. 101 |

IV. FORMULATION OF ALTERNATIVES AND RECOMMENDATIONS

| | |
|---|--------|
| A. Formulation of Alternative Solutions and Development | P. 102 |
| B. Recreation Work Group Recommendations | P. 103 |
| 1. Summary of Impact Assessments | P. 103 |
| 2. General Recommendations | P. 109 |
| 3. Pools Specific Recommendations | P. 255 |
| a. Pool 11 | P. 256 |
| b. Pool 12 | P. 273 |
| c. Pool 13 | P. 290 |
| d. Pool 14 | P. 307 |
| e. Pool 15 | P. 324 |
| f. Pool 16 | P. 342 |
| g. Pool 17 | P. 356 |
| h. Pool 18 | P. 369 |
| i. Pool 19 | P. 383 |
| j. Pool 20 | P. 405 |
| k. Pool 21 | P. 418 |
| l. Pool 22 | P. 431 |

| | |
|------------|--------|
| V. SUMMARY | P. 444 |
|------------|--------|

| | |
|----------------|--------|
| VI. REFERENCES | P. 469 |
|----------------|--------|

1

INTRODUCTION

INTRODUCTION

The Mississippi is the greatest river in North America gathering run-off from 31 states and two Canadian provinces, and draining 1.5 million square miles. It is the third largest watershed in the world, flowing 2,500 miles to the Gulf of Mexico. Millions of people live on its banks and draw life from its waters. Over five hundred kinds of animals live among the diverse plant communities that thrive in and along the river.

Man, in his progress, has put the river to many varied and sometimes conflicting uses. The pressures of man's use of the river are feared to be degrading the environmental qualities of the river. More information is needed on the complex interactions of the river's resources and these resource reactions to man's activities on the river. When this information is obtained, it can then be used to determine where problems exist and the alternatives available to man to solve these problems and coordinate river uses to minimize conflicts.

A. Study Authorization and Development

In response to increasing public concern for the environmental quality of the river, the Great River Study was authorized by Congress in the Water Resources Development Act of 1976 (PL 94-578). This legislation authorizes the U.S. Army Corps of Engineers.... "to investigate and study, in cooperation with interested states and Federal agencies, through the Upper Mississippi River Basin Commission, the development of a river system management plan....".

The total study program includes three Great River Environmental Action Teams (GREAT), which have the responsibility for the river reaches from St. Paul/Minneapolis to Guttenberg, Iowa (GREAT I); Guttenberg to Saverton, Missouri (GREAT II); and Saverton to the confluence of the Ohio (GREAT III).

The study programs and recommendations of the three Great Teams will be brought together into a river management strategy for the entire Upper Mississippi River. The goal of the study is to present to Congress and the people a river resource management plan that is, above all, realistic - a plan that is technically and economically sound, socially and environmentally acceptable, and capable of being put into action within a reasonable period of time.

B. Study Purpose and Scope

→ The purpose of the GREAT II Studies is to identify and resolve conflicts resulting from separate legislative actions of Congress which mandated that the Upper Mississippi River be managed in the national interest for commercial navigation and as a fish and wildlife refuge.

→ The concept of the study originated from a need to coordinate the maintenance activities of a nine foot navigation channel by the — > /cont

U.S. Corps of Engineers from Guttenberg, Iowa to Saverton, Missouri with other river uses. GREAT II was founded because of increasing concern by conservationists and the general public over the lack of information available about the impacts of U.S. Corps of Engineers channel maintenance activities on many key resources of the river.

The scope of the GREAT II Study is directed toward developing a river system management plan incorporating total river resource requirements. GREAT II was organized early in fiscal year 1977 (October 1976 through September 1977) and is studying the river from Guttenberg, Iowa, to Saverton, Missouri.

C. Study Participation and Organization

The GREAT II Team is composed of representatives from the following Upper Mississippi Basin States and the Federal River Resource-oriented agencies:

- State of Illinois
- State of Iowa
- State of Missouri
- State of Wisconsin
- U.S. Department of the Interior - Fish and Wildlife Service
- U.S. Department of Agriculture - Soil Conservation Service
- U. S. Department of Defense - Department of the Army -
Corps of Engineers
- U. S. Department of Transportation - U.S. Coast Guard
- U. S. Environmental Protection Agency
- Upper Mississippi River Conservation Committee (ex officio)

GREAT II is organized into 12 functional work groups and the Plan Formulation Work Group. Each work group is to accomplish the study objectives as they relate to the work group's functional area and as directed by the team. Work groups are composed of persons having expertise and interest in the work groups area of study.

This report summarizes the concerns, objectives, activities, conclusions and recommendations of the Recreation Work Group as they relate to the GREAT II Study Area.

D. Recreation Overall Objectives

D. 1. Total Study Objectives

As defined by the Great River Environmental Action Team, the basic objective of the Great River Study was "to develop a river system management plan that would incorporate total river resource requirements" (with specific emphasis directed at the maintenance requirements of the nine-foot channel within the river corridor).

D. 2. Recreation Work Group Objectives

As directed by the total study effort, the recreation work group considered its objectives in the following time frames:

Near-term: Represent recreational interests in the process of developing recommendations for channel maintenance for the upcoming navigation seasons.

In fulfilling the near-term objective, the work group concentrated its efforts in providing guidance and recommendations to the corps of engineers regarding recreation concerns at current site specific dredge disposal areas. Coordination of information was maintained among all work groups.

Long-term: Represent recreational interests in the process of developing recommendations related to operation and maintenance activities of the nine-foot navigation channel.

Recreational interests both for the near-term and long-term objectives are defined as those individuals involved in any one or more of the following activities: picnicking, camping, swimming, water skiing, boating (all types), sport fishing, hunting, trapping, hiking, resource interpretation, sightseeing and etc.

The following planning sub-objectives were included in the attainment of the long-term objective.

1. Eliminate adverse effects to recreation resulting from channel operation and maintenance activities.
2. Enhance recreational benefits of the river corridor from channel maintenance activities.
3. Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreational opportunities.
4. Maintain the integrity of the recreation viewshed.
5. Distribute information on study findings.

E. RECREATION MANAGEMENT WORK GROUP ORGANIZATION

E. 1. Participants

The RWG II was formed from various agencies, groups, and individuals with an interest in recreation on the Mississippi River. The Iowa Conservation Commission assumed the chairmanship duties under contract to the Corps of Engineers for preparation of the Work Group Appendix for 1976 to 1979. In 1979 the Illinois Department of Conservation assumed the chairmanship duties and Iowa Conservation Commission assumed the responsibility for all printing. Those agencies that were actively involved in the Work Group on a voluntary basis were: The Illinois Department of Conservation, the Wisconsin Department of Natural Resources, the Iowa Conservation Commission, the Rock Island District U.S. Army Corps of Engineers, and the Mark Twain and Upper Mississippi River Refuges of the Fish and Wildlife Service. Representatives of the Western Illinois University, the University of Wisconsin, and Iowa State University have been involved in various aspects of the Work Group activities through contracting and research efforts. Interested individuals of the general public and members of hunting and fishing groups and levee districts have also attended meetings and provided recommendations.

E. 2. Meetings and Procedures

Work group meetings were generally held once a month. During the initial study stages of 1978, the work group met in Cassville, Wisconsin; Le Claire, Muscatine, Burlington, and Keokuk, Iowa; and Rock Island and Quincy, Illinois, to generate local interest and gather local concerns.

Meetings were open to any interested agency or member of the general public. Discussion was tailored around an agenda that was prepared prior to each meeting with the flexibility of adding additional items to the agenda if time allowed. The agenda was distributed to a mailing list that varied during the study period from between 60 to 90 agencies, groups, and individuals.

E. 3. Voting Procedures

Voting procedures operated on a consensus basis of those present at work group meetings. This approach was modified in June of 1979 to allow one vote per state or federal agency present at a work group meeting with consensus sought.

E. 4. Public Input

Awareness of recreation-related problems and needs was the basis for formulating work group objectives. During September of 1977, a series of public meetings was held at over 30 locations in the GREAT II area to identify problems and concerns. These concerns were compiled and published by the Public Participation Work Group.

Meetings were held during October, November, and December of 1978 to review the Preliminary Feasibility Report. Again, concerns and comments were received from the public.

RWG II meetings during 1978 were scheduled at six different locations along the river ranging from Cassville, Wisconsin, to Quincy, Illinois, to avail the local public the opportunity of attending work group meetings and discussing current problems. Several special interest groups participated in these meetings.

Comments and opinions of dredged material beach users were surveyed through an "on-site" questionnaire during the summer of 1978. A "mail-return" questionnaire was distributed during the first half of 1979 to glean further indepth information from dredge material beach users.

2

PROBLEM IDENTIFICATION

II. PROBLEM IDENTIFICATION

II A. Problem Identification Process

Once the twelve functional work groups and their overall objectives were formulated, the work group members began to identify public concerns, use conflicts and other problems related to their overall objective and area of study. A work groups' list of problems was composed of those problems identified in any of the following ways:

1. the problem was identified in GREAT I and was applicable to the GREAT II area
2. the particular work group recognized an existing problem based on existing conditions
3. the particular work group recognized a potential problem based on future projections of existing conditions and trends
4. other work groups identified concerns relating to the particular work groups' area of study
5. the public expressed concerns and problems directly to the particular work group
6. the public expressed concerns and problems to a particular work group through the public participation and information work group (i.e., town meetings; houseboat trips; etc.).

These problems were compiled into a list to be evaluated by the particular work group for their relevancy to the study; the urgency or certainty of the problem; and the potential for resolving the problem within the time-frame of the study. Certain problems were eliminated from further study based on criteria guidelines developed by the Upper Mississippi River Basin Commission in 1974. The list of remaining problems was then prioritized by the work group. (See Plan Formulation Work Group Appendix for the listing of these problems.)

The results of this screening process were put into tables and displayed in the Preliminary Feasibility Report.

Once the work groups had developed a set of problems and needs, they formulated a list of objectives designed to address and, at a minimum, partially resolve their problems. These objectives were then used to identify tasks and/or studies which the work group needed to accomplish in order to identify the possible alternative solutions to their respective problems. The problems, objectives and tasks therefore represent the plans-of-action each work group use to derive their final conclusions and recommendations.

The conditions, both existing and future, which were used to identify a work groups problems are discussed in the following sections. The year 1979 was chosen as a base point for existing conditions, and a project life of fifty years was used to predict future conditions. Attachments 1, 2 and 3 summarize the plan-of-action for each work group.

II B. Existing Conditions

B. 1. Existing Recreation Resources

The twelve pools (314 miles) of the GREAT II reach of the Mississippi River provide excellent opportunities for outdoor recreation enjoyment. The Nine Foot Channel Environmental Impact Statement prepared by the Rock Island District, Corps of Engineers, identified over 164,500 acres of water, 2,600 miles of shoreline (including islands) and 81,400 acres of publicly-owned land in Pools 11 through 22.

The 1977 GREAT II Recreation Facility Inventory shows a total of 15,488 acres of undeveloped and 3,879 acres of developed recreation land, not including dredged material beaches within the study area. In addition, there are approximately 225 boat launching lanes with over 5,145 adjacent parking spaces; 3,600 marina slips, and 3,200 private boats not in marinas. There are 3,200 individual camping units; 3,500 picnic tables; 50 miles of designated hiking trails; 10 miles of designated horseback riding trails; 5 miles of designated cross-country ski trails; and 20 miles of designated snowmobile trails. These facilities are provided by federal, state, and local governmental agencies and commercial and private interests. There are also 634 cabin site leases which are scheduled to be terminated in 1988.

Dredged material beaches have historically received large amounts of recreation use within the Mississippi River corridor. It has been noted by Corps of Engineers personnel that within hours after dredging operations cease, people utilize these beaches for recreation. Dredge material beaches provide primitive types of recreation with only make-shift facilities that individual recreationists may improvise. If such areas are to remain as future dredge material disposal sites, development of recreation facilities would complicate disposal practices and increase costs.

Dredge material beaches are used for camping, swimming, sunbathing, picnicking, family outings, and partying. They form base locations for water skiing, hunting, and fishing groups. They have been historically, and continue to be, an important destination point during recreation visits to the Mississippi River.

B. 2. Existing Recreational Use

Recreation resource managers and enforcement personnel have indicated a large increase in recreation use on and along the banks of the Mississippi River in past years. Recreation users have noted this change and have suggested the need to evaluate the impacts which are facing the recreation users. From Corps of Engineers use counts and resource and facilities manager observations, the 1979 use seem to have declined. However, we cannot predict the effects that energy problems will have on the recreational use of the Upper Mississippi River.

Recreation use information is compiled on a yearly basis for Pools 11 through 22 by the Rock Island District, Corps of Engineers, under the Recreation Resource Management System (RRMS). The Recreation Work Group through a contract with Iowa Conservation Commission assessed recent changes and improvements in the RRMS and utilized an average of 1977 and 1978 information to develop "Base Year" data. The following table represents recreation use in activity days** for the GREAT II area:

BASE YEAR - TOTAL ACTIVITY DAYS* (Average of 1977 & 1978)

| | |
|---------|---------------------------|
| Pool 11 | - 1,204,350 activity days |
| Pool 12 | - 1,234,400 activity days |
| Pool 13 | - 1,346,701 activity days |
| Pool 14 | - 1,573,050 activity days |
| Pool 15 | - 1,306,000 activity days |
| Pool 16 | - 1,873,700 activity days |
| Pool 17 | - 905,450 activity days |
| Pool 18 | - 1,207,750 activity days |
| Pool 19 | - 2,322,200 activity days |
| Pool 20 | - 270,800 activity days |
| Pool 21 | - 2,330,850 activity days |
| Pool 22 | - 1,566,900 activity days |

Total GREAT II Area = 16,845,151 activity days

*Data should be used only for relative comparison purposes between pools.

Additional information on the total recreational activities days can be obtained from the "Recreation Use Projections and Needs Report".

** An "Activity Day" is defined as the attendance of one person at the area for the purpose of engaging in one or more recreational activities for one day or a fraction thereof. An "Activity Day" does not refer to a specific number of hours and should not be confused with "Visitor Day".

B. 3. Existing Means of Maintaining Recreation

Presently there are recreation facilities owned, operated and maintained by private entities and a cross section of public agencies. A small portion of the facilities are owned in fee title and operated and maintained by private interests. Additional private facilities are operated and maintained under lease agreement with the Corps of Engineers, Fish and Wildlife Service, states or cities. This category includes the cabin site lease properties. The Corps of Engineers operate and maintain 26 recreation sites with a staff of seven permanent rangers.

The Fish and Wildlife Service operates portions of two refuges in the GREAT II area: the Upper Mississippi Wildlife and Fish Refuge and the Mark Twain Refuge. Illinois, Iowa, Missouri, and Wisconsin each own and lease recreation areas. This also holds true for many counties and cities along the river.

Funding for acquisition, development, operation and maintenance derives from many sources ranging from line items in budgets, to general operation and maintenance funds, to Marine Fuel Tax Funds, to license and registration money, use fees, to Land and Water Conservation Fund and the Federal Water Project Recreation Act of 1965 (Public Law 89-72) monies, private contributions of time or hip pocket operations, etc.

Many beaches in the GREAT II area have been nourished with dredge material as a result of channel maintenance activities by the Corps of Engineers. Since no agency, public or private, has overall authority or funding for maintaining recreation island beach areas, one can only assume that a majority of existing beaches would deteriorate in the future and become unusable for recreation.

B. 4. Relationship of Recreational Use to Commercial Transportation.

The expanse of water created by the locks and dams of the navigation project provide many opportunities for recreation use and enjoyment in the Mississippi River corridor. Major boating activity occurs in the navigation channel and the main channel corridor. Major hunting and fishing activity occurs along the main channel border and backwaters. Camping, picnicking, swimming and other river-oriented recreation activities occur throughout the corridor.

Conflicts exist between recreation use and maintenance of the navigation channel and commercial navigation use. Portions of the navigation pools have very shallow areas and stump fields. While these areas provide good fish nursery and waterfowl areas, they are hazards to the boater unfamiliar with the river. Channel structures, such as wing dikes and closing dams, used to help maintain the navigation channel, are also a hazard to the novice or inexperienced boater on the Mississippi.

During the problem identification phase of this study, it was thought that accidents involving recreation boat and commercial tows were a major concern. Review of state boating accident data did not substantiate this concern. During discussions with boaters during the 1978 summer survey, there was considerable concern expressed about the problems that commercial tow wakes caused. Boaters reported numerous occasions of taking on water and causing beached boats to be pushed high and dry, pushed into adjacent boats, or freed from moorings. A majority of these concerns were expressed at high-use areas during weekends or holidays.

B. 5. Existing Relationship of Recreation to Areas Economy

The amount of money being spent by the American public on recreational goods and services has increased rapidly through the past decade. Because the majority of the people who use recreation facilities are from the local area, these people purchase goods and services locally to participate in recreational activities. As a result, more money stays in local communities, improving local economies. Those people traveling a considerable distance to use local facilities also support local economies by purchasing such commodities as gas, food, and lodging, and using local services.

The future management of existing recreational facilities, as well as the establishment of any new recreational facilities, would have a positive impact on the economy of nearby cities and towns. As a result of increased local spending and the possible establishment of new businesses and new jobs related to increased recreational activity, local economies will be improved.

The development of additional public recreational facilities often results in a loss of tax revenue for the municipality undertaking the development. This loss in many cases is balanced or outweighed by the increased value of surrounding homes and property, the possible attraction of new industries, businesses, and people to the area, as well as an improved social environment where new recreational facilities are established.

Numerous recreational facilities along the Mississippi have been established and are managed by various state or federal government agencies. In an effort to economize, these agencies have contracted with local private firms to take care of various maintenance tasks such as trash removal and grass cutting. As a result, state and federal agencies are putting money back into local economies.

Federal and state government agencies also have cost sharing programs for establishing new recreational facilities in towns and cities. These programs make it possible for many municipalities to establish recreational facilities which they otherwise could not afford. Although local participants do not pay construction costs, the annual maintenance and management costs can far exceed the original construction costs over time. These costs must be paid by the participant and as of now there are no programs for recreational maintenance and management assistance. Because of this, there have not been a large number of local governments participating in these programs.

B. 6. Existing Relationship of Recreation to Environmental Concerns

The establishment and existence of outdoor recreational facilities have an effect on various facets of both the natural and social environments. These effects can be positive or negative depending on the management, design, and use of recreational areas.

Through proper planning and design, many of the negative impacts associated with the establishment of recreational facilities can be alleviated or reduced. Choosing a site for development with the proper relationship of carrying capacity to desired recreational activities can eliminate numerous negative impacts on the site's natural resources. The impacts associated with a loss of vegetation as well as food and cover for wildlife through the establishment of access roads, buildings, parking lots, and other supporting facilities can be reduced by using vegetation and landscape plantings that will provide food and cover for wildlife species during the fall, winter, and early spring months. Impacts can be further reduced by planting vegetation in areas adjacent to the site that will offer visual screening and further benefits to wildlife.

Through proper management and maintenance, damage to vegetative cover can be reduced by the proper placement of facilities (restrooms, picnic tables, etc.) and good enforcement of park rules and regulations. By keeping the facility neat and orderly, vandalism will be reduced and users will better appreciate the facilities and natural resources of the area. Care must be taken to quickly correct problems that, if neglected, could result in serious damage to the environment and natural resources of the site. The ability to protect the natural resources is directly related to the investment of labor, capital, and management of the facility.

In the mid 1960's and continuing through the 1970's, society has become increasingly aware of the benefits of outdoor recreation. This can be attributed to an increase in leisure time and personal disposable income. As time goes on, there will be increasing competition for land and water resources for all types of use. In the future, the concept of multiple use will need to be employed to a greater degree than presently due to a shortage of available land. Every year more land is developed for residential and commercial uses. In the future, the only land that may be available for public recreational facilities is government land. These same lands will be needed for wildlife, timber, aesthetics, buffer zones, and for other public values. As a result, greater use of multiple use management principles will need to be made. More guidelines on what types and where recreational facilities could be developed will need to be established. High density use recreational areas (beaches, picnic areas, etc.) should be developed in areas where wildlife use is low and impacts will be small, where alteration of the aesthetics will be minimal, and where centers of population will have easy access to the areas.

B. 7. Public Concerns

Many concerns were identified by the public during the various public meetings and during the 1978 On Site Questionnaire Survey. The concerns are too numerous to mention here, but are listed in composite form under Section II, D, pages 14-22, Problem Identification Sheet. The primary concerns involved specific recreation facility or beach needs, litter problems on islands and at access sites, boating safety, locking delays and Federal cottages leases.



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II. C. PROJECTED CONDITIONS - 2025 (Without Action)

C. 1. Projected State and Federal Regulations and Their Relations to Recreation

The following federal legislation has in the past, and will continue to affect the provision of public recreational opportunities along the Mississippi River.

Federal Aid in Fish Restoration Act--1950
Federal Aid in Wildlife Restoration Act--1937
Federal Water Project Recreation Act--1965
Water Resources Development Act--1976
Fish and Wildlife Coordination Act--1934
Flood Control Act--1944
Historic Sites, Buildings and Antiquities Act--1935
Land and Water Conservation Act--1965
Migratory Bird Conservation Act--1929
Migratory Bird Conservation Stamp Act--1934
National Historic Preservation Act--1966
National Trails System Act--1968
National Wildlife Refuge System Administration Act--1966
Recreation Coordination and Development Act--1963
Refuge Recreation Act--1962
Rivers and Harbors Act--1899
Sikes Act--1960
Water Resources Planning Act--1965

Existing state legislation in Missouri, Illinois, Wisconsin, and Iowa will continue to affect the provision of public recreational opportunities along the Mississippi River. The existing legislation varies between states causing development and enforcement variations. Without implementation of GREAT recommendations, the promulgation and enforcement of recreation regulations will most likely proceed as it has in the past, (a slow process of uniformity). Without GREAT it will be necessary for some other organization to serve the role of coordination of the overall recreation picture. Coordination is important to provide for a greater degree of understanding, communication and uniformity between the states.

With or without the GREAT process, recreation pressures will increase. In order to maintain quality recreation experiences on the Mississippi River system, regulations and policies must be strengthened, streamlined, and expanded.

C. 2. Projected maintenance of recreation areas

Without implementation of the GREAT II recommendations, it can be expected that maintenance of existing recreation areas will remain roughly equivalent to the present situation--maintenance of some recreation facilities is good while at other facilities maintenance is poor. Individual agencies will continue to do their best with limited funds to maintain the areas and facilities they now manage, but inflation and, in some cases, decreasing amounts of tax money, will make it progressively more difficult to adequately maintain these facilities.

A potential problem without continuation of GREAT II activities could be a lack of maintenance of existing dredge spoil beaches. Without recreation input via the pre-dredging On-Site Inspection Team, there could be a decrease in the attention given to using dredge spoil material for nourishment of existing beaches or creation of new beaches where needed.

C. 3. Projected safety of recreation users

User safety on the Mississippi River within the GREAT II area without the impetus that could be provided by GREAT studies and recommendation follow-through would probably not improve significantly. While some improvements might be made by individual agencies, these could well be offset by increased future use levels. Increased use would further crowd already over-taxed facilities resulting in increased numbers of accidents and a worse safety situation.

C. 4. Projected Recreation Resources

Existing recreation resources (facilities and opportunities) that, in many cases, are being used beyond capacity now, would have to serve increased use levels. Relief from new facilities and dispersion of use would be slow in coming and could be more than offset by use of potential recreation areas for other uses. As the demand for recreation resources increases, the supply would remain the same or decrease.

C. 5. Projected Recreation Use

The overall population of the study area is expected to steadily increase through the year 2025. A total of 51 of the counties studied will gain population while 15 are expected to lose population. Taken as a whole, the study area is projected to grow at a faster rate than the United States with an overall increase of 27% compared to 18%. The area's share of United States' population will grow from 1.3% to 1.4%. This is a share of over 250,000 people. Recreation use in the GREAT II area is projected to increase 13% from the base year to 2000 and 2% to 2025. This would amount to an increase of over 3.8 million activity days over the 45 year projection. This increased use points out that present recreation facilities would experience increased use pressure and could prove to be inadequate for the provision of "quality" recreation experiences, and could lead to overuse and safety problems.

II. D. Statement of Problems

The following tables lists those problems which were identified by the general public, GREAT II Study and members of the GREAT II Recreation Work Group.



R1D

NORTH DAKOTA

NORTH DAKOTA

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, GROUP, ETC., WHO IDENTIFIED | 4A. IS THE PROBLEM BEING ADDRESSED BY GREAT 11? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|---|--------------------|--|---|--|------------------------------|
| 1. Legal and institutional authority: Who is responsible for what? Study team members and the public are generally not familiar with legal and institutional authorities. | 1976 | GREAT I | Yes | 1 | -- |
| 2. Little is known about the river recreationists, use patterns, resource perceptions, etc. | 1976 | GREAT I | Yes | 4, 5, 6, 8 | -- |
| 3. Significant areas of water surface use must be identified to reduce or avoid conflicts. | 1976 | GREAT I | Yes | 6, 7 | NA |
| 4. Many people do not know what facilities are available. Types and quantities: locations | 1976 | GREAT I | Yes | 2, 11 | NA |
| 5. The future "demand" for developed and undeveloped recreation areas is unknown. | 1976 | GREAT I | Yes | 3, 2 | NA |
| 6. Recreation use/areas may have adverse impacts on the environment. | 1976 | GREAT I | Partially, through review of recommendations | Recommendation assessment review by RWG & PFWG 15 | |
| 7. Future and existing recreation areas may be adversely affected by development, channel maintenance, and accelerated sedimentation. | 1976 | GREAT I | Partially | 13 Dredge mat. beach priority list for future maintenance | Require site by site review. |

PROBLEM IDENTIFICATION

WORK GROUP RECREATION

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, GROUP, ETC., WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT II? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|--|--------------------------|--|---|--|--|
| 8. Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities. | 1976 | GREAT I | Yes | 4, 8 | NA |
| 9. Boating safety is a problem. Frequency of boating accidents is relatively high. (courtesy & regulations) | 1976 | GREAT I | Yes | 7 | NA |
| 10. Recreation use sometimes conflicts with commercial uses. | 1976 | GREAT I | Yes | 6, 7, 10 | NA |
| 11. Historic and archaeological site destruction may occur within or outside of urban areas, within the riverine area or beyond the bluffs. | 1976 | GREAT I | Yes | Cultural Resources work group is addressing | NA |
| 12. Golf courses, playgrounds, athletic fields, swimming pools, and other uses within urban areas may be adversely affected by dredged material (Urban Parks) | 1976 | GREAT I | Not specifically | -- | Will not be able to go to individual park managers - time & money constraint |
| 13. Areas funded by Land and Water Conservation funds may be adversely affected or the original project purposes may be amended by the deposition of dredged material. | 1976 | GREAT I | Yes | Identification of recreation areas funded by LAWCON-15 | |
| 14. There is a threat of degradation of the view shed. | 1976 | GREAT I | indirectly | 5 | Will be asking survey questions May make "land use" recommendation |

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|---|--------------------|--|--|--|--|
| 15. User fees may affect recreation uses. | 1976 | GREAT I | no | NA | Beyond the scope of GREAT - partially addressed in Master Plan |
| 16. Water quality limits some recreation uses. | 1976 | GREAT I | partially | Water quality addressing source of major discharges RWC - will use this info | -- |
| 17. The "supply" of existing developed and undeveloped recreation areas is unknown. | 1977 | GREAT II - Recreation Work Group | Yes | 3, 4 | -- |
| 18. The future "need" for developed and undeveloped recreation areas is unknown. | 1977 | GREAT II - Recreation Work Group | Yes | 3, 4 | -- |
| 19. Litter exists on some dredged material island/beaches. | 1977 | Public | Yes | 7, 11 | |
| 20. Railroad bridges won't open for recreational boats. | 1977 | GREAT II Recreation Work Group | Partially, similar problem and more pressing for commercial traffic. | 11 | US CODF 499 is the regulation regarding this matter. |
| 21. Recreation is not a project purpose of the nine-foot navigation project. | 1977 | GREAT II Recreation Work Group | Yes | 11 | |

PROBLEM IDENTIFICATION

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|---|--------------------------|---|---|---|---------------------------------|
| 22. Levees limit recreational access | 1977 | GREAT II Recreation Work Group | Yes | 12 | -- |
| 23. Future recreational development may be limited due to environmental concerns. | 1977 | GREAT II Recreation Work Group | Yes | 11, 13 | -- |
| 24. Public Law 89-72 limits Corps authority for recreation development. | 1977 | GREAT II Recreation Work Group | Yes | 11 | -- |
| 25. Law enforcement is limited on the river. | 1977 | GREAT II Recreation Work Group | Yes | 7 | -- |
| 26. There is limited manpower and funds available by agencies to maintain existing and future recreation areas. | 1977 | GREAT II Recreation Work Group | Yes | 8, 13 | -- |
| 27. Sanitary pumpouts for recreational crafts are limited. | 1977 | GREAT II Recreation Work Group | Yes | 2, 4, 5, 11 | |
| 28. State Comprehensive Outdoor Recreation Plans do not place enough emphasis on the Mississippi River. | 1977 | GREAT II Recreation Work Group | Partially | Discussion & coordina- tion with SCORP partners | |

WORK GROUP

PROBLEM IDENTIFICATION

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| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, ETC. WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT II? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|---|--------------------------|---|---|---------------------------------------|--|
| 29. Many recreationists are unfamiliar with river hazards. | 1977 | GREAT II Recreation Work Group | | | |
| 30. Need education on locking priorities. | August 1978 | Public | Indirectly | 7, 11 | |
| 31. Need access below Ft. Madison | August 1978 | Public | See #18 Yes/General Terms | | Information may not be site specific |
| 32. Need more access below dam in Pool 11. | August 1978 | Public | See #31 | | |
| 33. Need more islands/beaches around lower part of state. | August 1978 | Public | See #31 | | |
| 34. Need something more for tourists. Ferry between Gutenberg, IA and Cassville, Wisconsin. | August 1978 | Public | No | | Beyond scope of GREAT, IA & WI DOT's are aware of problem |
| 35. Areas along channel (recreational developments, docks, etc.) are seriously affected by wakes from recreational craft. | August 1978 | Public | Yes | 7 | |

PROBLEM IDENTIFICATION

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, GROUP, ETC. WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT IT? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|---|--------------------------|---|---|---------------------------------------|---------------------------------|
| 36. Bellevue needs public harbor for tourist traffic with facilities. | August 1978 | Public | See #21 | | |
| 37. Recreational use in part of Savanna proving grounds - does government need all that area | August 1978 | Public | See #31 | | |
| 38. Need for a no-wake area below Lock and Dam 12 (pleasure craft) | August 1978 | Public | See #39 | | |
| 39. Need some organization to contract with local person to police recreational areas. | August 1978 | Public | See #9 | | |
| 40. Need more beaches on Iowa side above Lock & Dam 12. | August 1978 | Public | See #18 | 4 | |
| 41. Need more pumping stations for recreational craft. All the harbors or marinas need a holding tank that could be pumped out later or at locks. | August 1978 | Public | See #27 | | |
| 42. There are no public beach facilities accessible by road in Pool 19 - we need some. | August 1978 | Public | See #31 | | |

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, GROUP, ETC. WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT 11? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|--|--------------------------|---|---|---------------------------------------|---------------------------------|
| 43. No fee for recreational lockages. | August 1978 | Public | See #15 | | |
| 44. Boat docks are needed. | August 1978 | Public | See #18 | | |
| 45. In Pool 19, there are hardly any sandbars. Most boats, especially larger ones, cannot get to recreational sites. | August 1978 | Public | See #31 | | |
| 46. Need to put dredged material on bars to make sandbars. | August 1978 | Public | See #18 | | |
| 47. Ft. Madison Railroad Bridge won't open for pleasure craft. | August 1978 | Public | See #20 | | |
| 48. What is Coast Guard planning on doing about pump-out-facilities. | August 1978 | Public | See #27 | | |
| 49. Why can't Corps put pumping stations at all their own harbors? | August 1978 | Public | See #'s 24, 27 | | |

PROBLEM IDENTIFICATION

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|---|--------------------------|---|---|---------------------------------------|---------------------------------|
| 50. Problems with boat harbor/access filling in. (every year at Warsaw, Illinois) | August 1978 | Public | No | | Being Studied by Coe |
| 51. Need a dredged material beach on Illinois side- closer to Warsaw | August 1978 | Public | See #31 | | |
| 52. Good potential area for recreational development with road access just above the boat ramp in Warsaw | August 1978 | Public | See #31 | | |
| 53. Need policing on spoil islands - trash cans, etc. | August 1978 | Public | See #19 | | |
| 54. Need locking schedule for recreational craft. | August 1978 | Public | Yes | 11 | |
| 55. Recreational area developed from Fenway Landing N. to some extent and from Fenway down to Canton. Need access to it. | August 1978 | Public | See #31 | | |
| 56. Recreational area: ramp, harbor, marina docking - need fill for recreation area below L & D 20-rock ledge exists that could be built up to form Marina. | August 1978 | Public | Sec #31 | | |

PROBLEM IDENTIFICATION

WORK GROUP RECREATION

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|--|--------------------------|--|---|---------------------------------------|---------------------------------|
| 57. Have small riverfront park and potential for marina development | August 1978 | Public | See #31 | | |
| 58. Recreational development for riverfront - have area available adjacent to Pete's Boat House | August 1978 | Public | See #31 | | |
| 59. Can they get some help from the Corps to develop recreational area. | August 1978 | Public | See #24 | | |
| 60. Interested in upgrading or developing Turtles, Shuck, and Classcow (Jackson) Islands, for recreation. They would like some guidance on this. | August 1978 | Public | Yes | 8,13 | |
| 61. Blanchard Island below Muscatine is submerged slightly and boats are getting hung up on it. | August 1978 | Public | Yes, in general terms | 7 | May not be site specific |
| 62. Needs policing of islands/beaches | August 1978 | Public | See #19 | | |
| 63. Need to educate boaters on river locations of wing dams, why they are there, etc. | August 1978 | Public | See #9 | | |

PROBLEM IDENTIFICATION

WORK GROUP RECREATION

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, GROUP, ETC., WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT 11? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|--|--------------------------|--|--|---------------------------------------|--|
| 64. Need marina facility in Niota area | August 1978 | Public | See #18 | | |
| 65. Dallas City interested in developing a marina/ harbor in Bay area | August 1978 | Public | See #18 | | |
| 66. Need more recreational beaches. | August 1978 | Public | See #18 | | |
| 67. Don't like the rip-rap at the public use area below Andalusia. It is too hard to get to the water. | August 1978 | Public | Not specific- ally but enhancement guidelines can be followed. | 8 | Responsibility of Rock Island District, Corps |
| 68. Would like to expand harbor. Right now there is only room for boats from residents. Would like a boat ramp and more slips. | August 1978 | Public | See #18 | | |
| 69. Would also like that land surrounding the harbor (river side of dike) kept up better. Right now they have no management control since it is federal property. | August 1978 | Public | See #18, 24 & 25. | | |
| 70. Concerned with inexperienced boaters on the river. | August 1978 | Public | See #9 | | |

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NAME GROSS REAT

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, GROUP, ETC., WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT II? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|--|--------------------------|--|---|---------------------------------------|--|
| 71. Heavy use on Albany Island. Problem of policing beach. | August 1978 | Public | See #19 | | |
| 72. Need to develop some way of policing the dredge beaches. | August 1978 | Public | See #19 & 24 | | |
| 73. Generally need more recreational beaches | August 1978 | Public | See #18 | | |
| 74. Need more dredge spoil islands in the Dubuque area. | August 1978 | Public | See #18 | | |
| 75. How will the GREAT Study affect cottages and homes on leased riverfront land? What is status of government leases now? Will it be changed? | August 1978 | Public | Information from "Cabin Site" Inventory will be included in appendix individual sites will be reviewed. | 3, 4, 11 | Lease termination responsibility of Rock Island District Corps |
| 76. With all this interest in increasing recreation activities in the GREAT II area, why is the CORPS closing campsites (cabins) and all leases? | August 1978 | Public | No | | Beyond scope of GREAT - problem being addressed by Corps |
| 77. Will holding tanks on boats be required (enforced) beginning in 1978 and thereafter? | August 1978 | Public | Partially, and State laws apply but pump out areas will be recommended. | 4, 11 | |

WORK GROUP RECREATION

Attachment #1

PROBLEM IDENTIFICATION

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, ETC. WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT II? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|---|--------------------------|---|---|---------------------------------------|---------------------------------|
| 78. Burlington has quite a few sandbars, and it is a greatly used recreation area; but there are very few accesses over the levees to these areas so that people can get to them. We need some new accesses to the river? | August 1978 | Public | See #18 | 12 | |
| 79. Levees along the channel are seriously affected by wake from recreational craft. | September 1979 | Public | Yes | 12 | |
| 80. Need to address the impact of energy situation of the recreation resource. | August 1979 | Public | No But will be considered. | | |
| 81. A joint effort between states to clean up litter on islands should be made. | August 1979 | Public | See # 19 | | |
| 82. Need to have some other type of program for development of new recreational areas. | August 1979 | Public | See #26 | | |
| 83. The need for a coordinated effort to consider all benefits of dredged material placement. | June 1979 | GREAT II Recreation Work Group | Yes | 8 | |
| 84. Dredged material has not always been placed with recreation use potential in mind. | June 1979 | GREAT II Recreation Work Group | | 8 | |

WORK GROUP RECREATION

PROBLEM IDENTIFICATION

Attachment #

| 1. STATEMENT OF PROBLEM (LIST IN CHRONOLOGICAL ORDER) | 2. DATE IDENTIFIED | 3. AGENCY, GROUP, ETC. WHO IDENTIFIED | 4A. IS THE PRO- BLEM BEING ADDRESSED BY GREAT II? | 4B. IF IT IS, BY WHICH TASKS | 4C. IF IT'S NOT, WHY NOT? |
|---|--------------------------|---|---|---------------------------------------|---------------------------------|
| 85. Dredged disposal practices do not consider natural features for recreation enhancement. | June 1979 | GREAT II Recreation Work Group | yes | #8 | |
| 86. Insure that the coordinating activities of the GREAT efforts are continued after the completion of the GREAT studies. | June 1979 | GREAT II Rec W G | yes | #11 | |
| 87. Need for planning and design guidelines for public access areas | January 1980 | Public | yes | #11 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

II. E. Recreation Work Group Objectives

OVERALL OBJECTIVES: Represent recreational interests in the process of developing recommendations for channel maintenance for the upcoming navigation season.

SUB-OBJECTIVES:

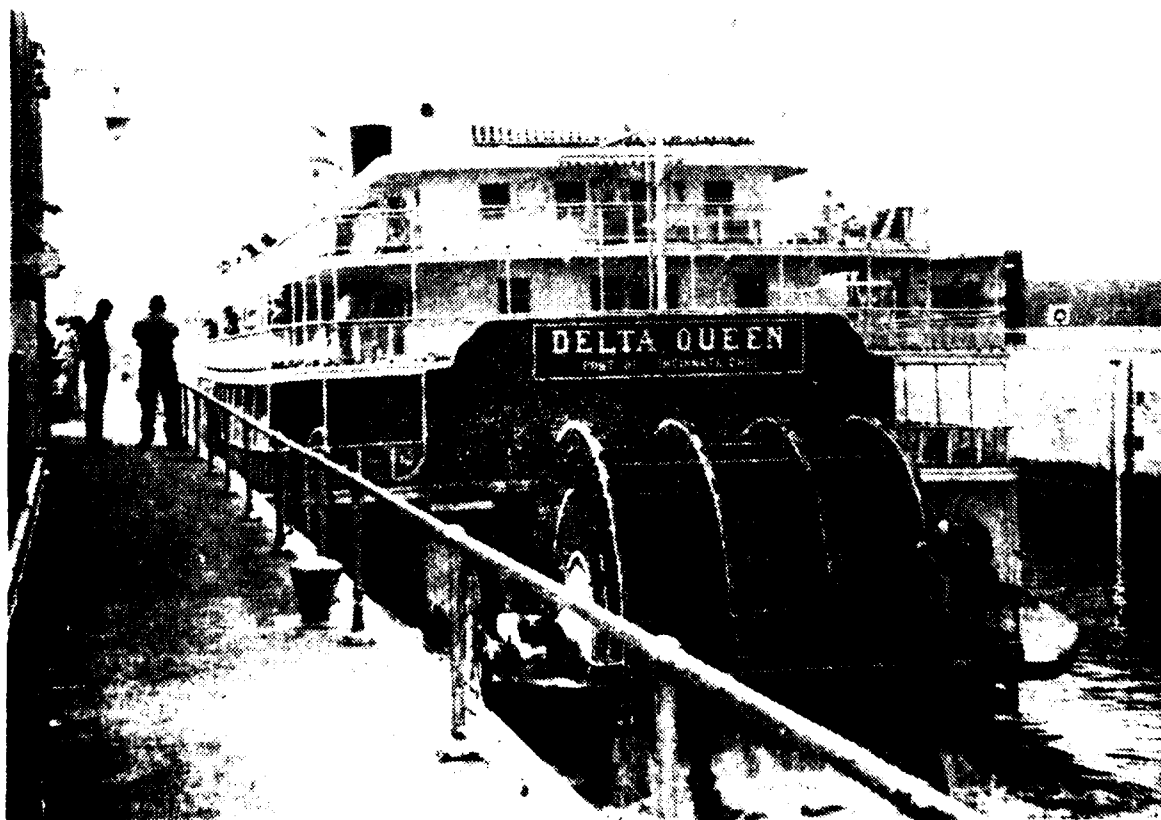
1. Eliminate adverse effects to recreation resulting from channel operation and maintenance activities.
2. Enhance recreational benefits of the river corridor from channel maintenance activities.
3. Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreational opportunities.
4. Maintain the integrity of the recreation viewshed.
5. Distribute information on study findings.



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II. F. Recreation Work Group Plans and Action

The following tables lists the tasks were accomplished during the GREAT II Study.



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WORK GROUP RECREATION

FORMULATION OF TASKS

| DESCRIPTION OF TASK | PURPOSE OF TASK | PERSON(S) OR GROUP(S) RESPONSIBLE FOR COMPLETION OF TASK | PROBLEMS ADDRESSED BY TASK | ANTICIPATED COMPLETION DATE OF TASK |
|---|--|--|--|--|
| #1. Legal Institutional Framework Study | Will identify problems, overlaps and conflicts involved with multi-agency jurisdiction and develop recommendations to resolve conflicts. | University of Missouri Peter Davis | 1 | interim July report: 1979 final April report 31, 1980 |
| #2. Facility Inventory | To provide "supply" information for "supply" and "use" projections - identify areas with access on or to the river | Upper Mississippi River Conservation Committee | 4,5,17,27,41 48,49 | completed 1977 |
| #3. Use Projection Report | Identify deficiencies & present recreation use on a pool by pool basis | Don Brazelton | 5,18,31,32, 33,36,37,38 42,44,45,46, 51,52,55,56, 57,58 | May 31, 1979 |
| #4. Recreation Needs Analysis | Identify needs based on pool objectives, which were developed in the use projection with the report. | Don Brazelton | 2,8,18,27,31 32,33,36,37, 38,40,41,42 44,45,46,48, 49,51,52,55, 56,57,58,64, 65,66,68,69, 73,74,75,77 | Pool - June 15, 1979 Needs - July 15, 1979 |

WORK GROUP RECREATION

FORMULATION OF TASKS

| DESCRIPTION OF TASK | PURPOSE OF TASK | PERSON(S) OR GROUP(S) RESPONSIBLE FOR COMPLETION OF TASK | PROBLEMS ADDRESSED BY TASK | ANTICIPATED COMPLETION DATE OF TASK |
|---|---|--|--|---|
| #5. Recreation Use Survey Includes Marina Operator's Questionnaire | To answer questions work group had about the characteristics and attitudes of the users | Bob Becker - University of Wisconsin | 2,14,27,41, 48,49 | Initial: completed summer 1978 Followup: May 1979 Report March 1980 |
| #6 Recreation Monitoring Study | To develop economical and feasible method to monitor recreation use on the river - to identify problem areas, needed facilities, trends, congregations of use. | Bob Becker - University of Wisconsin | 2,3,10 | March 1980 |
| #7 Boating Safety Report | Obtain information on boating accidents to identify types of accidents, their causes, location of accidents, etc. to identify what needs to be done to alleviate the problem. | Don Brazelton | 3,9,10,19,25 29,30,35,39 53,61,62,63 70,71,72 | July 1, 1979 Completed |
| #8 Maintenance & Enhancement of Island Beach Areas | To determine what parameters of existing beaches attract people to them - to determine what placement of dredged material could be used to attract people. | David Johnson Iowa State | 2,8,26,46,60, 67,83,84,85 | Completed |

WORK GROUP RECREATION

FORMULATION OF TASKS

| DESCRIPTION OF TASK | PURPOSE OF TASK | PERSON(S) OR GROUP(S) RESPONSIBLE FOR COMPLETION OF TASK | PROBLEMS ADDRESSED BY TASK | ANTICIPATED COMPLETION DATE OF TASK |
|--|---|--|---|-------------------------------------|
| #9 Literature Review | Research and to determine what present information is available regarding recreation on Mississippi River - to avoid duplication of efforts | George Harker West Illinois Univ. | | Completed |
| #10 Not a task of GREAT but will be used for addressing problems | | Midwest Research Institute for St. Paul District, Corps of Engineers | 10 | Completed |
| #11 Work Group meeting and discussion | to disseminate and share new and existing information regarding recreation and projects affecting recreation | Recreation Work Group | 16,19,20,21 23,24,27,30 41,47,48,49 53,54,59,62 71,72,75,77 | FY80 |
| #12 Meetings with levee districts | identify methods of providing safe recreational access over levees and recreational facilities that do not promote use on the levee | Recreation Work Group | 22,78 | FY80 |

WORK GROUP RECREATION

FORMULATION OF TASKS

| DESCRIPTION OF TASK | PURPOSE OF TASK | PERSON(S) OR GROUP(S) RESPONSIBLE FOR COMPLETION OF TASK | PROBLEMS ADDRESSED BY TASK | ANTICIPATED COMPLETION DATE OF TASK |
|--|---|--|----------------------------|-------------------------------------|
| #13 Disposal Site Selection: | identify disposal sites which enhance recreation use and/or facilities | Recreation Work Group | 7, 23, 26, 60 | FY80 |
| #14 Economic Impact Analysis | determine the recreation benefit derived from the use of dredge material beaches | Recreation Work Group/ Report Writer/Economist | | FY80 |
| #15 Land and Water Conservation Fund Project Listing | identify recreation areas that may be adversely affected through change of project purpose from dredge material disposal. | Recreation Work Group | 13 | Completed 6/79 |
| #16 Recommendation Assessment | approve recommendation for final report | Plan Form Work Group | 6 | FY80 |

3

ACTIVITIES/ACCOMPLISHMENTS

III. WORK GROUP ACTIVITIES/ACCOMPLISHMENTS

III. A. Legal and Institutional Framework Study

1. Purpose and Objectives

The task was carried out to document the present regulatory authorities and programs affecting the recreation sector. The Recreation Work Group wished to identify strengths, deficiencies, conflicts, gaps, overlaps, and authorities.

2. Description

The legal and institutional framework task was the study that reviewed existing laws, policies, programs and authorities that govern recreation use or the provision thereof in the GREAT II Study area. Research was concentrated in federal and state policies and laws.

3. Schedule/Cost

Information was gathered in the late 1978 and early months of 1979 for those states and agencies involved in recreation on the Mississippi by the Recreation Work Group Chairman. The information was then turned over to Mr. Peter Davis of the University of Missouri College of Law at Columbia for additional research. The task was a joint effort with the Floodplain Management Work Group and was scheduled to be completed during the summer of 1980 for \$8,500.

4. Methods

The following states and agencies were contacted and asked to update a report, entitled, "Report by the Inner Agency Group on the Upper Mississippi River," dated November 21, 1974, prepared by the Heritage, Conservation and Recreation Service formally known as the Bureau of Outdoor Recreation:

The State of Illinois, State of Iowa, State of Missouri, State of Wisconsin, Bureau of Land Management, Corps of Engineers, Federal Highway Administration, Fish and Wildlife Service, Heritage Conservation and Recreation Service, National Park Service. The responses provided by the states and the federal agencies were forwarded to Mr. Davis for analysis. Additional indepth research was carried out by the University of Missouri College of Law.

5. Results and Conclusions

For information on the study refer to the Flood Plain Management Work Group Appendix.

III. B. Facility Inventory

I. Purpose and Scope

Recreation Facility Inventory provided base line data on existing recreation facilities along the 314 miles of the GREAT II area. The inventory was utilized to assess the "supply" portion of the "recreation supply/demand/needs" analysis. These facilities were compared on a pool by pool basis with existing and projected use to develop the relative adequacy of a particular pool to provide recreation services.

2. Description

Public recreation and private facilities open to the public were inventoried during 1976/1977. Facilities that are adjacent to or dependent upon the river as a scenic setting were considered for inclusion. The information was compiled in a report entitled, "GREAT II Recreation Facility Inventory, 1977"

3. Methods

Inventory forms were distributed to State conservation and natural resource agency personnel familiar with the Mississippi River to list and assess each area's facilities. The inventory was compiled on a pool by pool basis and recorded in that format as well as totaled for the GREAT II area.

4. Schedule/Cost

The task was carried out during 1976/1977. The report was published in 1978 and distributed on April 1, 1978, as a joint effort of the Great River Environmental Action Team and the Upper Mississippi River Conservation Committee. The staff time for documentation and compilation were absorbed by the state resource agencies involved and the printing cost for the GREAT II portion totaled approximately \$500.

5. Results.

The results of the Facility Inventory are tabulated in the following summaries: (figures 1-6)

6. Conclusions

No conclusions were derived from the inventory. The information contained within the report was analyzed with existing and future use information to develop conclusions for the "Recreation Needs Analysis".

FIGURE 1

GREAT II SUMMARY

UPPER MISSISSIPPI RIVER

RECREATION FACILITY

INVENTORY

| | LAND ACRES | | BOATING ACCESS | | | | | | |
|--|-------------|-----------|----------------|----------------------------------|------------------|-----------------|-----------------|------------------|----------------------|
| | UNDEVELOPED | DEVELOPED | PARKING SPACES | RAMPS : NUMBERS & SURFACES | FEE'S CHARGED | MARINA SLIPS | RENTAL BOATS | PRIVATE BOATS | SERVICES PROVIDED |
| TOTAL for; ILLINOIS | 2057 | 2010 | 2208 | 97H, 6C 9G | 3X | 1760 | 135 | 114 | 25X |
| TOTAL for: IOWA | 20545 | 1779 | 2497 | 45H, 6N 15C, 25G | 15X | 1755 | 136 | 2636 | 43X |
| TOTAL for: MISSOURI | 12 | 29 | 216 | 4C, 3H 2G | | 120 | | 176 | 4X |
| TOTAL for: WISCONSIN | 774 | 61 | 224 | 7H, 4N 1C, 1G | | | 38 | | 3X |
| Code: G - Gravel H - Hard Surfaced C - Concrete Plank N - Non-Surfaced | | | | | | | | | |
| GRAND TOTAL -- GREAT II | 23388 | 3879 | 5145 | 152H 27G 26C 1CN | 18X | 3635 | 309 | 2926 | 75X |

GREAT II SUMMARY

| UPPER MISSISSIPPI RIVER RECREATION FACILITY INVENTORY | | TOTAL for WISCONSIN | TOTAL for MISSOURI | TOTAL for IOWA | TOTAL for ILLINOIS | GRAND TOTAL for GREAT II |
|---|-------------------------|-------------------------------|------------------------------|--------------------------------------|------------------------------|---------------------------------------|
| FISHING AREAS | | 1 | | 1 | | 1 |
| PICNIC TABLES | | 207 | 24 | 1790 | 1541 | 3562 |
| INTERPRETIVE AREAS | | | | 1 | 1 | 2 |
| UNMARKED SWIM AREAS | | 1 | 3 | 39 | | 43 |
| SWIM AREA | BEACH SIZE | | | | | |
| | AREA LENGTH | | | 1 | | 1 |
| CAMPING UNITS | GROUP | | | 1 | 51 | 52 |
| | INDIVIDUAL | 110 | 42 | 1082 | 1691 | 2925 |
| | BOAT ACCESS | | 1 | 232 | 1 | 234 |
| SPORTING AREA | ACRES | | | 87563 | | 87563 |
| | HUNTING | | | 4-B, 64-F ^{1/} 72-W, 6-S | | 4-B, 65-F ^{1/} 72-W, 6-S |
| | TRAPPING | | | | | |
| MILES OF TRAILS | HIKING | 2.75 | | 19 | 30 | 51.75 |
| | HORSEBACK | | | | 8 | 8 |
| | BICYCLE | | | | | |
| | SNOWMOBILE | | | 5 | 14 | 19 |
| | CROSS COUNTRY SKIING | | | 5 | | 5 |

^{1/} Code: B-Big Game, S-Small Game, W-Waterfowl, F-Fur Bearers

FIGURE 3

GREAT II SUMMARY

UPPER MISSISSIPPI RIVER

RECREATION FACILITY

INVENTORY

BOATING ACCESS

| | LAND ACRES | | | | | | | | | | | |
|---------|-------------|-----------|----------------|----------------------------------|------------------|-----------------|-----------------|------------------|----------------------|----|--|--|
| | UNDEVELOPED | DEVELOPED | PARKING SPACES | RAMPS : NUMBERS & SURFACES | FEE'S CHARGED | MARINA SLIPS | RENTAL BOATS | PRIVATE BOATS | SERVICES PROVIDED | | | |
| POOL 11 | IOWA | 310 | 98 | 383 | 1H, 3C 5G | 5X | 222 | 41 | 282 | 7X | | |
| | WISCONSIN | 774 | 60.8 | 200 | 5H, 1C 1G, 4N | 1X | | 38 | | 2X | | |
| POOL 12 | ILLINOIS | 204 | 40.5 | 295 | 7H, 1G | | 613 | 44 | | 6X | | |
| | IOWA | 219 | 341 | 453 | 8H, 1G | | 464 | 2 | 528 | 6X | | |
| | WISCONSIN | | | 24 | 2H | | | | | 1X | | |
| POOL 13 | ILLINOIS | 1160 | 1645 | 684 | 14H, 3G | 2X | 95 | 87 | 50 | 7X | | |
| | IOWA | 3113 | 238 | 361 | 1N, 2H 4C, 7G | 2X | 106 | 53 | 41 | 6X | | |
| POOL 14 | ILLINOIS | 2.5 | 5 | 265 | 11H, 1C | 1X | 95 | 4 | 20 | 3X | | |
| | IOWA | 1298 | 219.5 | 254 | 1C, 3N 7G, 8H | 4X | 532 | 24 | 683 | 8X | | |
| POOL 15 | ILLINOIS | 81 | 36.8 | 115 | 8H | | 188 | | | 2X | | |
| | IOWA | 7 | 15.5 | 50 | 2H | | 130 | | 305 | 2X | | |
| POOL 16 | ILLINOIS | 185.5 | 97 | 145 | 2C, 1G 10H | | 425 | | 22 | 3X | | |
| | IOWA | 589 | 657.1 | 505 | 2C, 1G 10H | 1X | 40 | | 60 | 3X | | |

FIGURE 4

GREAT II SUMMARY

 UPPER MISSISSIPPI RIVER
 RECREATION FACILITY
 INVENTORY

| GREAT II SUMMARY | | LAND ACRES | | BOATING ACCESS | | | | | | |
|---|----------|-------------|-----------|----------------|----------------------------------|------------------|-----------------|-----------------|------------------|----------------------|
| UPPER MISSISSIPPI RIVER RECREATION FACILITY INVENTORY | | UNDEVELOPED | DEVELOPED | PARKING SPACES | RAMPS : NUMBERS & SURFACES | FEE'S CHARGED | MARINA SLIPS | RENTAL BOATS | PRIVATE BOATS | SERVICES PROVIDED |
| POOL 17 | ILLINOIS | 73.6 | 8.7 | 27 | 2H | | | | | |
| | IOWA | 14924 | 35.3 | 179 | 3H, 2C 1G | 1X | 90 | 16 | 144 | 3X |
| POOL 18 | ILLINOIS | 149 | 77.2 | 165 | 13H, 3C | | 96 | | 22 | 2X |
| | IOWA | 16 | 29.5 | 85 | 2N, 1G 1H, 1C | | | | | |
| POOL 19 | ILLINOIS | 39 | 12.8 | 92 | 7H, 1G | | | | | 1X |
| | IOWA | 69.5 | 134.6 | 187 | 6H, 2C 2G | 2X | 301 | | 544 | 7X |
| POOL 20 | ILLINOIS | 1 | 4.3 | 65 | 2H, 1G | | | | | |
| | IOWA | | 10.75 | 40 | 4H | | 96 | | 49 | 1X |
| | MISSOURI | 3 | 9 | 71 | 3H, 2G | | 2 | | 34 | 1X |
| POOL 21 | ILLINOIS | 128 | 77 | 313 | 17H, 2G | | 248 | | | 1X |
| | MISSOURI | 6 | 9 | 55 | 2C | | 2 | | 8 | 1X |
| POOL 22 | ILLINOIS | 33.9 | 5.6 | 42 | 6H | | | | | |
| | MISSOURI | 3 | 11 | 90 | 2C | | 116 | | 134 | 2X |

FIGURE 5

GREAT II SUMMARY
UPPER MISSISSIPPI RIVER
RECREATION FACILITY
INVENTORY

| | FISHING AREAS | PICNIC TABLES | INTERPRETIVE AREA | UNMARKED SWIM AREA | SWIM AREA | | CAMPING UNITS | | | SPORTING AREA | | | MILES OF TRAILS | | | | CROSS-COUNTRY SKIING |
|---------|---------------|---------------|-------------------|--------------------|------------|-------------|---------------|------------|-------------|---------------|-------------|-------------|-----------------|-----------|---------|------------|----------------------|
| | | | | | BEACH SIZE | AREA LENGTH | GROUP | INDIVIDUAL | BOAT ACCESS | ACRES | HUNTING(1) | TRAPPING(1) | HIKING | HORSEBACK | BICYCLE | SNOWMOBILE | |
| POOL 11 | IOWA | 1 90 | | 3 | | | 1 | 150 | 8 | 116 | | | 2 | | | | |
| | WISCONSIN | 207 | | 1 | | | | 110 | | | | | 2.75 | | | | |
| POOL 12 | ILLINOIS | 55 | | | | | | 49 | | | | | 3 | 3 | | | |
| | IOWA | 327 | | 1 | | | | 77 | 5 | 100 | | | | | | | |
| POOL 13 | WISCONSIN | 1 | | | | | | | | | | | | | | | |
| | ILLINOIS | 484 | 1X | | | | 50 | 1057 | 1 | | | | 7 | | | 14 | |
| POOL 14 | IOWA | 206 | | 1 | | | | 346 | 15 | 2719 | B, S, W, F, | | 6 | | | 5 | 5 |
| | ILLINOIS | 55 | | | | | | 135 | | | | | | | | | |
| POOL 15 | IOWA | 380 | | 12 | | | | 95 | 113 | 24,428 | 2S 19F 20W | | | | | | |
| | ILLINOIS | 1 324 | | | | | 1 | 80 | | | | | 3 | | | | |
| POOL 16 | IOWA | 9 | | 1 | | | | 15 | | | | | | | | | |
| | ILLINOIS | 130 | | | | | | 80 | | | | | 15 | 5 | | | |
| POOL 16 | IOWA | 681 | 1X | 4 | | | | 267 | 15 | 15,900 | 11W, 11F | | 11 | | | | |
| | ILLINOIS | | | | | | | | | | | | | | | | |

Code

G - Gravel
H - Hard Surfaced
C - Concrete Plank
N - Non-Surfaced
B - Big Game
S - Small Game
W - Waterfowl
F - Fur Bearers

FIGURE 6

GREAT II SUMMARY
UPPER MISSISSIPPI RIVER
RECREATION FACILITY
INVENTORY

| GREAT II SUMMARY | | | | | | | | | | | | | | | | | |
|-------------------------|---------------|--------------------|---------------------|------------|-------------|---------------|------------|-------------|---------------|-------------|--------------|-----------------|-----------|---------|------------|----------------------|--|
| UPPER MISSISSIPPI RIVER | | | | | | | | | | | | | | | | | |
| RECREATION FACILITY | | | | | | | | | | | | | | | | | |
| INVENTORY | | | | | | | | | | | | | | | | | |
| FISHING AREAS | PICNIC TABLES | INTERPRETIVE AREAS | UNMARKED SWIM AREAS | SWIM AREA | | CAMPING UNITS | | | SPORTING AREA | | | MILES OF TRAILS | | | | | |
| | | | | BEACH SIZE | AREA LENGTH | GROUP | INDIVIDUAL | BOAT ACCESS | ACRES | HUNTING (1) | TRAPPING (1) | HIKING | HORSEBACK | BICYCLE | SNOWMOBILE | CROSS-COUNTRY SKIING | |
| POOL 17 | 20 | | | | | | | 58 | | | | | | | | | |
| | 24 | | 5 | | | | | 62 | 12 | | 23,750 | 11W 3B 3S | 10F | | | | |
| POOL 18 | 206 | | | | | | | 154 | | | | | | 2 | | | |
| | 55 | | 5 | | | | | 70 | 32 | | 6,200 | 7W | 7F | | | | |
| POOL 19 | 52 | | | | | | | | | | | | | | | | |
| | 17 | | 7 | | | | | | 32 | | 12,850 | 19W | 16F | | | | |
| POOL 20 | 5 | | | | | | | | | | 1,500 | 3W | | | | | |
| | 1 | | | | | | 1X | | | | | | | | | | |
| | 11 | | 2 | | | | | 29 | | | | | | | | | |
| POOL 21 | 194 | | | | | | | 60 | | | | | | | | | |
| | 5 | | 1 | | | | | 5 | | | | | | | | | |
| POOL 22 | 16 | | | | | | | 18 | | | | | | | | | |
| | 8 | | | | | | | 8 | 1 | | | | | | | | |

III. C. Recreation Use Projection/Population Projections

1. Purpose and Scope

The task was undertaken to develop future recreation use participation data. The existing and projected recreation use data was analyzed with recreation facilities supply information (III B) to determine recreation "needs" (III D).

2. Description

Existing recreation use data and existing and projected population data were collected and analyzed to project future recreation use on a pool by pool basis for seven selected recreation activities.

3. Methods

Calculations of the projected recreation use for the year 2025 involves several data sources. The Economics Branch of the Rock Island District, Corps of Engineers prepared population projections for three population zones (0-25, 26-50, 51-75 miles) for each of the twelve pools. Population projections for the area beyond 75 miles were developed by computing a compound rate of growth from the Upper Mississippi River Basin Commission's Main Stem "Series E" population figures.

Percentage breakdowns of recreation visitations from each zone to each pool were derived from data extracted from the "On-Site Questionnaire" collected by the RWC 11 in 1978. These data were compared to existing studies such as the Pool 21 study by Fleener completed in 1974, and discussions with recreation and conservation area managers.

Existing recreation use data was compiled from information collected by the Rock Island District, Corps of Engineers through the Recreation Resource Management System (RRMS). The Rock Island District's Resource Management Branch felt that recent data were the most accurate for the use projection study due to recent changes in monitoring methodology. The Recreation Work Group used an average of 1977 and 1978 pool visitation and activity participation percentages to develop "base year" figures.

Due to the uncertainty of the impacts caused by the current energy situation on recreation use, leisure time, disposable income and mobility, the RWC 11 assumed that any increase or decrease in recreation use on the Mississippi River would derive from increases or decreases in population.

The percentages of recreation use from each zone were multiplied by the "base year" recreation use data to derive "base year" visitation from each zone for each pool. These products were then multiplied by the year 2000 and 2025 zonal population projection increases. These zonal population projection increases in activity days were added to the zonal "base year" recreation use figures to develop projected zonal recreation use data for the years 2000 and 2025 for each pool. These zonal projections were added to derive projected use figures in activity days for each pool.

The pool recreation use information for the "base year", 2000 and 2025 were multiplied by the "base year" activity participation percentages to develop participation in activity days for the seven selected recreation activities. The Recreation Work Group did not attempt to project changes in participation rates due to the quality and detail of available information.

4. Schedule/Cost

The population projection report entitled, "Five-year Population Projections for the Mississippi River Region, 1975-2025 (Lock and Dam 22 through Lock and Dam 10)" was prepared by the Economics Branch of the Rock Island District, Corps of Engineers in October, 1978. The cost of the report, \$500, was absorbed in the Rock Island District's GREAT II budget. The use projection report was prepared by the Iowa Conservation Commission as one segment of the Recreation Use Projections/Needs Report. The total report was funded for \$5,000 under a modification to the state of Iowa's contract. The report was completed in August, 1979.

5. Results

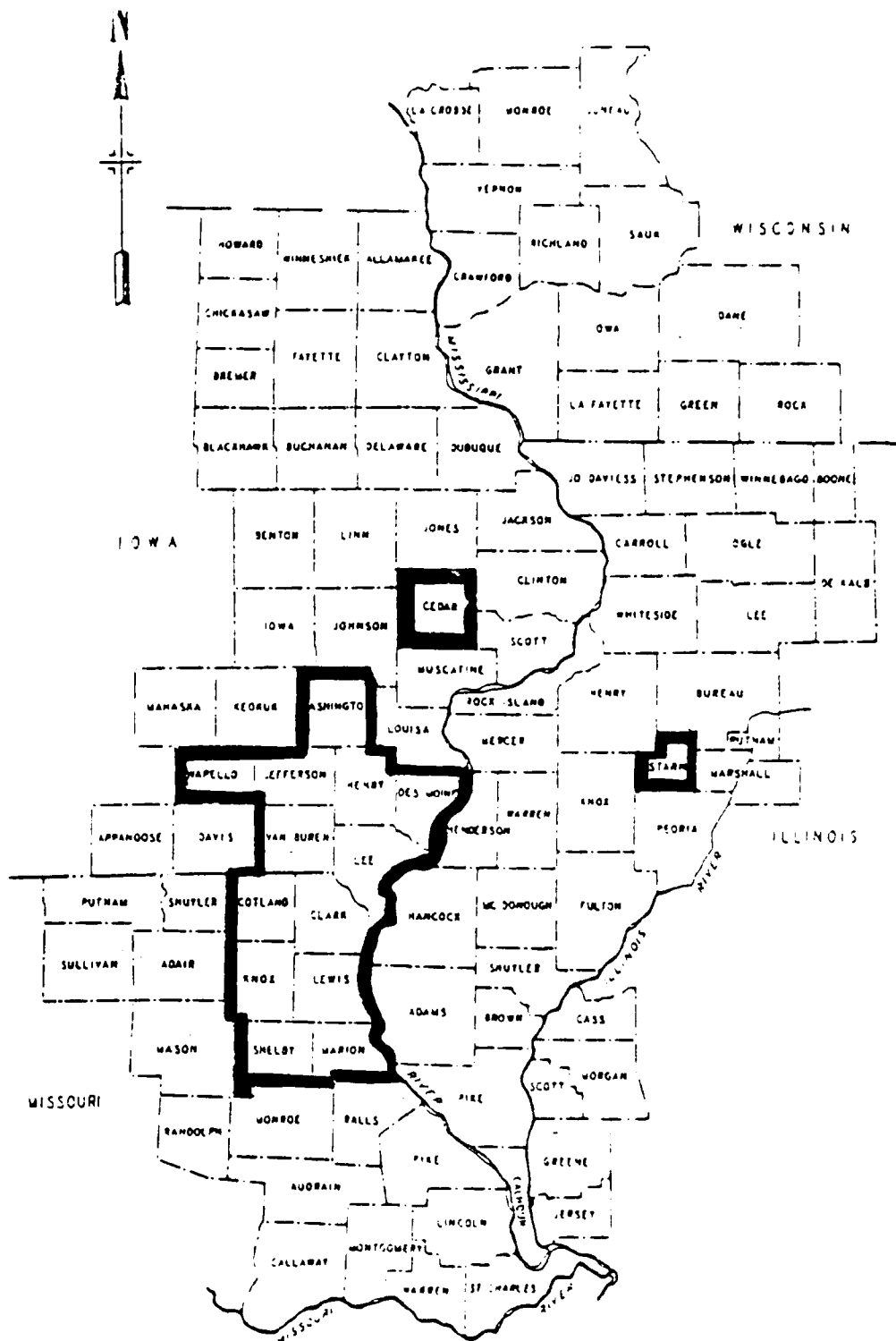
a. Population Characteristics

The overall population of the study area is expected to steadily increase through the year 2025. A total of 51 of the counties studied will gain population while 15 are expected to lose population. With exception of Cedar County, Iowa, and Stark County, Illinois, those counties losing population comprised a continuous region in far Southeast Iowa and far Northeast Missouri (Figure 7). Those counties having the largest projected gain in population are Dane in Wisconsin and Winnebago in Illinois. The population of each is expected to increase by more than 100,000 persons. Other counties where substantial expected increases of 20,000 persons or more are Grant and Greene in Wisconsin; Dubuque, Scott, and Johnson in Iowa; and Whiteside, Rock Island, and McDonough in Illinois. Adair County is expected to undergo the greatest increase in Missouri with a net change of nearly 15,000 persons, or 61%.

The Quad cities area is expected to remain the major metropolitan center in the study area and will probably show a substantial increase in population over the study.

Taken as a whole, the study area is projected to grow at a faster rate than the United States with an overall increase of 27% compared to 18%. The area's share of United States population will grow from 1.3% to 1.45%. The share percentage may seem small, but this is a share of over 250,000 people.

The basic composition of the total population study is not expected to vary greatly. In each of the states it is expected that future populations will have greater percentages of people age 15-65 and 65 and above. The percentages of people age 0-14 are projected to decrease. These three age categories were chosen in order to roughly isolate the segment having income and mobility independence. It is the segment of population age 15-65 which, of course, will provide the greatest recreation demand for water resources.



Counties Expected to Decrease in Population

Figure 7

Another indication of positive financial conditions is the low level of water reimbursement in income. The population in the study area has been expected to increase sharply in the next few years, and the level of food and services for the population is expected to increase. It has been experienced that in 1970, the population was not able to pay for food and other necessities.

b. Total concentration = 1.00 M

decently, and in the last 10 years, the number of people in the world has increased by 1.5 billion. In the year 2000, the world population was 6 billion. The world population is expected to increase to 10 billion by the year 2050, and to 12 billion by the year 2075.

1978 reported that the mean number of children per woman was 2.1, to be noted. The age:

Pool 19, the fourth largest, has a volume of 1,000,000 gal. Center Area Pools 11, 7, and 16, the second, third, and fourth largest, all have a volume of 1,000,000 gal. Pool 11 is filled with 11 percent of the total water, Pool 7 with 10 percent, and Pool 16 with 11 percent of the total water. The total water in the three largest and fourth largest pools is 3,000,000 gal. or 30 percent of the total water.

5. An "Active" ball was defined as the attendance of the ball in at least one day or a fraction thereof, or activity on the field is related to a specific number of hours and it could not be confused with the "other ball".



Year 2000 figures showed that Pool 19 still ranked first at 1.2 percent of the total activity days, Pool 16 moved to second at 11.7 percent of the total activity days and Pool 21 dropped to third at 11.2 percent of the total activity days. Pool 14 and Pool 22 held their respective fourth and fifth positions.

The year 2025 figures revealed that Pool 16 moved into the first position as the heaviest used pool at 11.6 percent of the total activity days, Pool 19 was second at just under 11.4 percent of the total activity days and Pool 21 was third at 11.3 percent of the total activity days. Again, Pools 14 and 22 ranked fourth and fifth respectively.

TOTAL RECREATION USE*

| Pool | Base Rate | Year 2000 | Year 2025 |
|---------------------------|-----------|------------|------------|
| 11 | 1,204,350 | 1,476,533 | 1,752,931 |
| 12 | 1,234,400 | 1,499,055 | 1,726,555 |
| 13 | 1,346,701 | 1,544,127 | 1,750,980 |
| 14 | 1,573,050 | 1,887,345 | 2,140,763 |
| 15 | 1,306,000 | 1,529,326 | 1,705,505 |
| 16 | 1,873,700 | 2,192,041 | 2,440,868 |
| 17 | 905,450 | 1,015,462 | 1,117,325 |
| 18 | 1,207,750 | 1,255,214 | 1,319,949 |
| 19 | 2,322,200 | 2,281,097 | 2,372,591 |
| 20 | 270,800 | 256,068 | 279,005 |
| 21 | 2,033,850 | 2,141,644 | 2,349,300 |
| 22 | 1,066,900 | 1,646,811 | 1,773,260 |
| Total GREAT II 16,345,151 | | 18,724,723 | 20,729,032 |

* Data should only be used for comparison purposes between pools (See Recreation Projection & Needs Report)

While the southern portion of the GREAT II area, Pools 19-22, are the heaviest used in the base year and remain heavily used through the years 2000 and 2025, the northern portion (Pools 11 through 16) experience the largest increases in use, both in percentage and in activity days.

c. Total Use for Seven Selected Recreation Activities

Picnicking, camping, swimming, water skiing, boating, fishing and hunting were the seven activities used as indicators for use trends and facility needs. Boating and fishing were the most preferred activities in the GREAT II area and account for over one-half of the total base year use. This holds true for the year 2000 and 2025 projection data.

The largest increases in activity days to the year 2025 occurred in boating, 1.2 million activity days, and fishing, 1.1 million activity days. The largest percentage increase in use over the same period occurred in camping.

'77-'78 AVERAGE BASE RATES*

| Pool | Picnic | Camping | Swimming | Water Skiing | Boating | Fishing | Hunting |
|-------|-----------|---------|----------|--------------|-----------|-----------|-----------|
| 11 | 72,261 | 54,196 | 42,152 | 30,109 | 337,218 | 355,283 | 66,237 |
| 12 | 104,924 | 67,892 | 24,688 | 37,032 | 364,148 | 388,836 | 74,064 |
| 13 | 101,003 | 87,536 | 20,201 | 53,868 | 417,477 | 383,810 | 87,536 |
| 14 | 125,844 | 55,057 | 31,461 | 62,922 | 511,241 | 479,780 | 47,192 |
| 15 | 169,780 | 26,120 | 13,060 | 52,240 | 528,930 | 274,260 | 6,530 |
| 16 | 159,265 | 121,791 | 37,474 | 93,685 | 505,899 | 562,110 | 103,054 |
| 17 | 45,273 | 31,691 | 18,109 | 31,691 | 271,635 | 307,853 | 72,436 |
| 18 | 108,698 | 48,310 | 36,233 | 42,271 | 344,209 | 428,751 | 114,736 |
| 19 | 92,888 | 11,611 | 81,277 | 127,721 | 731,493 | 673,438 | 185,776 |
| 20 | 17,602 | 10,832 | 4,062 | 8,124 | 78,532 | 93,426 | 17,602 |
| 21 | 142,370 | 40,677 | 70,155 | 122,631 | 630,494 | 528,801 | 172,877 |
| 22 | 47,007 | 15,669 | 86,180 | 54,842 | 383,891 | 423,063 | 117,518 |
| TOTAL | 1,186,915 | 571,377 | 465,052 | 716,536 | 5,105,167 | 4,899,411 | 1,065,558 |

* Data should only be used for comparison purposes between pools (See Recreation Projection and Needs Report)

PROJECTED ACTIVITY DAYS FOR 2000*

| Pool | Picnic | Camping | Swimming | Water Skiing | Boating | Fishing | Hunting |
|-------|-----------|---------|----------|--------------|-----------|-----------|-----------|
| 11 | 88,592 | 66,444 | 51,679 | 36,913 | 413,429 | 435,577 | 81,209 |
| 12 | 127,420 | 82,448 | 29,981 | 44,972 | 442,221 | 472,202 | 89,943 |
| 13 | 115,810 | 100,368 | 23,162 | 61,765 | 478,679 | 440,076 | 100,368 |
| 14 | 150,988 | 66,057 | 37,747 | 75,494 | 613,387 | 575,640 | 56,620 |
| 15 | 198,812 | 30,586 | 15,293 | 61,173 | 619,377 | 321,158 | 7,647 |
| 16 | 186,324 | 142,483 | 43,841 | 109,602 | 591,851 | 657,612 | 120,562 |
| 17 | 50,773 | 35,541 | 20,309 | 35,541 | 304,639 | 345,257 | 81,237 |
| 18 | 112,969 | 50,209 | 37,656 | 43,933 | 357,736 | 445,601 | 119,245 |
| 19 | 91,244 | 11,405 | 79,838 | 125,460 | 718,546 | 661,518 | 182,480 |
| 20 | 16,644 | 10,243 | 3,841 | 7,682 | 74,260 | 88,344 | 16,644 |
| 21 | 149,915 | 42,833 | 64,249 | 128,499 | 663,910 | 566,827 | 182,040 |
| 22 | 49,404 | 16,468 | 90,575 | 57,638 | 403,469 | 444,639 | 123,511 |
| TOTAL | 1,338,895 | 655,085 | 498,171 | 788,672 | 5,681,504 | 5,444,451 | 1,161,514 |

* Data should only be used for comparison purpose between pools (See Recreation Projection and Needs Report)

PROJECTED ACTIVITY DAYS FOR 2025

| POOL | PICNIC | CAMPING | SWIMING | WATER SKIING | BOATING | FISHING | HUNTING |
|-------|-----------|---------|---------|--------------|-----------|-----------|-----------|
| 11 | 105,176 | 78,882 | 61,823 | 43,823 | 490,821 | 517,115 | 96,411 |
| 12 | 146,757 | 94,960 | 34,531 | 51,797 | 509,334 | 543,865 | 103,593 |
| 13 | 131,323 | 113,814 | 26,265 | 76,039 | 542,804 | 499,029 | 113,814 |
| 14 | 171,261 | 74,927 | 42,815 | 85,630 | 695,748 | 652,933 | 64,223 |
| 15 | 221,716 | 34,110 | 17,055 | 68,220 | 690,729 | 358,156 | 8,527 |
| 16 | 207,474 | 158,656 | 48,817 | 122,043 | 659,034 | 732,260 | 134,248 |
| 17 | 55,866 | 39,106 | 22,346 | 39,106 | 335,197 | 379,890 | 89,386 |
| 18 | 118,795 | 52,798 | 39,598 | 46,198 | 376,185 | 468,582 | 125,395 |
| 19 | 94,904 | 11,863 | 83,041 | 130,492 | 747,366 | 688,051 | 189,807 |
| 20 | 18,135 | 11,160 | 4,185 | 8,370 | 80,911 | 96,257 | 18,135 |
| 21 | 164,451 | 46,986 | 70,479 | 140,958 | 728,283 | 610,818 | 199,690 |
| 22 | 53,198 | 17,733 | 97,529 | 62,064 | 434,449 | 478,780 | 132,994 |
| TOTAL | 1,489,056 | 734,995 | 548,013 | 970,360 | 6,290,861 | 6,025,736 | 1,276,223 |

*Data should only be used for comparison purpose between pools (See Recreation Projection and Needs Report)

6. Conclusions

Recreation use in the GREAT II area is projected to increase 16% from the base year to year 2000 and 21% to year 2025. This amounted to an increase of over 3.8 million activity days over the 45 year projection. This increased use points out that present recreation facilities would experience increased use pressure and may prove to be inadequate for the provision of a "quality" recreation experience.

Recreation data and data gathering are inadequate on the Mississippi River. Better methods of monitoring recreation use and use pressure would benefit recreation and resource planners and managers to better plan for and manage future recreation use on the river.

Projected increases in recreation use could lead to overuse, safety problems, and degradation of the quality of the recreation experience. This development of management objectives for each pool as to the type and level of recreational service provided would form the basis on which future management decisions could be based.

III. D. Recreation Needs Analysis

1. Purpose and Objectives

This task was performed to document general deficiencies in the provision of selected recreational services and facilities in the GREAT II Study area. The task also developed recommendations for the future direction of recreational services in the GREAT II area.

2. Description

Existing recreation facilities were compared against present and projected recreation use to determine relative recreation facility needs. This general information along with specific recommendations from the public and recreation agencies was then utilized to recommend additional facilities within the context of broad management objectives.

3. Methods¹

The Recreation Work Group utilized methodology outlined in Outdoor Recreation in Illinois, the Statewide Comprehensive Outdoor Recreation Plan, published in 1978 by the Illinois Department of Conservation, to determine the ranking of the pools on the basis of supply and demand for facility development. Pools 11-22 were ranked according to their ability to provide recreation services based on the following formula:

Relative Adequacy Indicator equals Annual Participation In Activity
Days Per Activity Per Pool divided by Recreation Supply Per Pool.

The relative adequacy indicator quotients were then ranked in numerical order. Hence, a pool with a low relative adequacy indicator ranking for a specific activity would be providing a better recreational service in comparison to a pool with higher ranking. Conversely, pools with high relative adequacy indicator values in a given activity indicate that a pool is providing recreational services of a lesser degree. The Recreation Work Group did not attempt to judge the quality of facilities or services provided in this ranking. It must be remembered that each pool may have unique factors that could enhance or adversely affect the activities taking place therein.

Recreation use in activity days was compared for the base year (an average of 1977 and 1978 use), the year 2000 and 2025. In each case, existing facilities compiled from 1977 aerial photography or the 1977 GREAT II Recreation Facility Inventory were utilized for comparison. The Recreation Work Group did not feel there was adequate data on which recreation facility supply could be projected. The work group felt that the base year computation was an adequate indicator for short-term planning. The computations for 2000 and 2025 provided indications for intermediate and long-range planning respectively.

The Recreation Work Group felt one note of caution is necessary in utilizing this approach. Population, resource and recreation characteristics within a given pool may not be consistent with the relative adequacy ranking.

¹ See the "Recreation Use Projections and Needs Report" for a more detailed explanation of this methodology.

As additional factors are analyzed, recreation and resource managers and planners may suggest that recreation should increase, remain at present levels or should decrease. These recommendations based on an intimate knowledge of the resource and on detailed management objectives for desired recreation use types, use levels and use locations may be contrary to the relative adequacy ranking.

Resource managers and planners who wish to use this data must understand that the data does not indicate the actual need for various facilities. Even though the pool with the lowest ranking for a particular activity may have a better supply of facilities relative to its demand, that pool may still have a serious shortage of those facilities. The other pools simply have a worse supply/demand ratio.

The purpose of the RAI technique is to identify the relative need for public recreation facilities in each pool and to help establish priorities for additional development to meet those needs. For example, if an agency has management responsibilities in a number of pools, this information can help in deciding which pool or pools should receive the highest development priorities. Once that decision is made, that agency must then decide where development should occur within a specific pool. Site-specific guidance is not provided through use of the relative adequacy indicators. Those final decisions must, and should, be made by the field managers and the user public who are most familiar with the on-the-ground situations. As additional factors are analyzed, resource managers and planners may suggest that recreation use should increase, remain at present levels, or decrease based on their knowledge of the resource and on the detailed management objectives for desired recreation use types, use levels, and use locations.

4. Schedule/Cost

The "Needs Analysis" was carried out in conjunction with the Recreation Use Projection Analysis. The total task was completed for \$5,000 under a contract modification with the Iowa Conservation Commission.

5. Results

The following tables 1-10 were developed in the recreation adequacy indicator analysis and provides data which were utilized and developing conclusions and recommendations.

TABLE 1 PICNICKING

| Participation In Activity Days* | | | | Supply Units | | | | Rel. Adeq. Indicators | | | | | | |
|--|-----------|---------|---------|--------------|-----------------|-----|----|-----------------------|-------------------|----|-------------------|----|-------|----|
| Pool | Base Year | 2000 | 2025 | WIS | (Picnic Tables) | | | 2000 ¹ | | | 2025 ¹ | | | |
| | | | | | IA | ILL | MO | TOTAL | B.Y. ¹ | N | A | R | | |
| | | | | | | | | | | | | | | |
| 11 | 72,261 | 88,595 | 105,176 | 207 | 90 | 0 | 0 | 297 | 243 | 3 | 298 | 3 | 354 | 3 |
| 12 | 104,924 | 127,420 | 146,757 | 0 | 327 | 55 | 0 | 382 | 274 | 4 | 336 | 4 | 384 | 4 |
| 13 | 101,073 | 115,810 | 131,324 | 0 | 206 | 484 | 0 | 690 | 146 | 1 | 167 | 1 | 190 | 1 |
| 14 | 125,844 | 150,988 | 171,261 | 0 | 380 | 55 | 0 | 435 | 289 | 5 | 347 | 5 | 393 | 5 |
| 15 | 169,780 | 198,812 | 221,716 | 0 | 9 | 324 | 0 | 333 | 509 | 7 | 597 | 7 | 665 | 7 |
| 16 | 159,265 | 186,324 | 207,474 | 0 | 681 | 130 | 0 | 811 | 196 | 2 | 229 | 2 | 255 | 2 |
| 17 | 45,273 | 50,773 | 55,866 | 0 | 24 | 20 | 0 | 44 | 1,028 | 9 | 1,153 | 10 | 1,269 | 10 |
| 18 | 108,698 | 112,969 | 118,795 | 0 | 55 | 206 | 0 | 261 | 416 | 6 | 432 | 6 | 455 | 6 |
| 19 | 92,888 | 91,244 | 94,904 | 0 | 17 | 52 | 0 | 69 | 1,346 | 11 | 1,322 | 11 | 1,375 | 11 |
| 20 | 17,602 | 16,644 | 18,135 | 0 | 1 | 5 | 11 | 17 | 1,035 | 10 | 979 | 9 | 1,066 | 9 |
| 21 | 142,370 | 149,915 | 164,451 | 0 | 0 | 194 | 5 | 199 | 715 | 8 | 753 | 8 | 826 | 8 |
| 22 | 47,007 | 49,404 | 53,198 | 0 | 0 | 16 | 8 | 24 | 1,958 | 12 | 2,058 | 12 | 2,216 | 12 |
| TOTAL 1,186,915 1,338,895 1,489,057 207 1,790 1,541 24 3,562 | | | | | | | | | | | | | | |

Explanation of Tables 4-13:

-Relative Adequacy Indicator = Participation (Activity Days)

Supply Units

-A high ranking (1) indicates greater adequacy

-A low ranking (12) indicates a deficiency of units within the pool with respect to participation.

¹ Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 2 CAMPING--A

| Pool | Base Year | 2000 | 2025 | WIS | IA | ILL | MO | TOTAL | Supply Units (Developed Camp Sites) | | | | Rel. Adeq. Indicators | | | |
|-------|-----------|---------|---------|-----|-------|-------|----|-------|--|----|-------------------|----|-----------------------|----|-------------------|---|
| | | | | | | | | | B.Y. ¹ | K | 2000 ¹ | K | 2025 ¹ | K | 2025 ¹ | K |
| | | | | | | | | | | | | | | | | |
| 11 | 54,196 | 66,444 | 78,882 | 110 | 150 | 0 | 0 | 260 | 208 | 2 | 255 | 3 | 303 | 3 | | |
| 12 | 67,892 | 82,448 | 94,961 | 0 | 77 | 49 | 0 | 126 | 538 | 9 | 654 | 10 | 153 | 11 | | |
| 13 | 87,536 | 100,368 | 113,812 | 0 | 346 | 1,057 | 0 | 1,403 | 62 | 1 | 71 | 1 | 81 | 1 | | |
| 14 | 55,057 | 66,057 | 74,927 | 0 | 95 | 135 | 0 | 230 | 239 | 4 | 287 | 4 | 325 | 4 | | |
| 15 | 26,120 | 30,586 | 34,110 | 0 | 15 | 80 | 0 | 95 | 274 | 6 | 321 | 6 | 359 | 6 | | |
| 16 | 121,791 | 142,483 | 158,656 | 0 | 267 | 80 | 0 | 347 | 351 | 7 | 410 | 8 | 457 | 8 | | |
| 17 | 31,691 | 35,541 | 39,106 | 0 | 62 | 58 | 0 | 120 | 264 | 5 | 296 | 5 | 325 | 5 | | |
| 18 | 48,310 | 50,209 | 52,798 | 0 | 70 | 154 | 0 | 224 | 215 | 3 | 224 | 2 | 235 | 2 | | |
| 19 | 11,611 | 11,405 | 11,863 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 0 | 12 | | |
| 20 | 10,832 | 10,243 | 11,160 | 0 | 0 | 0 | 29 | 29 | 373 | 8 | 353 | 7 | 384 | 7 | | |
| 21 | 40,677 | 42,833 | 46,986 | 0 | 0 | 60 | 5 | 65 | 625 | 11 | 658 | 11 | 722 | 10 | | |
| 22 | 15,669 | 16,468 | 17,733 | 0 | 0 | 18 | 8 | 26 | 602 | 10 | 633 | 9 | 682 | 9 | | |
| TOTAL | 571,377 | 655,085 | 734,994 | 110 | 1,082 | 1,691 | 42 | 2,925 | | | | | | | | |

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 3 CAMPING--B

| Pool | Base Year | 2000 | 2025 | Supply Units | | | | | Rel. Adeq. Indicators | | | | | | | | | |
|-------|-----------|---------|---------|--------------------------------|-----|-----|----|-------|-----------------------|-------------|-------------|-------------|--------|----|--|--|--|--|
| | | | | (Pot. Camp Sites) ² | | | | | | | | | | | | | | |
| | | | | WIS | IA | ILL | MO | TOTAL | B.Y. ¹ | R A N | R A N | R A N | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 11 | 74,196 | 66,444 | 78,882 | 73 | 21 | 0 | 0 | 94 | 576 | 6 | 706 | 6 | 839 | 6 | | | | |
| 12 | 67,892 | 82,448 | 94,961 | 20 | 25 | 16 | 0 | 61 | 1,112 | 10 | 1,351 | 10 | 1,556 | 10 | | | | |
| 13 | 87,536 | 100,368 | 113,812 | 0 | 23 | 70 | 0 | 93 | 941 | 9 | 1,079 | 9 | 1,223 | 9 | | | | |
| 14 | 55,057 | 66,057 | 74,927 | 0 | 42 | 37 | 0 | 79 | 696 | 7 | 836 | 7 | 948 | 7 | | | | |
| 15 | 26,120 | 30,586 | 34,110 | 0 | 0 | 2 | 0 | 2 | 13,060 | 12 | 15,293 | 12 | 17,055 | 12 | | | | |
| 16 | 121,791 | 142,483 | 158,656 | 0 | 17 | 9 | 0 | 26 | 4,684 | 11 | 5,480 | 11 | 6,102 | 11 | | | | |
| 17 | 31,691 | 35,541 | 39,106 | 0 | 3 | 33 | 0 | 36 | 880 | 8 | 987 | 8 | 1,086 | 8 | | | | |
| 18 | 48,310 | 50,209 | 52,798 | 0 | 42 | 70 | 0 | 112 | 431 | 4 | 448 | 4 | 471 | 4 | | | | |
| 19 | 11,611 | 11,405 | 11,863 | 0 | 24 | 44 | 0 | 68 | 170 | 1 | 167 | 1 | 174 | 1 | | | | |
| 20 | 10,832 | 10,243 | 11,160 | 0 | 0 | 25 | 32 | 57 | 190 | 2 | 179 | 2 | 195 | 2 | | | | |
| 21 | 40,677 | 42,833 | 46,833 | 0 | 0 | 66 | 5 | 71 | 572 | 5 | 603 | 5 | 661 | 5 | | | | |
| 22 | 15,669 | 16,468 | 17,733 | 0 | 0 | 45 | 6 | 51 | 307 | 3 | 322 | 3 | 347 | 3 | | | | |
| TOTAL | 571,377 | 655,085 | 734,994 | 93 | 197 | 417 | 43 | 750 | | | | | | | | | | |

¹Number of activity days per supply unit.²Sand areas at least 100 feet long by 100 feet wide identified by RWG II from 1977 aerial photographs.

*Data should only be used for comparison purposes.

TABLE 4 SWIMMING

| Participation In Activity Days* | | | Supply Units | | | | | Rel. Adeq. Indicators | | | | | | | | |
|------------------------------------|-----------|---------|--------------|------------------------------|-------|-------|-------|-----------------------|-------------------|------------------|------------------|------------------|-------------------|----|--|--|
| Pool | Base Year | 2000 | 2025 | (Approximate Beach Frontage) | | | | | 2000 ¹ | | | | 2025 ¹ | | | |
| | | | | WIS | IA | ILL | MO | TOTAL | B.Y. ¹ | R A N K | R A N K | R A N K | R A N K | | | |
| | | | | | | | | | | | | | | | | |
| 11 | 42,152 | 51,679 | 61,353 | 7,300 | 3,800 | 0 | 0 | 11,100 | 3.8 | 5 | 4.6 | 5 | 5.5 | 5 | | |
| 12 | 24,688 | 29,981 | 34,531 | 2,000 | 1,600 | 2,500 | 0 | 6,100 | 4.0 | 6 | 4.9 | 6 | 5.6 | 6 | | |
| 13 | 20,201 | 23,162 | 26,264 | 0 | 3,500 | 7,000 | 0 | 10,500 | 1.9 | 2 | 2.2 | 2 | 2.5 | 2 | | |
| 14 | 31,461 | 37,747 | 42,815 | 0 | 5,800 | 5,200 | 0 | 11,000 | 2.8 | 4 | 3.4 | 4 | 3.9 | 4 | | |
| 15 | 13,060 | 15,293 | 17,055 | 0 | 1,000 | 200 | 0 | 1,200 | 10.9 | 12 | 12.7 | 12 | 14.2 | 12 | | |
| 16 | 37,474 | 43,841 | 48,817 | 0 | 3,000 | 900 | 0 | 3,900 | 9.6 | 10 | 11.2 | 10 | 12.5 | 11 | | |
| 17 | 18,109 | 20,309 | 22,346 | 0 | 300 | 3,300 | 0 | 3,600 | 5.0 | 7 | 5.6 | 7 | 6.2 | 7 | | |
| 18 | 36,233 | 37,656 | 39,598 | 0 | 5,400 | 8,000 | 0 | 13,400 | 2.7 | 3 | 2.8 | 3 | 2.9 | 3 | | |
| 19 | 81,277 | 79,838 | 83,041 | 0 | 2,400 | 4,400 | 0 | 6,800 | 11.9 | 11 | 11.7 | 11 | 12.2 | 10 | | |
| 20 | 4,062 | 3,841 | 4,185 | 0 | 0 | 2,600 | 3,800 | 6,400 | .63 | 1 | .60 | 1 | .65 | 1 | | |
| 21 | 70,155 | 64,249 | 70,479 | 0 | 0 | 7,300 | 1,300 | 8,600 | 8.1 | 8 | 7.5 | 8 | 8.2 | 8 | | |
| 22 | 86,180 | 90,575 | 97,529 | 0 | 0 | 8,500 | 2,000 | 10,500 | 8.2 | 9 | 8.6 | 9 | 9.3 | 9 | | |
| TOTAL | 465,052 | 498,171 | 548,013 | | | | | | | | | | | | | |

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 5 WATER SKIING

| Participation In Activity Days* | | | Supply Units | | | | Rel. Adeq. Indicators | | | | | | | |
|------------------------------------|-----------|---------|--------------|-----|----------------------|-----|-----------------------|-------|-------------------|----|-------------------|----|-------|----|
| Pool | Base Year | 2000 | 2025 | WIS | (Hard Surface Ramps) | | | | 2000 ¹ | | 2025 ¹ | | | |
| | | | | | IA | ILL | MO | TOTAL | B.Y. | K | N | R | | |
| | | | | | | | | | | | | | | |
| 11 | 30,109 | 36,913 | 43,823 | 6 | 4 | 0 | 0 | 10 | 3,010 | 6 | 3,691 | 6 | 4,382 | 6 |
| 12 | 37,032 | 44,972 | 51,797 | 2 | 8 | 7 | 0 | 17 | 2,178 | 2 | 2,645 | 3 | 3,046 | 3 |
| 13 | 53,868 | 61,765 | 70,039 | 0 | 6 | 14 | 0 | 20 | 2,693 | 4 | 3,088 | 4 | 3,501 | 4 |
| 14 | 62,922 | 75,494 | 85,631 | 0 | 9 | 12 | 0 | 21 | 2,996 | 5 | 3,594 | 5 | 4,077 | 5 |
| 15 | 52,240 | 61,173 | 68,220 | 0 | 2 | 8 | 0 | 10 | 5,224 | 9 | 6,117 | 9 | 6,822 | 9 |
| 16 | 93,685 | 109,602 | 122,043 | 0 | 12 | 12 | 0 | 24 | 3,903 | 7 | 4,566 | 7 | 5,085 | 7 |
| 17 | 31,691 | 35,541 | 39,106 | 0 | 5 | 2 | 0 | 7 | 4,527 | 8 | 5,077 | 8 | 5,586 | 8 |
| 18 | 42,271 | 43,933 | 46,198 | 0 | 2 | 16 | 0 | 18 | 2,348 | 3 | 2,440 | 2 | 2,566 | 2 |
| 19 | 127,721 | 125,460 | 130,493 | 0 | 8 | 7 | 0 | 15 | 8,514 | 12 | 8,364 | 12 | 8,699 | 12 |
| 20 | 8,124 | 7,682 | 8,370 | 0 | 4 | 2 | 3 | 9 | 902 | 1 | 853 | 1 | 930 | 1 |
| 21 | 122,031 | 128,499 | 140,958 | 0 | 0 | 17 | 2 | 19 | 6,422 | 10 | 6,763 | 10 | 7,418 | 10 |
| 22 | 54,842 | 57,638 | 62,064 | 0 | 0 | 6 | 2 | 8 | 6,855 | 11 | 7,204 | 11 | 7,758 | 11 |
| TOTAL | 716,536 | 788,672 | 868,742 | 8 | 60 | 103 | 7 | 178 | | | | | | |

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 6 BOATING--A

| Participation In Activity Days* | | | | Supply Units | | | | Rel. Adq. Indicators | | | | | | |
|------------------------------------|-----------|---------|---------|--------------|------------------|-----|----|----------------------|--------|------|--------|------|-------------------|-------------------|
| Pool | Base Year | 2000 | 2025 | WIS | (All Ramp Types) | | | | RANK | RANK | RANK | RANK | | |
| | | | | | IA | ILL | MO | TOTAL | | | | | B.Y. ¹ | 2000 ¹ |
| 11 | 337,218 | 413,429 | 490,821 | 11 | 9 | 0 | 0 | 20 | 16,860 | 5 | 20,671 | 5 | 24,541 | 5 |
| 12 | 364,148 | 442,221 | 509,334 | 2 | 9 | 8 | 0 | 19 | 19,165 | 6 | 23,274 | 7 | 26,807 | 7 |
| 13 | 417,477 | 478,679 | 542,804 | 0 | 14 | 17 | 0 | 31 | 13,467 | 2 | 15,441 | 2 | 17,510 | 2 |
| 14 | 511,241 | 613,387 | 695,748 | 0 | 19 | 12 | 0 | 31 | 16,491 | 4 | 19,786 | 4 | 22,443 | 4 |
| 15 | 528,930 | 619,377 | 690,730 | 0 | 2 | 8 | 0 | 10 | 52,893 | 12 | 61,937 | 12 | 69,073 | 12 |
| 16 | 505,899 | 591,851 | 659,035 | 0 | 13 | 13 | 0 | 26 | 19,457 | 7 | 22,763 | 6 | 25,348 | 6 |
| 17 | 271,635 | 304,639 | 335,198 | 0 | 6 | 2 | 0 | 8 | 33,954 | 9 | 38,079 | 9 | 41,900 | 10 |
| 18 | 344,209 | 357,736 | 376,186 | 0 | 5 | 16 | 0 | 21 | 16,390 | 3 | 17,035 | 3 | 17,914 | 3 |
| 19 | 731,493 | 718,546 | 747,366 | 0 | 10 | 8 | 0 | 18 | 40,638 | 10 | 39,919 | 10 | 41,520 | 9 |
| 20 | 78,532 | 74,260 | 80,911 | 0 | 4 | 3 | 5 | 2 | 6,544 | 1 | 6,188 | 1 | 6,743 | 1 |
| 21 | 630,494 | 663,910 | 728,283 | 0 | 0 | 19 | 2 | 21 | 30,023 | 8 | 31,614 | 8 | 34,680 | 8 |
| 22 | 383,891 | 403,469 | 434,449 | 0 | 0 | 6 | 2 | 8 | 47,986 | 11 | 50,433 | 11 | 54,306 | 11 |
| TOTAL 5,105,167 | | | | 5,681,504 | 6,290,865 | 13 | 91 | 112 | 9 | 225 | | | | |

¹ Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 7 BOATING--B

| Participation In Activity Days* | | | | Supply Units | | | | Rel. Ateq. Indicators | | | | | | |
|------------------------------------|-----------|---------|---------|------------------|-----------|-----|-------|-----------------------|-------|-------|-------|----|-------|----|
| Pool | Base Year | 2000 | 2025 | (Parking Spaces) | | | | R | | R | | R | | |
| | | | | WIS | IA | ILL | MO | TOTAL | B.Y. | A | N | A | N | A |
| | | | | | | | | | | | | | | |
| 11 | 337,218 | 413,429 | 490,821 | 200 | 383 | 0 | 0 | 583 | 578 | 4 | 709 | 4 | 842 | 4 |
| 12 | 364,148 | 442,221 | 509,334 | 24 | 453 | 295 | 0 | 772 | 471 | 3 | 572 | 3 | 660 | 3 |
| 13 | 417,477 | 478,679 | 542,804 | 0 | 361 | 684 | 0 | 1,045 | 399 | 1 | 458 | 2 | 519 | 2 |
| 14 | 511,241 | 613,387 | 695,748 | 0 | 254 | 265 | 0 | 519 | 985 | 6 | 1,181 | 6 | 1,341 | 6 |
| 15 | 528,930 | 619,377 | 690,730 | 0 | 50 | 115 | 0 | 165 | 3,205 | 12 | 3,753 | 12 | 4,186 | 12 |
| 16 | 505,899 | 591,851 | 659,035 | 0 | 505 | 145 | 0 | 650 | 778 | 5 | 910 | 5 | 1,014 | 5 |
| 17 | 271,635 | 304,639 | 335,198 | 0 | 179 | 27 | 0 | 206 | 1,318 | 7 | 1,478 | 8 | 1,627 | 8 |
| 18 | 344,209 | 357,736 | 376,186 | 0 | 85 | 165 | 0 | 250 | 1,376 | 8 | 1,430 | 7 | 1,505 | 7 |
| 19 | 731,493 | 718,546 | 747,366 | 0 | 187 | 92 | 0 | 279 | 2,621 | 10 | 2,575 | 10 | 2,679 | 10 |
| 20 | 78,532 | 74,260 | 80,911 | 0 | 40 | 65 | 71 | 176 | 446 | 2 | 421 | 1 | 460 | 1 |
| 21 | 630,494 | 663,910 | 728,283 | 0 | 0 | 313 | 55 | 368 | 1,713 | 9 | 1,804 | 9 | 1,979 | 9 |
| 22 | 383,891 | 403,469 | 434,449 | 0 | 0 | 42 | 90 | 132 | 2,908 | 11 | 3,056 | 11 | 3,291 | 11 |
| TOTAL 5,105,167 | | | | 5,681,504 | 6,290,865 | 224 | 2,497 | 2,208 | 216 | 5,145 | | | | |

¹ Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 8 BOATING--C

| Pool | Base Year | Participation In Activity Days* | | Supply Units | | | | | Rel. Adeq. Indicators | | | | | | | | | |
|----------------|-----------|------------------------------------|-----------|--------------|-----|-------|-------|-------|-----------------------|----|-------------------|----|-------|-------------------|---|---|---|---|
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| (Marina Slips) | | | | | | | | | | | | | | | | | | |
| | | 2000 | 2025 | WIS | IA | ILL | MO | TOTAL | B.Y. ¹ | K | 2000 ¹ | N | K | 2025 ¹ | R | A | N | K |
| 11 | 337,218 | 413,429 | 490,821 | 0 | 222 | 0 | 0 | 222 | 1,519 | 5 | 1,862 | 5 | 2,211 | 6 | | | | |
| 12 | 364,148 | 442,221 | 509,334 | 0 | 464 | 613 | 0 | 1,077 | 338 | 1 | 410 | 1 | 473 | 1 | | | | |
| 13 | 417,477 | 478,679 | 542,804 | 0 | 106 | 95 | 0 | 201 | 2,077 | 7 | 2,381 | 7 | 2,700 | 8 | | | | |
| 14 | 511,241 | 613,387 | 695,748 | 0 | 532 | 95 | 0 | 627 | 815 | 3 | 978 | 3 | 1,110 | 3 | | | | |
| 15 | 528,930 | 619,377 | 690,730 | 0 | 130 | 188 | 0 | 318 | 1,663 | 6 | 1,947 | 6 | 2,172 | 5 | | | | |
| 16 | 505,899 | 591,851 | 659,035 | 0 | 40 | 425 | 0 | 465 | 1,088 | 4 | 1,272 | 4 | 1,417 | 4 | | | | |
| 17 | 271,635 | 304,639 | 335,198 | 0 | 90 | 0 | 0 | 90 | 3,018 | 10 | 3,384 | 10 | 3,724 | 10 | | | | |
| 18 | 344,209 | 357,736 | 376,186 | 0 | 0 | 96 | 0 | 96 | 3,585 | 12 | 3,726 | 12 | 3,919 | 12 | | | | |
| 19 | 731,493 | 718,546 | 747,366 | 0 | 301 | 0 | 0 | 301 | 2,430 | 8 | 2,387 | 8 | 2,483 | 7 | | | | |
| 20 | 78,532 | 74,260 | 80,911 | 0 | 96 | 0 | 2 | 98 | 801 | 2 | 757 | 2 | 826 | 2 | | | | |
| 21 | 630,494 | 663,910 | 728,283 | 0 | 0 | 248 | 2 | 250 | 2,522 | 9 | 2,655 | 9 | 2,913 | 9 | | | | |
| 22 | 383,891 | 403,469 | 434,449 | 0 | 0 | 0 | 116 | 116 | 3,309 | 11 | 3,478 | 11 | 3,745 | 11 | | | | |
| TOTAL | | 5,105,167 | 5,681,504 | 6,290,865 | 0 | 1,755 | 1,760 | 120 | 3,635 | | | | | | | | | |

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 9 FISHING

| Pool | Base Year | Participation In Activity Days* | | Supply Units | | | | | Rel. Adeq. Indicators | | | | |
|-----------------|-----------|------------------------------------|-----------|--------------|----|-----|----|-------------------|-----------------------|-------------------|----|-------------------|----|
| | | 2000 | 2025 | WIS | IA | ILL | MO | TOTAL | (All Ramp Types) | | | | |
| | | | | | | | | B.Y. ¹ | I | A | R | A | N |
| | | | | | | | | | K | 2000 ¹ | K | 2025 ¹ | K |
| 11 | 355,283 | 435,577 | 517,115 | 11 | 9 | 0 | 0 | 20 17,764 | 4 | 21,775 | 5 | 25,855 | 5 |
| 12 | 388,836 | 472,202 | 543,865 | 2 | 9 | 8 | 0 | 19 20,465 | 6 | 24,852 | 6 | 28,624 | 7 |
| 13 | 383,810 | 440,076 | 499,029 | 0 | 14 | 17 | 0 | 31 12,380 | 2 | 14,196 | 2 | 16,097 | 2 |
| 14 | 479,780 | 575,640 | 652,933 | 0 | 19 | 12 | 0 | 31 15,476 | 3 | 18,569 | 3 | 21,062 | 3 |
| 15 | 274,260 | 321,158 | 358,156 | 0 | 2 | 8 | 0 | 10 27,426 | 9 | 32,115 | 9 | 35,815 | 9 |
| 16 | 562,110 | 657,612 | 732,261 | 0 | 13 | 13 | 0 | 26 21,619 | 7 | 25,292 | 7 | 28,163 | 6 |
| 17 | 307,853 | 345,257 | 379,891 | 0 | 6 | 2 | 0 | 8 38,481 | 11 | 43,157 | 11 | 47,486 | 11 |
| 18 | 428,751 | 445,601 | 468,582 | 0 | 5 | 16 | 0 | 21 20,416 | 5 | 21,210 | 4 | 22,313 | 4 |
| 19 | 673,438 | 661,518 | 688,052 | 0 | 10 | 8 | 0 | 15 37,413 | 10 | 36,751 | 19 | 38,225 | 10 |
| 20 | 93,426 | 88,344 | 96,257 | 0 | 4 | 3 | 5 | 12 7,785 | 1 | 7,362 | 1 | 8,021 | 1 |
| 21 | 528,801 | 556,827 | 610,818 | 0 | 0 | 19 | 2 | 21 25,181 | 8 | 26,515 | 8 | 29,086 | 8 |
| 22 | 423,063 | 444,639 | 478,780 | 0 | 0 | 6 | 2 | 8 52,882 | 12 | 55,579 | 12 | 59,847 | 12 |
| TOTAL 4,899,411 | | 5,444,451 | 6,027,739 | 13 | 91 | 112 | 9 | 225 | | | | | |

¹Number of activity days per supply unit.

*Data should only be used for comparison purposes.

TABLE 10 HUNTING

| Pool | Base Year | 2000 | 2025 | WIS | Supply Units | | | | | Rel. Adeq. Indicators | | | | | | | | |
|-------|-----------|-----------|-----------|-----------|------------------|-----|-----|-------|-------------------|-----------------------|-------------------|----|--------|-------------------|---|---|---|---|
| | | | | | (All Ramp Types) | | | | | | | | | | | | | |
| | | | | | IA | ILL | MO | TOTAL | B.Y. ¹ | K | 2000 ¹ | N | K | 2025 ¹ | R | A | N | K |
| | | | | | IA | ILL | MO | TOTAL | B.Y. ¹ | K | 2000 ¹ | N | K | 2025 ¹ | R | A | N | K |
| 11 | 66,237 | 81,209 | 96,411 | 11 | 9 | 0 | 0 | 20 | 3,311 | 5 | 4,060 | 5 | 4,821 | 5 | | | | |
| 12 | 74,064 | 89,943 | 103,593 | 2 | 9 | 8 | 0 | 19 | 3,898 | 6 | 4,733 | 7 | 5,452 | 7 | | | | |
| 13 | 87,536 | 100,368 | 113,814 | 0 | 14 | 17 | 0 | 31 | 2,823 | 4 | 3,237 | 4 | 3,671 | 4 | | | | |
| 14 | 47,192 | 56,620 | 64,222 | 0 | 19 | 12 | 0 | 31 | 1,522 | 3 | 1,826 | 3 | 2,072 | 3 | | | | |
| 15 | 6,530 | 7,647 | 8,528 | 0 | 2 | 8 | 0 | 10 | 653 | 1 | 764 | 1 | 853 | 1 | | | | |
| 16 | 103,054 | 120,562 | 134,248 | 0 | 13 | 13 | 0 | 26 | 3,963 | 7 | 4,637 | 6 | 5,163 | 6 | | | | |
| 17 | 72,436 | 81,237 | 89,386 | 0 | 6 | 2 | 0 | 8 | 9,054 | 10 | 10,154 | 11 | 11,173 | 11 | | | | |
| 18 | 114,736 | 119,245 | 125,395 | 0 | 5 | 16 | 0 | 21 | 5,463 | 8 | 5,678 | 8 | 5,971 | 8 | | | | |
| 19 | 185,776 | 182,488 | 189,807 | 0 | 10 | 8 | 0 | 18 | 10,320 | 11 | 10,138 | 10 | 10,545 | 10 | | | | |
| 20 | 17,602 | 16,644 | 18,135 | 0 | 4 | 3 | 5 | 12 | 1,466 | 2 | 1,387 | 2 | 1,511 | 2 | | | | |
| 21 | 172,877 | 182,040 | 199,690 | 0 | 0 | 19 | 2 | 21 | 8,232 | 9 | 8,668 | 9 | 9,509 | 9 | | | | |
| 22 | 117,518 | 123,511 | 132,995 | 0 | 0 | 6 | 2 | 8 | 14,689 | 12 | 15,438 | 12 | 16,624 | 12 | | | | |
| TOTAL | | 1,065,558 | 1,161,514 | 1,276,224 | 13 | 91 | 112 | 9 | 225 | | | | | | | | | |

¹ Number of supply units per activity day.

*Data should only be used for comparison purposes.

TABLE 11 Activity Participation Percentages¹ for Pools 11-22

(AVERAGE OF '77 and '78 RRMS DATA)

| Pool | Picnicking | Camping | Swimming | Water-Skiing | Boating | Fishing | Hunting |
|------|------------|---------|----------|--------------|---------|---------|---------|
| 11 | 6 | 4.5 | 3.5 | 2.5 | 28 | 29.5 | 5.5 |
| 12 | 8.5 | 5.5 | 2 | 3 | 29.5 | 31.5 | 6 |
| 13 | 7.5 | 6.5 | 1.5 | 4 | 31 | 28.5 | 6.5 |
| 14 | 8 | 3.5 | 2 | 4 | 32.5 | 30.5 | 3 |
| 15 | 13 | 2 | 1 | 4 | 40.5 | 21 | 0.5 |
| 16 | 8.5 | 6.5 | 2 | 5 | 27 | 30 | 5.5 |
| 17 | 5 | 3.5 | 2 | 3.5 | 30 | 34 | 8 |
| 18 | 9 | 4 | 3 | 3.5 | 28.5 | 35.5 | 9.5 |
| 19 | 4 | 0.5 | 3.5 | 5.5 | 31.5 | 29 | 8 |
| 20 | 6.5 | 4 | 1.5 | 3 | 29 | 34.5 | 6.5 |
| 21 | 7 | 2 | 3 | 6 | 31 | 26 | 8.5 |
| 22 | 3 | 1 | 5.5 | 3.5 | 24.5 | 27 | 7.5 |

¹The percentages used in this table are an average of the 1977 and 1978 activity participation percentages taken from the Rock Island District's Recreation Resource Management System data.

6. Conclusions

Outlined below are descriptions of the Activities and their relative needs on a pool by pool basis:

Pool 11

The most northern pool in the GREAT 11 area is 31.1 miles long. It stretches from Guttenberg, Iowa, on the north to Dubuque, Iowa, on the south. There are a total of 15,000 acres of water in the pool, 275 miles of shoreline, including islands, and 7,163 acres of land in public ownership.

Picnicking ranks a distant third behind fishing and boating in activity use in Pool 11 at 72,000+ activity days. Pool 11 is relatively well supplied for picnicking but closer inspection of the data reveals that Iowa would better serve potential use with additional facilities.

Developed camping is relatively adequate in Pool 11 and should continue to provide reasonable service in the future. Potential camp units are in the mid-point in comparing Pool 11 with other pools.

Swimming is an active use in Pool 11, ranking fourth among the 12 pools. The pool seems to be relatively well supplied in comparison to the other pools, but beaches with car/pedestrian access would be readily used.

Waterskiing use in Pool 11 ranks relatively low in comparison to the other pools and is in the middle range of relative adequacy indicators. Several new hard-surfaced ramps are scheduled for construction in Guttenberg which should alleviate major facility needs.

Boating activity use will increase in importance in comparison to other pools. For the entire pool, parking spaces and ramps are relatively adequate, but Wisconsin displays a need for marina slippage. Future trends could also indicate a need for slippage in Guttenberg.

Fishing is the largest recreation use activity in Pool 11. Projections call for this use to increase dramatically in comparison to other pools. The adequacy indicators show no major need for additional facilities.

Hunting pressure is not heavy in comparison to the other pools. Ramp access is relatively adequate to accommodate this use.

Pool 12

Pool 12 is 26.3 miles long and goes from Duguque, Iowa, on the north to Bellevue, Iowa, on the south. There are 19,000 acres of water encompassed by 280 miles of shoreline (including islands). There are also 5,865 acres of public land in conjunction with the project.

Picnicking on a pool-by-pool comparison is relatively well supplied. The analysis of the state unit breakdown indicates that Illinois could use additional facilities.

Developed camping is popular in Pool 12 but is in need of additional units. Future use projections indicates that this relative need worsens in the future with no increase in present supplies. There is also a relative need for potential island beach areas for camping.

Swimming is not a relatively popular activity in Pool 12. The relative adequacy indicator analysis shows a moderate need for additional swimming beaches. Beaches with car/pedestrian access would be utilized by the urban populations in the pool.

Waterskiing is not a relatively popular pastime in comparison to the other pools in the GREAT II study area. The analysis indicates a low need for additional hard-surfaced ramps.

Boating is popular in the pool. The indicator analysis shows a moderate need for additional ramps and a low need for parking spaces and marina slippage.

Fishing increases in relative popularity over the study period. The indicator analysis shows a moderate need for additional ramps that worsens by 2025. Hunting is moderately popular in Pool 12 with a moderate need for additional ramps. The relative need worsens in the year 2000 time frame.

Pool 13

Pool 13 stretches for 34.2 miles from Bellevue, Iowa, on the north to Clinton, Iowa, to the south. There are 29,103 acres of water and 503 miles of shoreline (including islands). There are 25,160 acres of public land in the pool.

Picnicking is a moderately popular activity which increases in relative popularity over the study period. The adequacy analysis indicates that there is a relative low need for additional facilities.

Developed camping is a highly popular activity in comparison to the other pools. This is due to the large numbers of existing facilities to absorb this use. The adequacy analysis indicates a relatively low need for additional developed camping facilities. The analysis did point out a relatively high need for potential beach campsites.

Swimming use is relatively low in Pool 13 and the analysis indicates a low relative need for beach facilities. Additional beaches with car/pedestrian access would be highly beneficial.

Waterskiing is a moderately popular activity with a moderately low relative need for additional hard-surfaced ramps. The breakdown of facilities by states indicates that Iowa could use additional facilities.

Boating is a moderately popular activity in comparing the 12 GREAT II Pools. The adequacy analysis indicates a low need for additional parking spaces at ramps or additional ramps. The waterskiing analysis did indicate a need for hardsurfaced ramps on the Iowa shore. The analysis points out a moderately high need for additional marina slippage.

Fishing is moderately popular in Pool 13. The adequacy analysis shows a relatively low need for additional facilities.

Hunting is moderately popular with a low to moderate relative need for additional ramp facilities.

Pool 14

Pool 14 extends from Clinton, Iowa, on the north to LeClaire, Iowa, on the south. This entails 29.2 miles of river; 10,450 acres of water and 277 miles of shoreline (including islands). There are 4,983 acres of public land in the pool.

Picnicking is a popular activity in Pool 14 and increased in relative popularity over the study period. The adequacy analysis indicates a moderate need for additional facilities. The facility breakdown by state identifies the major need lies in Illinois.

Camping is a moderately popular activity. The adequacy analysis indicates that there is a moderately low need for additional developed campsites; but this pool's close proximity to the major use generator, the Quad Cities, points toward the future need for additional upgraded facilities. There is also a relatively moderate need for potential beach campsite development.

Swimming is a moderately popular activity with a moderately low need for additional facilities. Again, in respect to the Quad Cities area, beaches with car/pedestrian access would be highly desirable.

Waterskiing is a relatively popular activity in Pool 14. The adequacy analysis indicates a moderate need for additional hard-surfaced ramps.

Boating is a moderately popular activity which gains in relative popularity over the study period. The adequacy analysis points out a low need for additional ramps and marina slips. Analysis of state facility breakdowns indicates a need for additional slippage in Illinois. There is a moderate relative need for additional parking spaces.

Fishing is moderately popular and gains in relative popularity over the study period. The analysis shows a relatively low need for additional ramps.

Hunting is relative low in popularity and the adequacy analysis indicates a low need for additional ramps.

Pool 15

Pool 15 is the shortest of the 12 pools in the GREAT II area at 10.5 miles. It extends from LeClaire, Iowa, on the north to the Quad Cities on the South. There are 3,740 acres of water, 38 miles of shoreline (including islands) and 1,011.5 acres of public land in the pool. The Quad Cities metro area heavily influences the recreation use figures. Coupled with this heavy use potential is a shoreline with extensive commercial and industrial development. Due to these aspects, it is believed that moderate portions of use projected for Pool 15 will gravitate to Pools 14 and 16.

Picnicking is a relatively high use activity with a moderate need for additional facilities. Analysis of state facility breakdowns indicates Iowa needs additional picnic facilities.

Camping is a relatively low use activity with a moderate need for developed facilities. The state facility figures show that Iowa has the greater need. Pool 15 ranks lowest of the 12 pools for potential beach campsites. This problem is compounded by the rocky nature of most material dredged in this pool.

Boating is a popular activity in the Pool. The adequacy analysis indicates a relatively large need for additional ramps and parking spaces with Iowa showing the most severe need. There is a moderate need for additional marina slippage.

Waterskiing is moderately popular with a relatively high need for additional hard-surfaced ramps. The state facility figures show the need is most pressing on the Iowa shore. The adequacy indicator indicates a need for additional beaches. This especially applies for beaches with car/pedestrian access.

Fishing and Hunting are relatively low use activities in comparison with the other pools. Again there is a high need for additional ramps, especially in Iowa. Also the more shoreline accessible to the bank fisherman, the more use the pool can absorb.

Pools 16

Picnicking is a relatively popular activity in comparison to the other pools. The adequacy analysis points out a relatively well supplied situation, but state facility breakdowns indicate a need in Illinois.

Camping use in the GREAT 11 area is the greatest in Pool 16. There is a moderately high need for additional developed facilities. State facility data indicate a more pressing need in Illinois. The analysis indicates a high need for potential beach campsite development.

Swimming is a moderately popular activity with a high need for additional beaches. The provision of beaches with car/pedestrian access would be very beneficial.

Boating is a moderately popular activity among the 12 pools. The adequacy analysis indicates a moderate need for additional ramps, parking spaces, and marina slippage. State figure breakdowns indicate a more pressing need for parking spaces in Illinois and for more marina slippage in Iowa. Waterskiing is a popular activity in the pool. The analysis indicates a moderate need for additional hard-surfaced ramps.

Fishing ranks relatively high in popularity which increases over the study period. The analysis indicates a moderate need for additional ramp facilities.

Hunting is moderately popular which increases to fairly high popularity by 2025. There is a moderate need for additional ramps to accommodate this relative use.

Pool 17

Pool 17 extends for 20.1 miles from Muscatine, Iowa on the north to several miles north of New Boston, Illinois. The pool contains 8,312 acres of water, 202.5 miles of shoreline (including islands), and 7,179 acres of public land.

Picnicking ranks low in popularity in comparison to the other pools. This may be due to the lack of opportunity with only 44 tables inventoried. The adequacy analysis points out a high need for additional facilities.

Camping is moderately low in popularity with a moderate need for additional developed camping facilities. Pool 17 shows a moderately high need for potential beach camping sites.

Swimming is not a relatively popular use activity. The analysis indicates a moderate need for additional beach frontage. This would best be served through car/pedestrian access facilities.

Boating is not a relatively popular activity in Pool 17 but there is a high new for additional ramps and marina slippage with a moderate need for parking space. Facility breakdowns indicate a more pressing need in Illinois for additional ramps and marina slips, while Iowa needs additional parking spaces.

Waterskiing is a relatively low use activity with a relatively moderate need for hard-surfaced ramps. State figures show that Illinois has the most pressing need.

Fishing is a lower ranking recreation activity than in most other pools in the GREAT II area. Additional ramps are needed to ease the pressure on existing ramps, especially in Illinois.

Hunting is a moderately popular activity. The adequacy analysis indicates a severe need for additional ramps and state figures indicate that Illinois has the most pressing need.

Pool 18

Pool 18 stretches from north of New Boston, Illinois to north of Burlington, Iowa, for a distance of 26.6 miles. The pool contains 13,600 acres of water, 279 miles of shoreline (including islands), and 9,953 acres of public land.

Picnicking in Pool 18 ranks moderately in relative use compared to the rest of the GREAT II area. This use declines in relative importance over the project period. The adequacy analysis indicates a moderate need for additional picnic facilities. The breakdown of facility by states shows that Iowa has a more pressing need for facilities than Illinois.

Camping is a relatively moderate use activity with a relatively low need for developed camping facilities. The pool is also fairly well situated for potential beach camping sites.

Swimming is a moderately important recreation activity in Pool 18. The analysis indicates the pool has a relatively low need for additional beach frontage although beaches with car/pedestrian access would be beneficial for the non-boater.

Waterskiing is not a relatively popular activity. The adequacy analysis shows a low need for additional hard-surfaced ramps although the facility breakdown shows a deficiency in Iowa.

Boating is a relatively low use activity in comparison to the total GREAT II area. Additional ramps are needed in Iowa as well as parking spaces and marina slippage.

Fishing and Hunting are a moderately popular activity, but is projected to decrease in relative importance over the study period. There is a moderate need for additional ramps, particularly in Iowa.

Pool 19

Pool 19 extends from north of Burlington, Iowa, on the north to Keokuk, Iowa, on the south. The 46.0 miles of river forms the longest pool in the GREAT II area. This pool also contains the largest water acreage at 30,854 acres with 246.3 miles of shoreline (including islands). In contrast to the longest length and largest acreage, there are only 2.88 acres of public land in the pool due to prior acquisition by Union Electric for the hydro-electric plant at Keokuk.

Picnicking is a relatively low use activity. This may be attributed to the low number of facilities in the pool. The adequacy analysis indicates a large need for additional facilities.

Camping is not popular in Pool 19. This can easily be attributed to the lack of any developed facilities in the pool. There is a severe need for additional developed facilities in this pool. The pool overall is relatively well supplied with potential beach campsites, but this analysis does not hold true for the lower portion of the pool below Fort Madison, Iowa, where no island beaches exist.

Swimming is a popular activity, but the analysis indicates a severe need for additional beach frontage. This is particularly true for the lower section of the pool and for car/pedestrian access beaches in the entire pool.

Waterskiing is a popular activity in comparison to the other pools. The adequacy analysis shows the highest relative need for additional hard-surfaced ramps in the GREAT II area.

Boating figures show the highest use in the GREAT II area occurs in Pool 19. The analysis indicates a moderate to high need for additional ramps, parking spaces, and marina slippage.

Fishing and hunting use in the pool rank first among the 12 pools and each declines to second position in 2025. The adequacy analysis points out a pressing relative need for additional access facilities.

Pool 20

From Keokuk, Iowa, on the north to Canton, Missouri, on the south, Pool 20 stretches from 21.2 miles. The pool contains 7,542 acres of water, 93 miles of shoreline (including islands), and 178 acres of public ownership. The recreation use figures indicate that Pool 20 experiences the smallest amount of total activity days in the GREAT II area.

Picnicking in the pool experiences the least relative use of the 12 pools. The adequacy analysis points out a high need for additional picnicking facilities.

Camping is not a popular activity with a moderate need for additional facilities. This may derive from the fact that there are only 29 developed campsites in the pool and these are all in Missouri. The adequacy analysis shows a moderate need for additional developed campsites and the facility breakdown indicates a severe need in Illinois. The analysis also indicates a low need for additional potential beach sites.

Swimming in Pool 20 ranks the lowest of the 12 pools. The analysis shows little need for additional beach frontage, but additional car/pedestrian access beaches would provide opportunities to those individuals without boats.

Waterskiing, boating, hunting and fishing are not relatively popular. The adequacy analysis shows low relative needs for additional ramps, parking spaces at ramps, and marina slippage. The state facility breakdown indicates that additional slippage could be utilized in both Missouri and Illinois if there is a sufficient market.

Pool 21

Pool 21 runs from Canton, Missouri, on the north to Quincy, Illinois, on the south. The pool is 18.4 miles long with 6,350 acres of water and 146.6 miles of shoreline (including islands). There are 8,536 acres of publicly-owned land in the pool.

Picnicking is a popular activity in Pool 21. The adequacy analysis indicates a moderate relative need for individual facilities. This need is the most severe on the Missouri shore.

Camping is a moderately popular activity but very few developed campsites are located here. The analysis shows a high need for additional facilities. The state facility breakdown shows this need to be more severe in Missouri. The analysis also indicates a moderate need for potential beach campsites.

Swimming ranks as a popular activity in the GREAT II area. The adequacy analysis indicates a moderately high need for additional beach frontage. Boating, fishing and hunting are relatively high use activities in comparison of the 12 pools. There is a relatively high need for additional parking spaces and marina slippage. The largest deficiency of facilities is along the Missouri shores.

Pool 22

Pool 22 extends 23.6 miles from Quincy, Illinois, on the north to Saverton, Missouri, on the south. The pool contains 8,540 acres of water, 126.0 miles of shoreline (including islands) and 6,592 acres of public land.

Picnicking in Pool 22 is a relatively low use activity in the GREAT II area. This is probably due to the lack of facilities. The adequacy analysis indicates the most severe need for additional facilities in this Pool. Camping is also a low use activity in comparison to the other pools. Again, there are very few developed campsites. The analysis indicates a high need for additional developed campsites and a low need for potential beach campsites.

Boating is moderately popular in the pool. The analysis points out a relatively high need for increased ramps, parking spaces, and marina slippage.

Swimming in the pool ranks highest among the 12 pools. The analysis indicates a high need for additional public beach facilities. Facilities with car/pedestrian access would allow nonboaters increased access to the river.

Waterskiing is a moderately popular activity which decreases in relative importance over the study period. The adequacy analysis indicates a relatively high need for additional hard-surfaced ramps with the pressure on the Missouri site being most severe.

Fishing is moderately popular and hunting is quite popular in relative to the other pools. Analysis of both activities indicate the most pressing need in this pool for additional ramps.

7. General Recreation Needs and Potentials

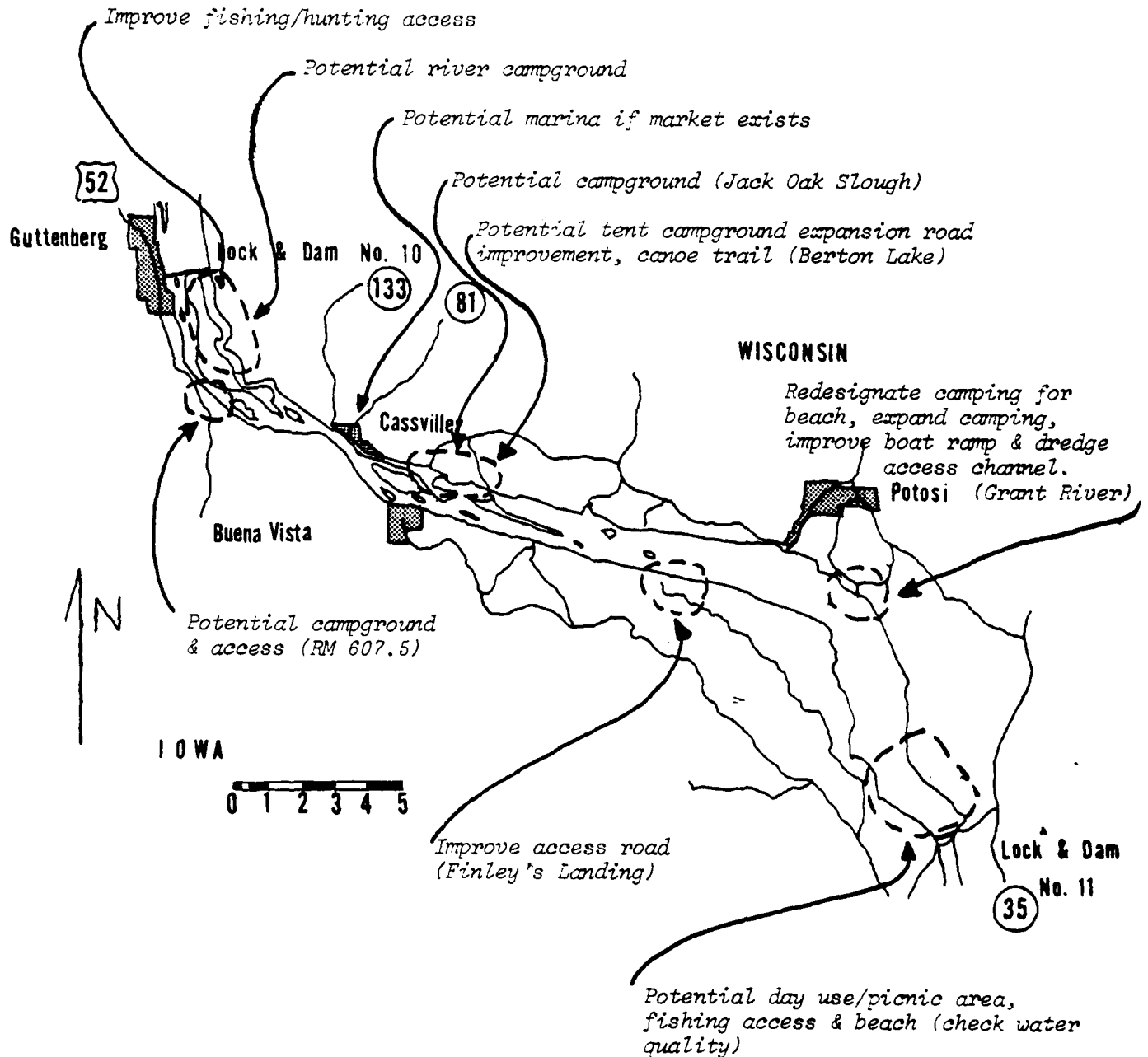
Determining the review of activities needs by pool, the work group developed recommendations for potential direction for recreational facilities in the GREAT II area. These potential services or facilities will need further study to determine site feasibility and capability. Maps were developed indicating in general terms the potential areas for needed activities, services and facilities. With some exceptions, these recommendations are shown in general geographical locations, rather than site-specific locations. These maps are located in Chapter 4 under Pool Specific Recommendations.



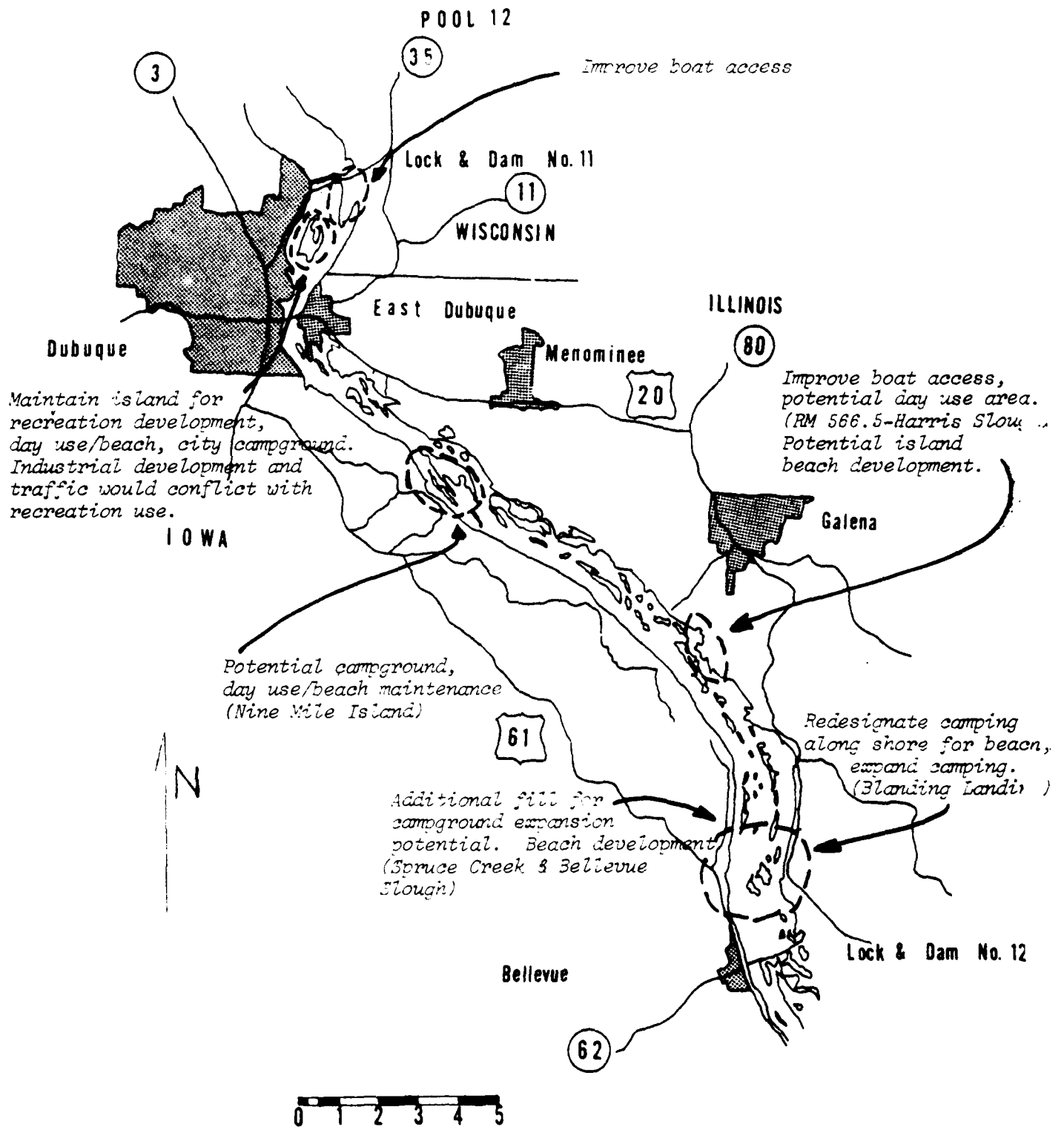
MTNWR

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 11

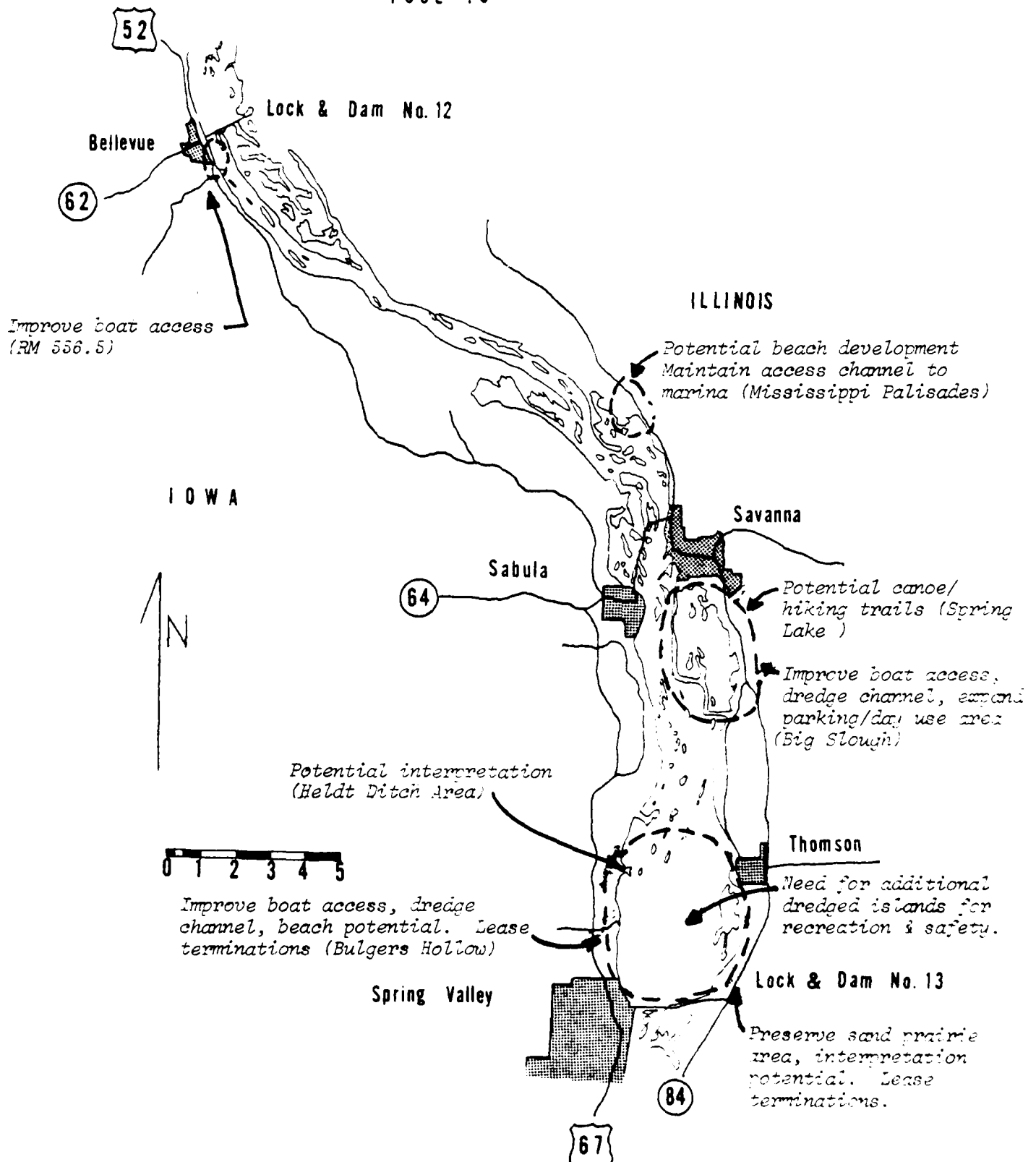


GENERAL RECREATIONAL NEEDS AND POTENTIALS



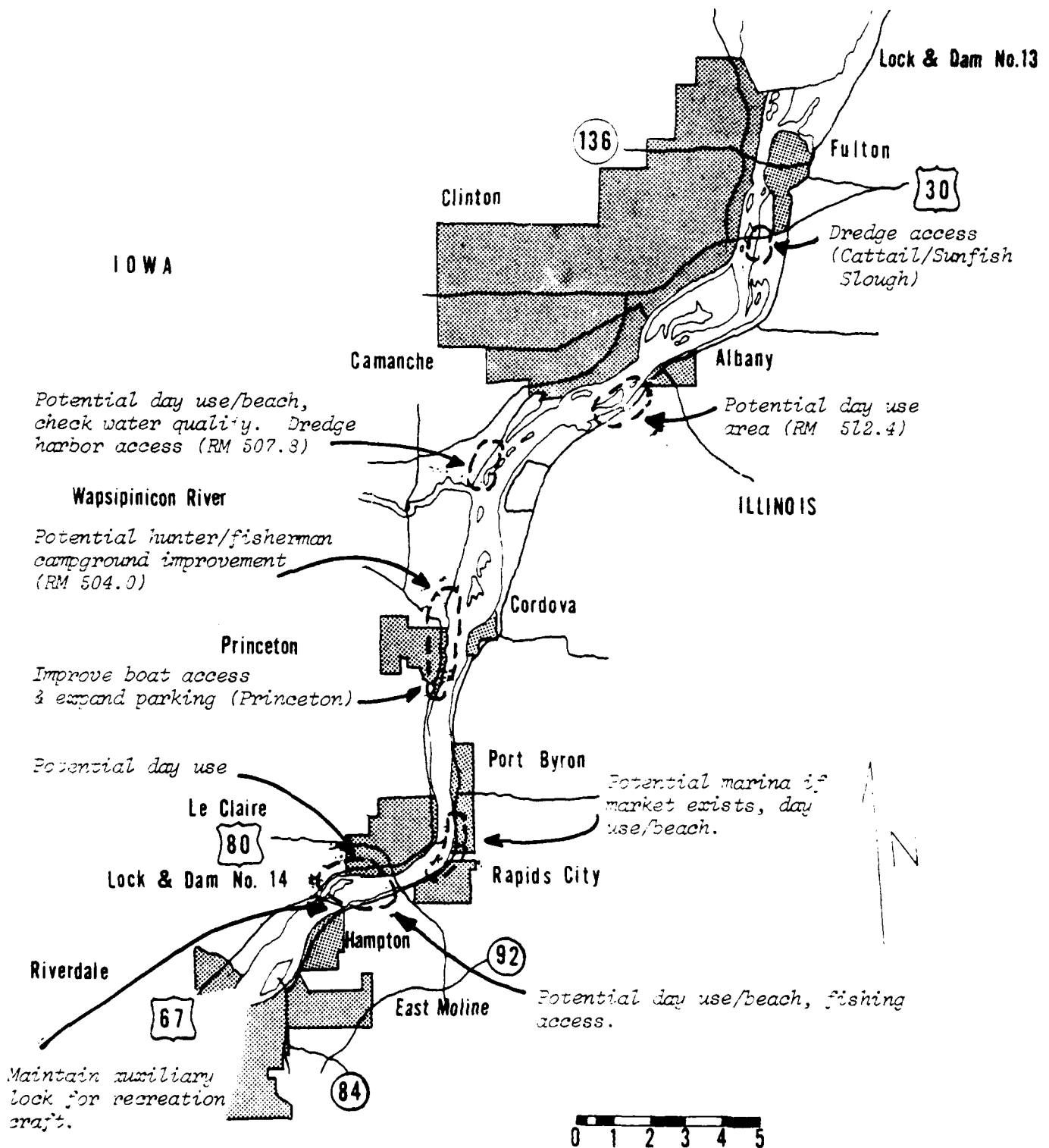
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 13



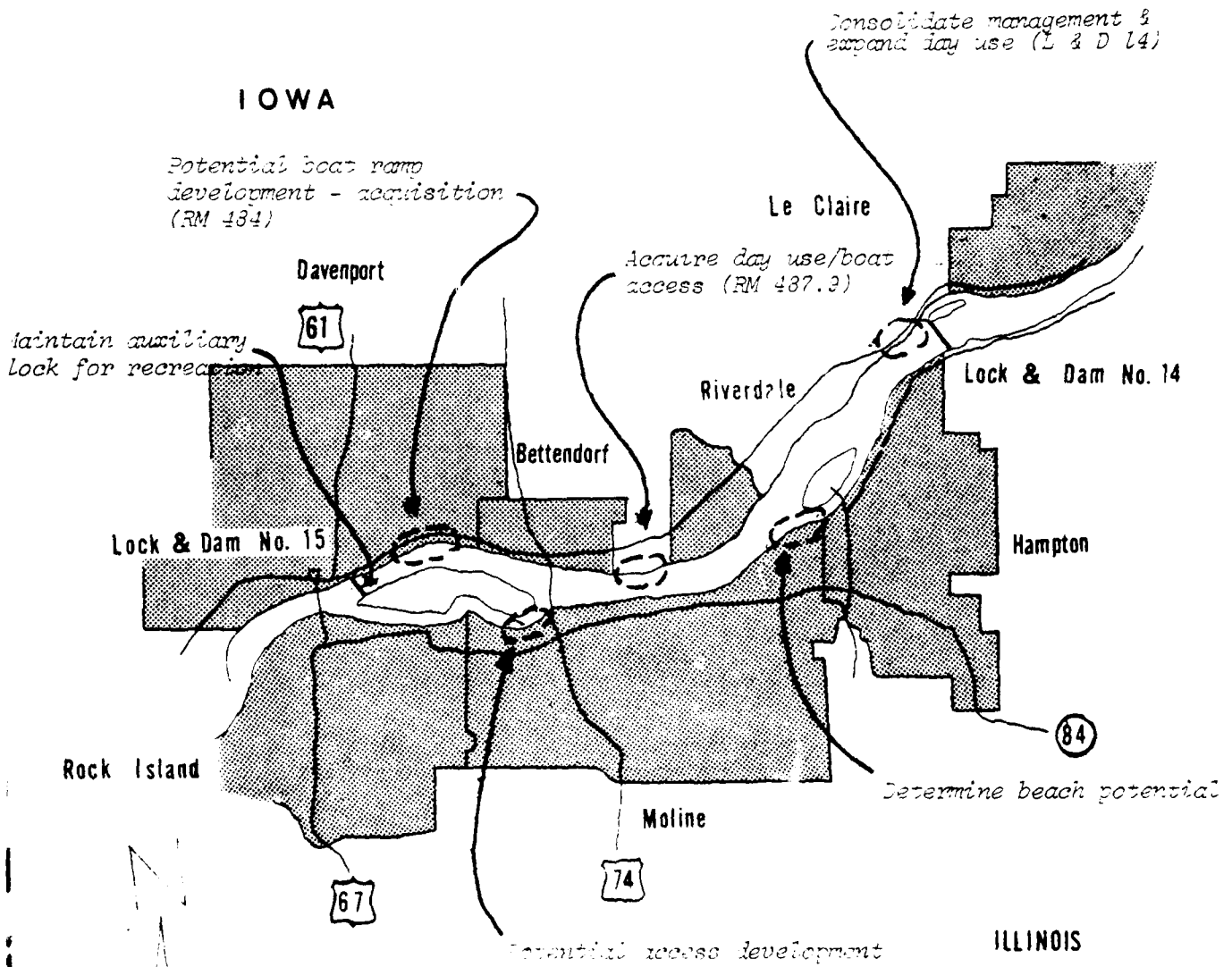
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 14



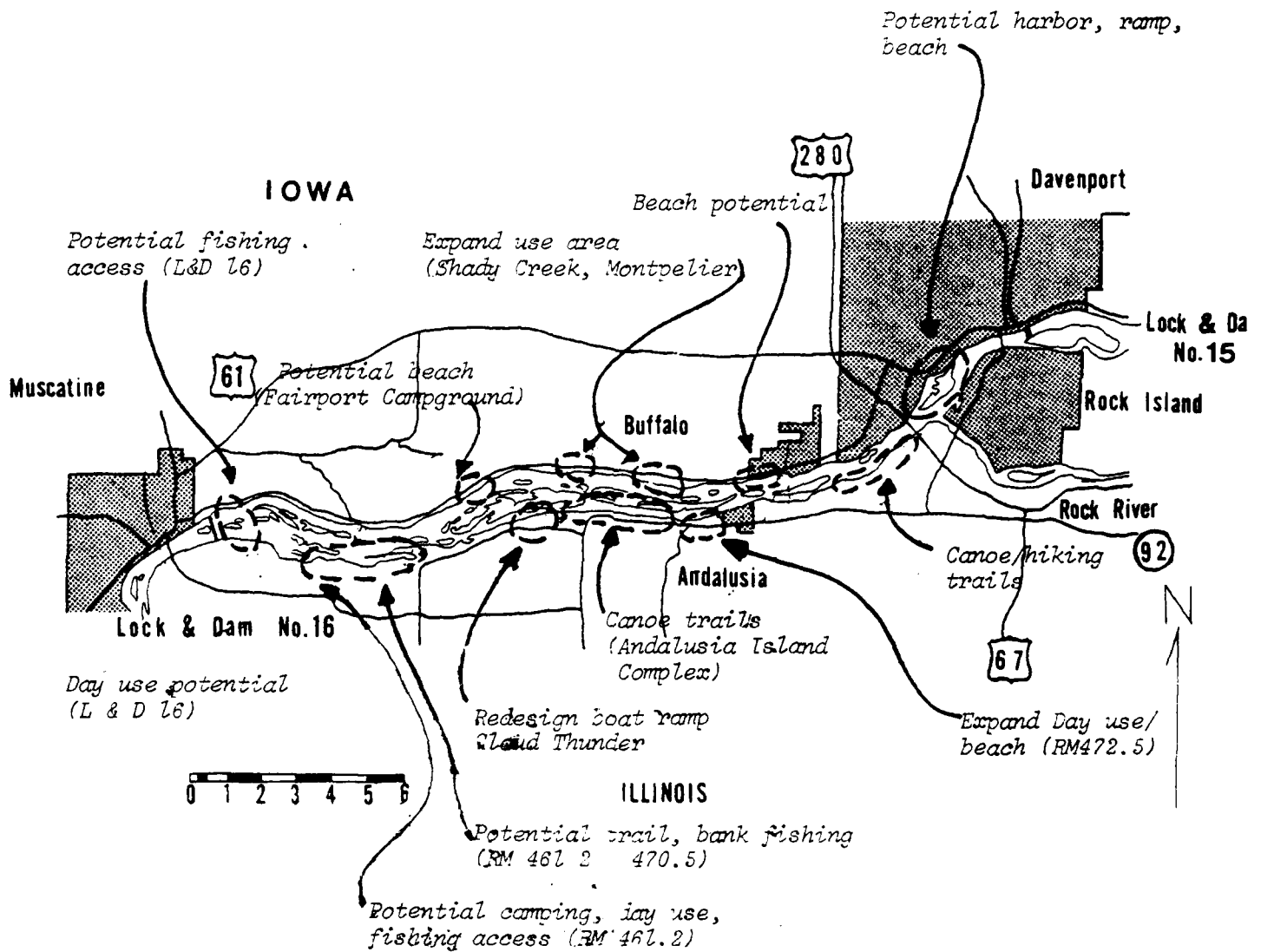
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 15



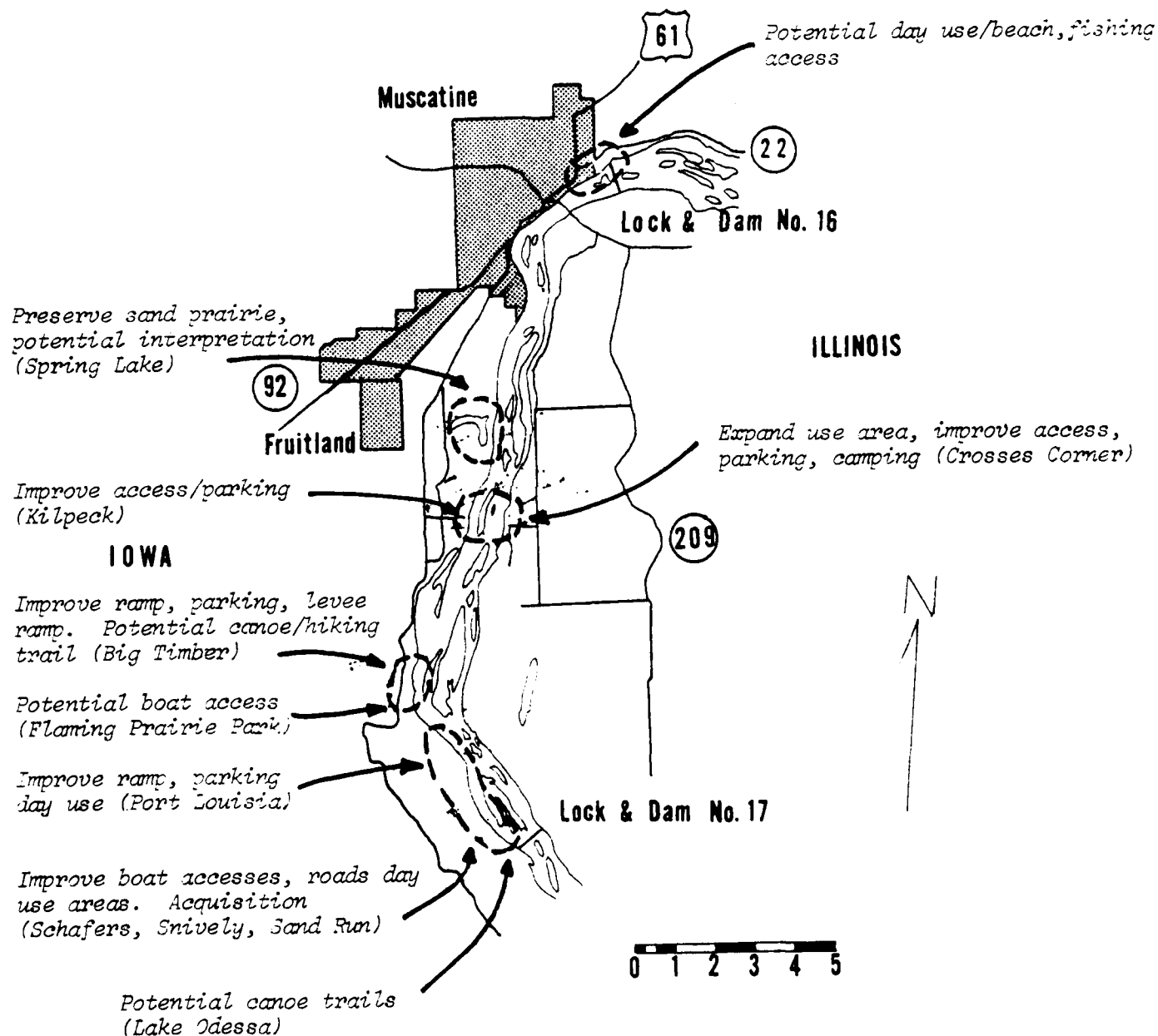
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 16



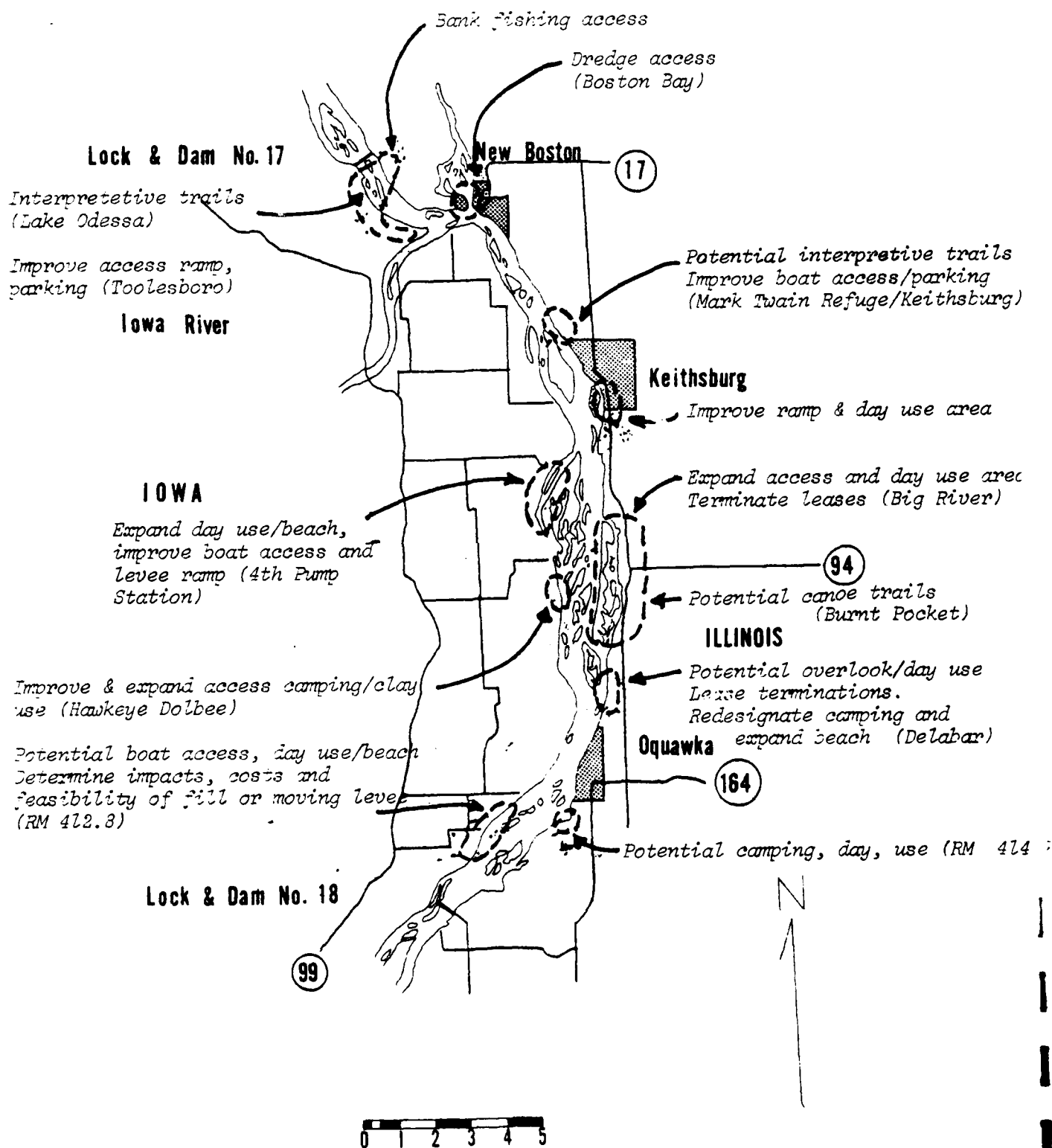
GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 17



GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 18



GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 19

Potential day use/beach
camping-acquisition (O'Connell Slough)

Lock & Dam No. 18

61

Potential day use/boat access

34

Burlington

Potential ramp/
parking expansion

Gulfport

Potential boat access,
interpretative trails

Skunk River

ILLINOIS

IOWA

88

Boat access needed

Fort Madison

Lomax

Potential day use
area improvement

Dallas City

Day use/beach, camping
check water quality-acquisition

Potential access/day use-acquisition (RM 480.8)

9

Marina potential if market exists.
Potential boat access/day use,
campground - acquisition

Nauvoo

Montrose

Dredge access channel
(Interview Park)

Need for additional dredged
islands for recreation and safety

61

Hamilton

Keokuk

136

Lock & Dam No. 19

96

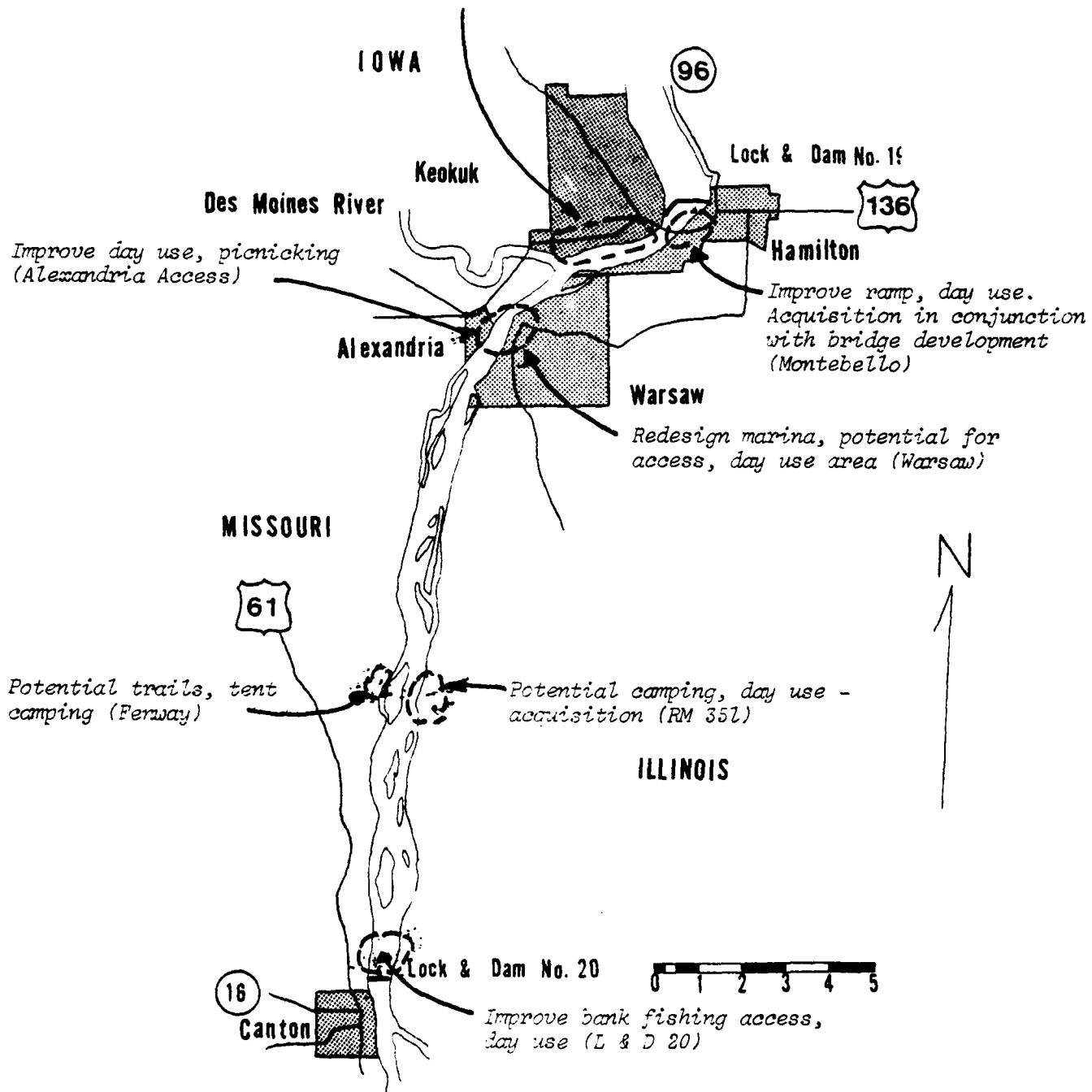
0 1 2 3 4 5

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GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 20

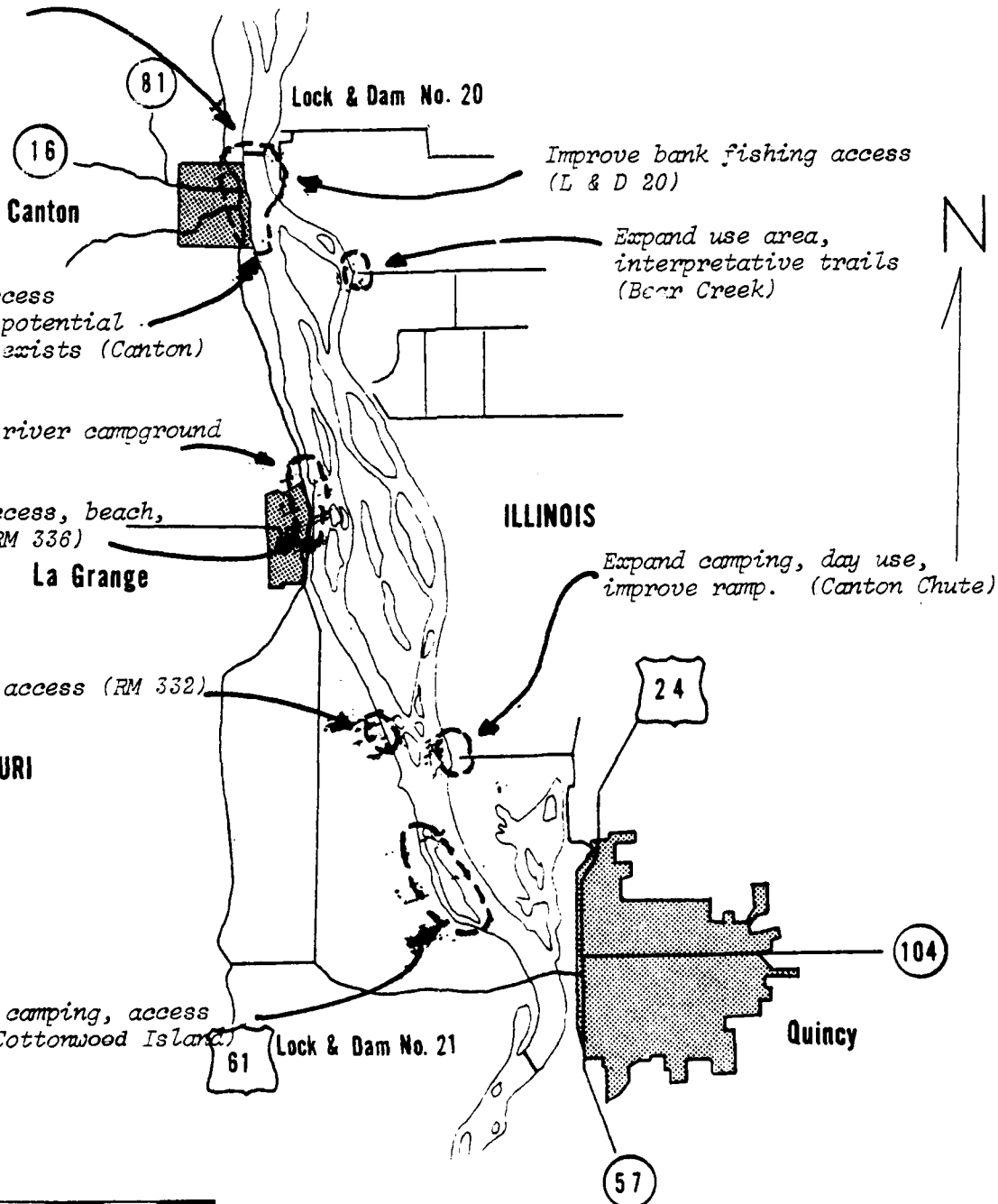
Potential boat access in conjunction with bridge project



GENERAL RECREATIONAL NEEDS AND POTENTIALS

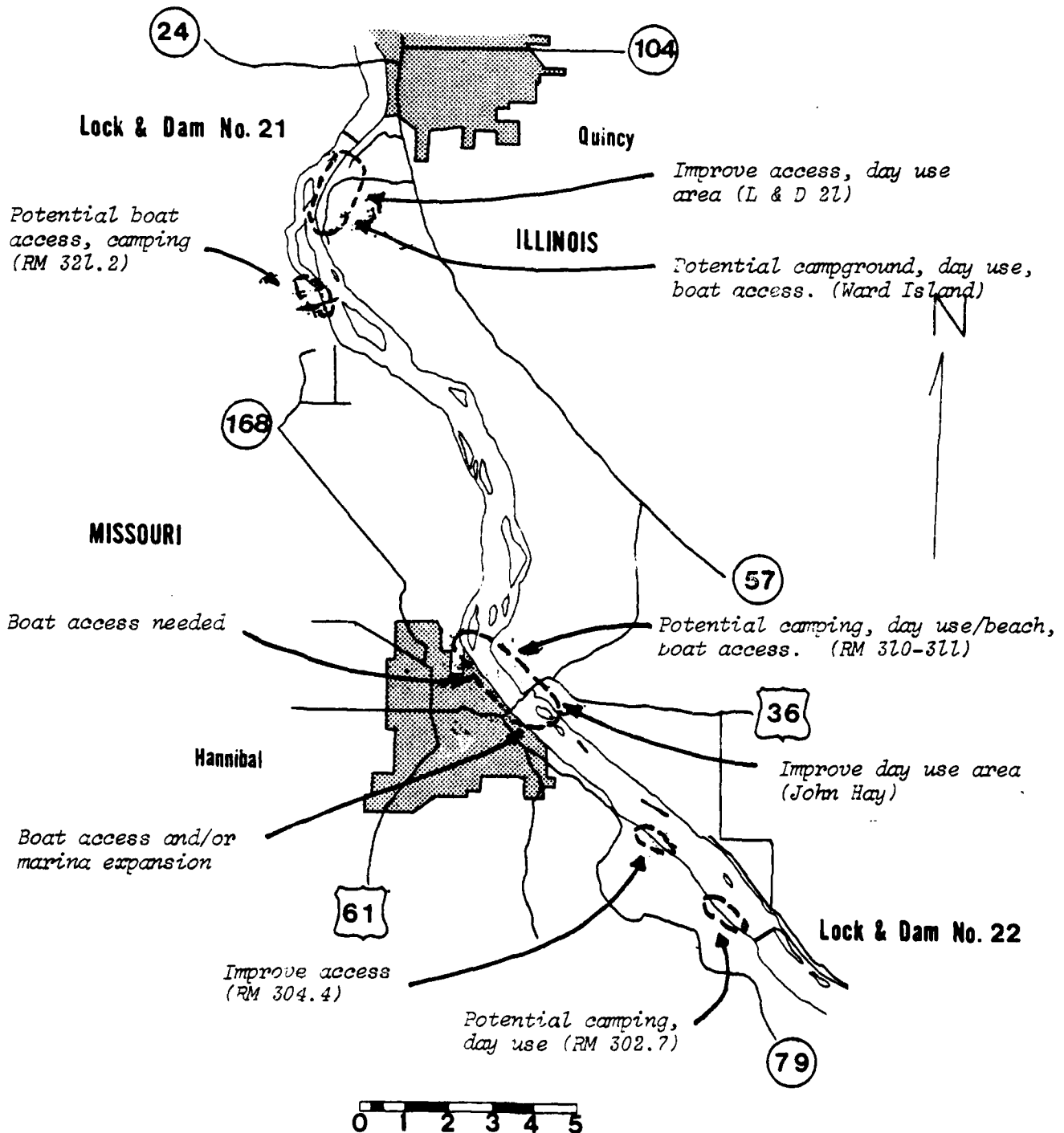
POOL 21

Improve access
(L & D 20)



GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 22



III. E. Recreation Use Survey

1. Purpose and Objectives

During initial study stages, the Recreation Work Group realized that it knew very little about those recreating on the river. Early indications from the literature search were also bearing this fact out. The use survey task was undertaken to determine the many unknown characteristics of the river recreationists, their perceptions, their desires, etc., of recreation use and of river resource management.

2. Description

The Recreation Work Group interviewed the river recreationists during the summer of 1978 to gather opinions and perceptions about Mississippi River recreation experiences. Due to a lack of funding, man power and time, the work group realized it could only concentrate its research efforts on a segment of the river's recreation users. The work group felt that the best source of information for input into the development of a channel maintenance plan was to assess recreation and recreation use of beaches, especially dredged material beaches.

3. Methods

During the July 4, 1977, holiday, aerial infrared photography was flown for the GREAT II area. This information was analyzed to determine recreation use patterns and recreation use concentrations. A list of potential beach survey areas was developed.

The Recreation Work Group modified a questionnaire developed for use by the Recreation Work Group in GREAT I. The survey instrument was taken to the field and administered to beach users in Pools 11 through 22 from mid May 1978 through the end of August, 1978. A crew of three CETA (Comprehensive Employment and Training Act) employees under the direction of the Iowa Conservation Commission administered over 2400 questionnaires during that time period.

The on-site questionnaires were then turned over to the University of Wisconsin-Madison for encoding and analysis. In addition, the statistics generated were compared to the data set provided for the Recreation Work Group report in the GREAT I area. The final report was prepared and written by the University of Wisconsin-Madison.

4. Schedule/Cost

The task was started in the early part of 1978 with the development of the "onsite questionnaire". The questionnaire was distributed to beach users during May through August 1978. The "mail return questionnaire" was distributed by the University of Wisconsin-Madison during May through August, 1979. The results were tabulated, analyzed and compiled in a report completed in March, 1980. The task was one segment of a three-part contract with the University of Wisconsin-Madison that totaled \$64,600. The recreation use survey portion of that contract was \$62,100.

5. Results

The information compiled by the contractor indicates that the composite user of dredge spoil islands surveyed in this study has come from Iowa (47%), Illinois (43%), Missouri (6%), or Wisconsin (3%). There are seven people in his party. He prefers to spend time only with his group (36.4%). He owns his boat (66.2%), a runabout (63%), 16 feet to 20 feet long (68%), and trailers it to the recreation site (46.6%).

Recreational activities in which he participates are boating (25%), waterskiing (17%), and sunbathing (16%). He will visit the river once a week during the season (55.5%). Those visits will generally last between three and six hours (38.8%). By his own estimation he will spend \$50 or less for his entire river visit (84.3%).

If he camps overnight on the river (43%), he will stay one or two nights on a wooded island. He prefers to visit the river on weekdays (39%), but usually visits the river on both weekdays and weekends (73.3%). He does not feel the river is crowded (50.8%).

He chooses his launch site either because it is easily accessible or is close to his home or to a favorite island or sandbar. The services he would most like to have at the point of river access are gasoline/boat servicing (69.3%) and a grocery store (36%). The type of islands he prefers are those which are mostly sand with some trees (48.1%). The type of camping areas he prefers are primitive islands with no facilities (36.9%).

As a general recreation experience, he prefers to relax in natural areas where few outdoor skills are required and there is no supervision or control of any activities.

He thinks that the beach he is on should be developed (54.8%). The facility he would most like to see at this beach is litter disposal facilities (46.7%). He thinks there should be more developed boat access ramps at each pool (66.2%). He would use nature interpretive areas if developed (59.2%). Residential development along the shoreline reduces his enjoyment of the river (46.5%). He does not enjoy going through locks when he is boating on the river (47%). He thinks sanitation facilities should be provided on islands (62.5%). He thinks dredged material should be placed along the river or on islands (53.8%). Boat docks on shorelines do not reduce his enjoyment of the river (60%). Barge tow traffic reduces his enjoyment of the river (34.5%). Commercial traffic along the Mississippi is not more important to him than recreational river use (64.6%).

Overall, he is very satisfied with his visit to the river and rates it as excellent (28%).

6. Conclusion

Over 65% of the users surveyed felt that the beach that they were on should be left essentially as it was. The most requested facilities were litter disposal (46.7%); toilets (33.9%); and table (22.0%).

Of the ten management options suggested in the survey, users generally agreed with five of them and generally disagreed with three. Most users did not care about the other two options. The statement, "There should be more developed boat access ramps to each pool" was agreed with or strongly

agreed with by 66.2% of the users. Other statements with which users agreed or strongly agreed were, "Sanitation facilities should be provided on islands" (62.5%), "Commercial and industrial development reduces my enjoyment of the river" (62.2%), "I would use nature interpretive areas if developed on the river" (59.2%), and "Residential developments on the shoreline reduces my enjoyment of the river" (46.5%). Those options with which respondents generally disagreed or strongly disagreed were "Commercial traffic along the Mississippi River is more important to me than recreational river use" (4.6%), "Boat docks on shorelines reduce my enjoyment of the river" (60%), and "Dredged material (sand) from channel maintenance work should not be placed along the river or on islands" (53.8%). Those options to which most people responded "do not care" were, "I enjoy going through locks when I boat on the Mississippi River" (32.2%), and "Barge tow traffic reduces my enjoyment of the river" (36%).

The following is a brief summary of the comparison of the 1979 mailed follow-up survey results to the 1978 on-site survey results: When asked directly if the Mississippi River was crowded, over one half said it was not at all crowded (OQ)*. This also indicates that nearly one half of the respondents do think the river is crowded to some degree. When this question was expanded on the mailer survey only 5.0% said the river was not crowded anytime (MQ). Most respondents have used a lock on the Mississippi River (71.8%) (MQ). However there are very few people who go through a lock on a regular basis (15.7%) (OQ). For those who have used a Mississippi lock most said they did not have to wait too long to go through the lock (61.5%), with the average waiting period being 30 minutes or less (MQ). When asked if they enjoy going through a lock, the highest percentage of people indicated they did not enjoy it (37.0%) (OQ). Most respondents use the Mississippi River once a week during the season (58.5%) (MQ) (55.5%) (OQ) with quite a few people visiting the river daily (19.6%) (MQ) (16.2%) (OQ).

Most respondents think sanitation facilities should be provided on islands, with 62.5% agreeing to some extent (OQ). This concurs with responses given to a similar expanded question in the mailer survey. In this case 63.7% of the users would support providing toilet facilities on beaches and islands if and when recreational use of the river causes environmental damage. Respondent also support providing sanitary pumping stations (60.5%) and litter barrels and trash collection services (73.4%) (MQ).

The most important recreation activity for both groups of respondents surveyed was boating, 85.1% for the mailer survey and 25% in the on-site survey. Other important activities identified in the mailer survey were camping (7%), fishing (2.3%) and swimming (2.3%). The most popular watercraft is the runabout, in use by 63% (OQ), and planned to be used by 73.1% (MQ). Both surveys indicate a very low percentage of users who rent boats (3.3%: MQ) (2.5%: OQ). The surveys also agree on the percentage of people who dock their boats at a marina (31.9%: MQ) (24.1%: OQ).

The on-site survey respondents expressed a need for more developed boat access ramps with 66.2% agreeing with the suggestion (OQ). When asked if there was adequate boat access to the Mississippi River 68.4% of the mailer survey respondents said yes.

* The letters M and O in parenthesis at the end of a sentence indicate whether the information came from the mailer survey (M) or the on site survey (O).

111. F. Total Recreational Use Monitoring Methodology

1. Purpose and Objectives

The development of an economically justifiable method of monitoring recreational use of an entire pool in the GREAT II study area that will encompass the complete seasonal cycle of recreational use was undertaken while also striving to insure the highest accuracy possible. The activities to be monitored include all types of boating, camping, picnicking, boating, fishing and snowmobiling. From this monitoring process will be obtained total use figures, peak and low use periods per activity, and some sense of spatial distribution. (Recreation Annex Supplement #4)

2. Description

Aerial photo reconnaissance, visual counting, and ground truthing of aerial work will be the basis of the monitoring process. The borders of the study area will be defined as those features that constrict the river (railroads, levees, roads) and the dams that form the pools themselves. Visual count hand recording will be compared to vertical photography in a minimum of 2 flights.

3. Methods

Visual counting by light aircraft flights will be recorded on navigation charts. Oblique photos during high use periods will insure validity. Visual counts will be proofed by parallel photography and ground truthing. Personnel will be supplied by RWGII. Cost per unit of data collected will be compared for hand recording and photo recording. Environmental factors will be recorded (temperature, wind, precipitation, time, date, pool level, etc.) Flights to be made in each of the 4 seasonal periods will include selected weekdays, weekends, and holidays. Film trade-offs will be explored so that 4 camera fly-over configurations are compared for the same piece of ground to allow viewing under all film conditions. From this technique it is hoped that optimum altitude, camera and film type will be determined along with cost of extraction per unit and efficiency of photo rates versus visual/hand recording.

Ground truthing of 3 pools will occur. They should be representative of the entire study area. Counters and visual verification will occur at marinas, launches, beaches, islands, selected shore lines, and scenic vistas. Data to be verified will be such items as boat class, number of occupants, movement of boat, and use of other facilities (beaches and islands for swimming and camping, duck blinds, etc.). The duration of ground truthing will include the period of flight plus one hour before and after. Fifty percent (50%) of the flights in the 3 selected pools (13, 16, 21) will be ground truthed. Enough sites will be chosen to assure validity.

It is hoped that from this monitoring process some statistical reliability will be determined, along with some indication of regional participation and turnover rates.

III. G. Boating Safety Report

1. Purpose and Scope

The boating safety report was prepared to address several safety related questions that were brought to the Recreation Work Group's attention during the public and work group meetings. One problem identified by the public was to access the conflict between recreational and commercial craft in the GREAT II study area.

2. Description

A boating safety report was the task carried out to analyze the what, when, why, where, and how of boating related accidents in Pools 11 through 22. During preparation of the report, boating laws and boating law enforcement were also analyzed.

3. Methods

Accident reports compiled by the Boating Law Administrators of the States of Illinois, Iowa, Missouri, and Wisconsin were individually reviewed for the years 1973 through 1978. The information was tabulated by accident type and accident result on a pool-by-pool basis for each year and for the 1973 through 1978 combined total. Analyses were developed for type of accident, accident/injury, accident/death, injuries by pool, deaths by pool and average annual accident rate.

4. Schedule/Cost

The safety report was compiled during April and May of 1979 and published in August. The report cost was absorbed in the chairman's contract with the Iowa Conservation Commission.

5. Results

From 1973, through 1978 there were 181 total reported accidents in the twelve pools (table #1). There were 85 reported injuries and 46 deaths. One-half of all reported accidents originated from two accident types: recreation boat versus recreation boat collision (25%) and recreation boat versus object collision (25%). The greatest number of injuries also derived from these two accident types. The greatest number of deaths resulted from people falling overboard. Pool 16 reported the highest number of injuries (19) while pool 19 reported the highest number of deaths (10). (Recreation Annex Supplement #5)

6. Conclusions

- a. As recreation use on the Mississippi River increases, the potential for boating and boating related accidents is expected to rise accordingly unless educational and enforcement activities are expanded.
- b. There appears to be a need for more thorough enforcement of existing laws.
- c. Emphasis on boating law enforcement along the Mississippi River at localized problem areas during peak use periods could help in the reduction of boating accidents. Areas of concern are located in pools 11, 13, 16, 19 and 21.

- d. If more permanent boating law enforcement officers were stationed on the river, additional enforcement of all laws such as litter laws would enhance recreation use enjoyment.
- e. Public preference was overwhelmingly for providing information about waiting times and lockages rather than providing waiting facilities.
- f. Collisions between recreational boats and commercial tows are not a major source of accidents.
- g. Collisions between two or more recreational boats, between recreational boats and objects, faulty equipment, and falling overboard account for most recreational boating accidents in the GREAT II segment of the Mississippi River.
- h. All pools within the study area have accident rates higher than the national average.
- i. More attention needs to be given to the accuracy of boating accident reports.
- j. More attention and consideration of boating safety problems (potential hazards of channel maintenance structures, tow boats, major causes of accidents, major locations of accidents, etc.) on the Mississippi River would be achieved through education of the boating public.
- k. There are many boating accidents that are probably not reported - both those required by law (over \$100 damage), and those not required by law.
- l. Young boaters are not involved as operators in a majority of reported accidents.
- m. Of those accidents reported after sunset, a majority were related to inadequate lighting and excessive speed for conditions.
- n. Commercial tows need better lighting along the full length of their barges.
- o. Excessive speed near access points and heavy use of recreation areas causes dangerous situations for beach users and rough wakes can cause damage to boats and docks.

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GREAT RIVER ENVIRONMENTAL ACTION TEAM
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TABLE 1

Recreation Boating Accidents

1973 - 1978

| BOAT NUMBER | ACCIDENT TYPE | | | | | | | | | | RESULTS | | | | REMARKS |
|-------------|--------------------------------------|--|---------------------------------------|---------------------------------------|--------------------------|------------------------------------|---------------------|-------------------|-------|---------|---------|-----------------------------|-----------------------------|------------|---------|
| | Recreation Boat - Barge Collision | Recreation Boat - Rec. Boat Collision | Recreation Boat - Person Collision | Recreation Boat - Object Collision | Swamped by Barge Wake | Swamped by Recreation Boat Wake | Faulty Equipment | Fell Overboard | Other | Injured | Dead | Property Damage (x 1000) | Total Reported Accidents | % of Total | |
| 11 | 1 | 5 | | 2 | | | 2 | 3 | 3 | 6 | 4 | 10.64 | 16 | 8 | |
| 12 | | 4 | 1 | 1 | | | 1 | 2 | 4 | 7 | 4 | 11.15 | 13 | 7 | |
| 13 | | 6 | | 5 | | 1 | 1 | 3 | 5 | 7 | 7 | 10.60 | 21 | 12 | |
| 14 | | 2 | 2 | 5 | 1 | | 6 | | 4 | 11 | 5 | 28.07 | 20 | 11 | |
| 15 | | | | 1 | | | | 1 | 2 | 2 | 4 | 4.25 | 5 | 3 | |
| 16 | | 7 | | 5 | | | 4 | 4 | 3 | 19 | 4 | 28.10 | 23 | 13 | |
| 17 | | 1 | | | | | 2 | 1 | 1 | 1 | 2 | 1.70 | 5 | 3 | |
| 18 | | 3 | | 6 | | | 1 | | 1 | 5 | | 24.23 | 11 | 6 | |
| 19 | | 5 | | 13 | 1 | | 1 | 10 | 8 | 12 | 10 | 46.53 | 38 | 21 | |
| 20 | | 3 | | | | | | | | | | 2.60 | 3 | 2 | |
| 21 | | 7 | | 4 | | | | | 4 | 9 | 4 | 17.95 | 15 | 8 | |
| 22 | 1 | 2 | | 4 | | | | 1 | 4 | 6 | 2 | 7.25 | 11 | 6 | |
| TOTALS | 2 | 45 | 3 | 46 | 2 | 1 | 18 | 25 | 39 | 85 | 46 | 193.07 | 181 | | |
| OF TOTAL | 1 | 25 | 2 | 25 | 1 | 1 | 10 | 14 | 21 | | | | | | |

III. H. Beach Maintenance and Enhancement

1. Purpose and Scope

An effort was undertaken to determine the optimum relationship of recreation/dredged material beaches with other recreation facilities, population centers, the main channel, etc. An attempt was made to determine physical attraction factors and means of maintaining and/or enhancing the recreational values of dredge material disposal areas.

2. Description

In preparation of this report background studies on environmental impact, revegetation, recreational use and stabilization of dredge material sites were reviewed. Information on dredged sites that provided a full range of recreational attractions plus maintained their usefulness over a multiple year period was sought. Sites with different disposal methods, with inland locations, with large disposal amounts, with high and low frequencies of dredging, with different litter amounts, with different degrees of stability, with tree kills, and with different rates of revegetation were analyzed.

3. Methods

Approximately 200 historical dredged material sites were assessed visually and through aerial photography. One-hundred identifiable sites were cataloged by location and size. From these 100 sites, 44 were selected for detailed site analysis. Objective and subjective criteria were utilized to assess the recreation attributes of each site. Analysis tried to determine relationships between those attributes and the recreation attraction and use of the dredged material sites plus the longevity of natural maintenance factors.

4. Schedules/Cost

The initial research took place during 1977 and a report was distributed in April, 1978. The report was prepared under contract with Iowa State University for \$2,500.

5. Results

A report entitled, "Determining Means of Enhancing and Maintaining Recreation Areas with Dredged Material" was published. (Recreation Annex Supplement #6). The report compiled important base line data on dredged material beaches for recreation and maintenance enhancement. Four recommendations with guidelines were developed on which to guide future placement of dredged material.

6. Conclusions

Recreational use of dredged material beaches is extensive. Under current disposal practices, valuable and needed low cost recreation areas are being lost due to a lack of planning disposal sites for recreation.

A poor distribution of recreationally desired dredged material sites throughout the Rock Island district is especially apparent in many of the larger urban centers along the river. Often the dredged material sites are in needed areas but are not usable or desirable for recreation.

With planning, the recreation opportunities can be enhanced on disposal sites without radically changing current dredged material disposal techniques. The useful recreational life of a dredged material site can be extended and maintained with minimal maintenance after site establishment through the use of natural maintenance methods.

The biggest step toward enhancing and maintaining the recreational qualities of dredged material sites will come in proper site selection and disposal methods that maximize natural stabilizing characteristics of the site while increasing the recreational desirability. This must start with the On-Site Inspection Team's recognition of the recreation potential of sites.

Maintenance of dredged material sites for recreational purposes can be broken down into three types: mechanical, natural, or chemical.

Beaches are inviting places for boaters to stop and recreate. Ninety percent of the recreationally attractive sand beaches are dredged material sites.

A better distribution of highly desirable dredged material beaches throughout the study area would increase recreational opportunity and alleviate the high recreational lockage demand at some locks.

Several physical features of dredged material sites help enhance the recreational experience. These are:

- large sand beaches
- good boat access and visibility from the main channel
- gentle beach slopes of ten percent or less
- adjacent water depths formed by five to ten percent slope bottom
- some over story vegetation located on the site
- topographic variety on the sites
- semi-circular revegetation patterns on large beach sites
- aspect of south to southwest
- a sand beach area at least 75 feet wide and greater than 200 feet long

Physical features which detract from the recreational experience are:

- no sand beaches on the site
- heavy revegetation by sandbar willows
- large masses of wood nettles
- deep adjacent water
- steep sand slopes
- lack of any overstory vegetation
- excessive amounts of trash

III. 1. Literature Search

1. Purpose and Scope

The literature search was conducted to determine the thoroughness of background information and to avoid duplication in research and planning efforts.

2. Description

Literature was reviewed in the following topics:

- a. Legal and institutional framework relating to Mississippi River recreation
- b. Characteristics of recreationists on the Mississippi River and other comparably "developed", organized and/or commercially navigable rivers.
- c. Physical and biological characteristics of dredge spoil islands.
- d. River recreation management on the Mississippi River and on other comparable rivers.
- e. River recreation use measurement on the Mississippi River and other comparable rivers.
- f. Adverse impacts of recreational use on land, water and associated floral and faunal resources.

The literature was assessed for its relevance in addressing the problems and tasks that were identified for work group research.

3. Methods

The search was conducted through a contract for services. The contractor was directed to provide a written review plus a annotated bibliography which was to include (but not limited to):

- a. Published material in journals, magazines, etc.
- b. Federally sponsored research
- c. Unpublished graduate thesis and/or university research.
- d. Internal agency documents:
 1. Minnesota Department of Natural Resources
 2. Wisconsin Department of Natural Resources
 3. Iowa Conservation Commission
 4. Illinois Department of Conservation
 5. Missouri Department of Conservation
 6. Corps of Engineers (to include Waterways Experiment Station)
 7. Heritage, Conservation and Recreation Service
 8. Fish and Wildlife Service.
- e. Upper Mississippi River Conservation Committee.
- f. Other

Potential sources of bibliographical information to be searched were to include (but not limited to):

- a. Computerized bibliography retrieval systems through public and private libraries.
 - b. Searches of unpublished thesis indexes.
 - c. Indexes to Selected Outdoor Recreation Literature, Heritage Conservation and Recreation Service.
 - d. Waterways Experiment Station, Corps of Engineers, Vicksburg, Mississippi.
 - e. Report by the inter agency group on the Mississippi River, (Bureau of Outdoor Recreation), 1974.
 - f. River Recreation Symposium Proceedings, North Central Forest Experiment Station, January, 1977.
 - g. Other.
4. Schedule and Costs

The literature review was carried out under contract with the Department of Recreation and Park Administration, University of Western Illinois University, Malcomb, Illinois for \$6,000. The report was published in August, 1978.

5. Results

A result of this task was a report entitled "Bibliography of Selected Literature on River Recreation (partially annotated)". The report was composed of 712 entries from 628 sources. (Recreation Annex Supplement #7)

6. Conclusions

From this research effort, it was concluded that there was little information specifically written about Mississippi River recreation. Also, studies about recreation use and users of similar riverine resources was lacking.

III. J. Marina Operator Questionnaire

1. Purpose and Objectives

The survey was carried out to expand the Recreation Work Group's knowledge of recreation use of the Mississippi River. Information from interests that depended upon the river as a vital part of their livelihood was needed as well as current habits, preferences, etc., of the marina user.

2. Description

Many different categories of recreation information needs were believed to be available from commercial recreation interests. Questions concerning facility capacity, user activities and trades, seasonal use breakdowns, craft type and use, present and future economic outlook and energy implications on recreation use were asked. The work group felt that the wide range in types and sizes of marina facilities would provide an adequate cross section of the river's recreationists.

3. Methods

A questionnaire was developed jointly by the Recreation Work Group and the University of Wisconsin - Madison. The 1977 GREAT/UMRCC (Upper Mississippi River Conservation operations and their addresses were extracted. These businesses were contacted for their interest in participation and a final list of approximately 45 facilities was forwarded to the University of Wisconsin - Madison. The research lab then conducted the questionnaire through a phone interview with each facility operator or manager.

4. Schedule/Cost

The questionnaire was developed by the work group during May and June of 1979. The final version was developed at the University of Wisconsin during July. The interviews took place during the remainder of the summer months. The information was tabulated in a report published in April, 1980. The cost of the effort was \$2,500.

5. Results

Size of the marinas surveyed varied from one marina with 10 slips to one marina with 320 slips. Average marina size was 97 slips with a median slip number of 94 slips. Marinas surveyed had a total of 4,056 slips of which 3,977 slips were rented in 1979 (occupancy rate of over 98%) and of which 3,816 were already rented for summer of 1980. This is an occupancy rate of 94%. About 68% of marinas maintain a waiting list for slip vacancies. The modal waiting time is 1-2 years, but generally turnover is very light. Composition of boats renting slips in the marinas during summer of '79 were: 42% runabouts; 24% cabin cruisers; 21% houseboats; 11% small fishing boats; and 1% sailboats.

Marina operators were asked to identify riverway and operation problems affecting their business. Problems mentioned were:

- (1) Silt accumulation 13
- (2) Flooding and high water 9
- (3) Gasoline availability 7

- (4) River level fluxuation due to dam operation 3
- (5) Water pollution 3
- (6) Litter 2
- (7) Other problems identified by one operator was - seawall too close, harbor too small, tow wakes, shallow water, beaches overgrown, fallen trees, wing-dam markings.

When asked to identify problems that affected the users, operators mentioned:

- (1) Silt accumulation 6
- (2) Water level fluxuation due to dam operation 5
- (3) Lack of dredge beaches 4
- (4) Floating debris 4
- (5) Flooding 3
- (6) Gas availability 3
- (7) Slow lockages 2
- (8) Wing-dam marking 2
- (9) Other problems identified by one operator was - few pump-out facilities, boat maintenance costs, boat rental costs, shallow water, lack of marina space, fast current, few access ramps, heavy tow traffic, and speeding jet-boats.

When asked, specifically, if siltation adversely affected their business, an additional 8 operators identified siltation as a major problem and 9 operators identified siltation as a small problem. Only 13 of the 43 operators did not feel siltation was a problem. When asked if gasoline was a problem, an additional 22 operators stated it was. Only 18 of the 43 operators did not feel gasoline price or availability was a problem.

6. Conclusion

Upper mid-west residents will continue to boat for recreation. As fuel availability problems increase, boaters may be less willing to tow their boats to lakes or reservoirs and opt to use the Mississippi more frequently and in larger numbers. The Mississippi River should become a more vital recreation resource and an excellent market setting to service the needs of current and future boaters. It is unlikely that existing marina capacity can accommodate these users. As many traditional vacation and recreation patterns alter to accommodate fuel costs and scarcity, resources which are in proximity to population center and were once taken for granted, will gain a new prominence. This is the future of the Upper Mississippi River and its recreational services and amenities.

III. K. Land and Water Conservation Fund (LAWCON) Listing

The following are the recreation areas located adjacent to the Mississippi River funded through the Heritage Conservation and Recreation Service's LAWCON program.

Illinois

Carroll County - Mississippi Palisades State Park, Illinois Department of Conservation
Mercer County - Mark Twain National Wildlife Refuge, Keithsburg Division Nash Track

Iowa

Clinton County - Rock Creek Park, Clinton County Conservation Board
Dubuque County - Finley's Landing, Dubuque County Conservation Board
Jackson County - Bellevue State Park Access, Iowa Conservation Commission
Lower Sabula Access, Jackson County Conservation Board
Spruce Creek Park - Jackson County Conservation Board

Lee County - Keokuk Boat Launch, City of Keokuk
Montrose Boat Launch, Lee County Conservation Board
Louisa County - Flaming Prairie Park, Louisa County Conservation Board

Missouri

- none -

Wisconsin

Grant County - Nelson Dewey State Park - Wisconsin
Department of Natural Resources

Changes or modification to the above sites (or a portion thereof) as a result of dredge operation on the Mississippi River were require clearance from the Heritage Conservation and Recreation Service.

III. L. Meetings with Levee Districts

For several years poor access over the levees adjacent to the Mississippi River have hampered public access to this recreation resource. Problems have occurred because of the lack for proper facilities, maintenance and supervision. As a result, several meetings were held between some of the Levee Districts, the Corps of Engineers and the Iowa Conservation Commission. The problems, limitations and possible solutions to the question of public access for recreation purpose over levees were discussed.

The following summarizes the concerns, limitations and recommendations of the levee Districts:

I. Levee District's Concern

- A. Activities in proximity of levee.
- B. Wave wash and current scour.
- C. Use of maintenance crossings over levee by the public
- D. The safety of the public:
 - 1. Lives and livelihood of those in the District.
 - 2. General public's use of accesses.

II. Limitations on Access Development

- A. Lack of compatible long-range development plans.
- B. Money for construction.
- C. The capability of governmental units to operate and maintain facilities.
- D. Lack of understanding of the concerns by all parties.
- E. Lack of cooperation in attaining mutual goals.

III. Levee District Recommendations

- A. Develop long-range plans for public accesses.
 - 1. Include a facility at or near each point currently receiving a significant amount of use.
 - 2. Designate probable activities for each site, e.g.;
 - a. Boat ramp and parking
 - b. picnicking
 - c. Camping
 - d. Viewing of river or fishing activities
 - e. Commercial fisherman's area
 - f. Docking
 - 3. Boat ramps should provide for loading 2 or more boats at the same time, maximum grade above normal summer pool of 9%, length of ramp above normal pool should not exceed 60'
 - 4. Provide 200' buffer zone between levee structure and activity areas to protect the levee structure and provide wildlife habitat.

B. Develop plan to provide wave wash protection:

1. Provide 200' berm riverward of levee for growth of brush and trees.
2. Relocate areas for cabin sites and special use permits to areas at least 200' riverward of the levee.
3. Develop tree and brush growth.

C. Public use of vehicular crossings:

1. Allow vehicular crossings at levee only when crossings conform to county road design standards.
2. The ramp on the riverside of the levee should meet the flood plain at least 200' riverward of the levee.

D. Implementation of Plan:

1. Establish most likely source of funds for each phase of each site.
2. Establish most likely source of funds for each phase of each site.
3. Place priorities for development of each improvement in view of need, availability of funds and capabilities to operate and maintain facilities.
4. All concerned parties cooperate in pursuing funds.

The above comments on behalf of the Levee Districts may not reflect the views nor have the approval of all Levee Districts in the GREAT II Study area.

III. M. Disposal Site Selection

During 1978 and 1979, the Recreation Work Group (RWG) prepared a pool by pool listing of priority dredged material beaches which were used for recreation purposes. In some cases a range in distances were used to identify the dredge beaches to insure the proper location of the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force indicating potential dredged material disposal sites. These recommendations along with other were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement will be only on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly. The following are the dredged beach priorities selected by the RWG.

DREDGED BEACH PRIORITIES

POOL 11

- a. 595.6 - 596.0 R (Finley's landing)
- b. 610.4 - 611.0 L (no name)
- c. 608.8 - 609.2 L (no name)
- d. 598.5 - 599.0 L (no name)
- e. 609.5 - 610.2 R (no name)
- f. 613.3 R (no name)
- g. 612.9 L (no name)

POOL 12

- a. 581.5 L, 581.6 - 581.9 L (no name)
- b. 582.3 L (no name)
- c. 574.3 R & L (Nine Mile Island and Main Shore) From pipeline crossing construction, not navigation channel maintenance
- d. 564.2 - 564.3 L (no name)
- e. 560.8 L (no name)
- f. 582.9 (O'Leary's Lake)

POOL 13

- a. 553.0 (Pleasant Creek)
- b. 550.7 - 551.1 L (Savanna Proving Grounds)
- c. 544.5 L (no name)
- d. 531.4 L (no name)
- e. 540.6 - 541.2 L (Santa Fe)
- f. 554.3 - 554.7 R
- g. 527.1 - 527.8 L (no name)

- Special Need -

POOL 14

- a. 503.7 - 505.0 R, 503.5 L (no names) dike necessary & riprap)
- b. 508.7 - 509.0 R (no name)
- c. 513.5 L (Albany Beach)
- d. 517.3 - 517.4 L (main shore)
- e. 519.5 R (no name)

POOL 15

- a. 489.8 L (Winnebago/Dynamite Island)
- b. 491.1 L (Kay Island)

POOL 16

- a. 461.3 - 461.6 R (no name)
- b. 469.5 - 469.9 L (Andalusia Island Complex)
- c. 472.7 R (main shore near county access)
- d. (473.0 - 473.3 L (no name)
- e. 474.2 - 474.4 L (no name)
- f. 464.2 - 464.4 L (Andalusia Island Complex)

POOL 17

- a. 447.8 - 448.2 L (Bass Island)
- b. 453.2 L (no name)
- c. 446.2 R (Kilpeck Island)

POOL 18

- a. 433.3 R (Perry Landing)
- b. 433.8 - 434.0 L (no name)
- c. 419.5 L (Benton Island)
- d. 425.8 L (Willow Bar Island)
- e. 424.5 L (no name)
- f. 427.3 R, 427.9 R (Blackhawk Island)

POOL 19

- a. 405.5 - 406.1 R (Baby Rush)
- b. 405.7 - 406.0 L (Willow Bar)
- c. 394.0 R (no name)
- d. 400.0 L (on Craigel) careful placement necessary
- e. 399.0 - 399.3 L (on Craigel)/careful placement necessary
- f. 409.7 - 410.0 R (Mercer)
- g. 405.3 R (no name)

- Special Need - Recreation & storm refuge islands in lower portion of pool -

POOL 20

- a. 355.1 - 355.3 R (Fox Island)
- b. 361.6 R (above Des Moines River confluence)

POOL 21

- a. 331.5 - 332.6 L (Hogback)
- b. 327.8 L (Quinsippi)
- c. 336.0 R (LaGrange Park)

POOL 22

- a. 316.1 - 316.3 L (on main shore)
- b. 319.0 - 319.3 L (Goose Island)
- c. 309.1 L (Corps Use Area)
- d. 316.8 L (Off Beebe Island)

III. N. ANNUAL RECREATION BENEFITS OF DREDGE MATERIAL BEACHES

At the request of the Plan Formulation Work Group, an attempt was made to estimate the economic value of recreational use of dredge material beaches within the GREAT II area.

Recreational use data for the dredge material beaches was based on 1977 aerial photography taken for that purpose. The use data developed by this method appears to be comparable with similar use data generated by other recent recreational use studies in the GREAT II area.

For purposes of estimating the economic value of dredged material beaches, the Recreation Work Group used the "Unit Day Value" methodology developed by the Water Resource Council (Federal Register, Vol. 44, No. 102, May 24, 1979). This method uses five measurement criteria with associated guidelines to estimate the value of a recreation activity day. The five criteria are: recreation experience, availability of opportunity, carrying capacity, accessibility, and environmental quality.

Applying these measurement criteria and guidelines to dredge material beaches results in a range of unit day values that could vary between \$1.25 and \$2.30 per beach activity day in the GREAT II area. The Recreation Work Group's best estimate of the unit day value was \$2.00 per activity day. However, because the application of the measurement criteria must entail a value judgment, the values for the \$1.25 and \$2.30 range limits are also presented in the following table.

The table indicates the recreation benefit value by pool. The values will only be given by pool since site specific information varies greatly over a day or season in any pool.

| Pool | Total Boat Users (Boating Season) | Dredge Beach Site Users (Boating Season) | Annual Recreation Value | | |
|-------|--|--|-------------------------|---------------|---------------|
| | | | \$1.25 | \$2.00 | \$2.30 |
| 11 | 83030 | 39854 | \$49818 | \$79,708 | \$91,664 |
| 12 | 54720 | 20246 | 25307 | 40,492 | 46,566 |
| 13 | 83980 | 36951 | 46189 | 73,902 | 84,987 |
| 14 | 98895 | 60375 | 75469 | 120,750 | 138,862 |
| 15 | 21945 | 7022 | 8778 | 14,044 | 16,151 |
| 16 | 68400 | 28728 | 35910 | 57,456 | 66,074 |
| 17 | 47595 | 19992 | 24990 | 39,984 | 145,982 |
| 18 | 61750 | 24084 | 30105 | 48,168 | 55,393 |
| 19 | 77710 | 25646 | 32057 | 51,292 | 58,986 |
| 20 | 23750 | 8789 | 10986 | 17,528 | 20,215 |
| 21 | 61940 | 26014 | 32517 | 52,028 | 59,832 |
| 22 | <u>31540</u> | <u>16400</u> | <u>20500</u> | <u>32,800</u> | <u>33,720</u> |
| Total | 715255 | 314101 | \$392,626 | \$628,202 | \$722,432 |

III. 0. CAMPSITE SURVEY SPONSORED AND CONDUCTED BY THE MISSISSIPPI
RIVER CAMPSITE PRESERVATION ASSOCIATION

An independant campsite survey was conducted by the Mississippi River Campsite Preservation Association to determine the economic expenditures of the lessees. It is believed that the results of this private survey can be obtained from the Association.

The opinions and recommendations stated in the Campsite Survey are those of the Mississippi River Campsite Preservation Association and do not necessarily reflect the views or recommendations of the Recreation Work Group, the GREAT Team or any of the member agencies associated with GREAT II.



4

**FORMULATION OF
RECOMMENDATIONS**

IV. ALTERNATIVES AND RESULTANT RECOMMENDATIONS

A. Formulation of Alternative solutions and development of Recommendations Process

The tasks that each work group chose to accomplish varied by work group, by type of problem they were addressing and by the existing knowledge they had about that problem. All work groups needed to collect and organize background information. This background information was used to identify further problems, to provide input and data for other work groups and as part of the narrative for their work group appendix. Where little background information existed, baseline data was collected and/or research studies conducted.

As all tasks were completed, the results were distributed to members of the pertinent work group. Conclusions were then drawn by members of the work group based on the results of their work groups' tasks.

The conclusions developed by each work group led to the identification and consequent development of potential alternatives to their problems. The results of some tasks indicated that there still was not enough available information to ensure a knowledgeable assessment of the potential alternative solutions to a problem. In these cases, no alternatives could be formulated and the only recommendation which could be made was for further study of the problem. Where completion of work group tasks led to identification of potential solutions, the alternatives were displayed on Attachment 4. The alternatives varied in specificity from site specific guidelines to general policy changes, dependent upon the problem they were addressing. Alternatives displayed on Attachment 4 were assessed and an alternative selected on the basis of a judgmental impact assessment. Once an alternative was selected; the rationale for its selection and all available supporting documents, information and studies supporting its selection were identified and displayed on Attachment 4. This information (and other), was used to compile a brief summary of the types of impacts that would result if the recommendation were implemented. Based on the impact assessment and careful evaluation of the recommendation the work group, through various voting procedures, either approved or rejected the recommendation.

All work group approved recommendations were sent to the GREAT II impact assessment coordinator for review and advice. The coordinator would then mail this information, complete with comments, back to the appropriate work group chairman. The work group then did a more thorough and detailed assessment of the impact potential of their recommendations. This information was recorded on Attachment 7. Each work group was responsible for obtaining or estimating the necessary information for their impact assessment through their studies, work group meetings, discussions with other work groups, discussions with other agencies having expertise in that particular field, discussions with economists and discussions with the impact assessment coordinator. When Attachment 7 was completed to the work groups' satisfaction, sufficient copies of Attachment 4 and 7 were brought to the next Plan Formulation Work Group meeting. The impact assessment was reviewed by all members present and additions, changes or suggestions were made to the impact assessment. Each work group chairman made the appropriate revisions and brought a final version of the impact assessment to the next Plan Formulation Work Group meeting for final review.

At this time, these recommendations were dropped from further active consideration, until all recommendations were submitted by all of the work groups. When all of the recommendations had been submitted to the Plan Formulation Work Group, the development of integrated and final plans began.

The recommendations brought to the Plan Formulation Work Group varied in specificity and implementability and were grouped into the following general categories:

1. Implementable actions with existing authority
2. Implementable actions requiring legislation
3. Implementable studies within existing authority
4. Implementable studies within existing authority
5. Feasibility studies, etc.
6. Policy changes

Within each of the six groups above, the recommendations varied from general recommendations applying to the river as a whole to those recommendations site specific in nature. Three categories of specificity used to help organize the recommendations into action plans are listed below:

1. general - apply to entire GREAT II reach or entire Upper Mississippi River Basin
2. pool - apply to a specific pool or group of pools
3. site - apply to a specific site(s) within a pool

B. Recreation Work Group Recommendations

I. Summary of Impact Assessments

The following table addressed the impacts required to be identified in Environmental Impact Statements. Each impact listed was considered for each recommendation made. Those direct impacts and indirect impacts which may need further assessment are shown and measured on the Recommendation Impact Assessment Form following each Recommendation.

IMPACT ASSESSMENT SUMMARY

RECOMMENDATION NUMBER

| IMPACTS | 1001 | 1002 | 1003 | 1004 | 1005 | 1006 | 1007 | 1008 | 1009 | 1010 | 1011 | 1012 | 1013 |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1. Noise | | | | | | | | | | | | X | |
| 2. Displacement of People | | | | | | X | | | | | | | |
| 3. Aesthetic Values | | | | | | X | | | | | | | |
| 4. Community Cohesion | | | | | | | | | | | | | |
| 5. (Desired) Community Growth | | | | | | | | | | | | | |
| 6. Tax Revenues | | | | | | | | | | | | | |
| 7. Property Values | | | | | | | | | | | | | |
| 8. Public Facilities | | | | | | | | | | | | | |
| 9. Public Services | | | | | | | | | | | | | |
| 10. (Desired) Regional Growth | | | | | | | | | | | | | |
| 11. Employment/Labor Force | | | | | | | | | | | | | |
| 12. Business/Industrial Activity | | | | | | | | | | | | | |
| 13. Displacement of Farms | | | | | | | | | | | | | |
| 14. Man-Made Resources | | | | | | | | | | | | | |
| 15. Natural Resources | | | | | | | | | | | | | |
| 16. Air Quality | | | | | | | | | | | | | |
| 17. Water Quality/Quantity | | | | | | | | | | | | | |

KEY

- ☒ Significant Direct Impact
- ☒ No Direct Impact, Indirect Impacts May Need Further Assessment
- ☐ Negligible Direct Impact
- ☐ No Direct Impact

NOTE: Significant Direct Impacts and Indirect Impacts which may need further assessment are shown and measured individual assessment. Impacts may be either positive or negative.

IMPACT ASSESSMENT SUMMARY

RECOMMENDATION NUMBER

| IMPACTS | 1014 | 1015 | 1016 | 1017 | 1018 | 1019 | 1020 | 1021 | 1022 | 1023 | 1024 | 1025 | 1026 |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1. Noise | | | | | | | | | | | | | |
| 2. Displacement of People | | | | | | | | | | | | | |
| 3. Aesthetic Values | | | / | | X | X | | | | | | | / |
| 4. Community Cohesion | | | | | | | | | | | | | |
| 5. (Desired) Community Growth | | | | | | | | | | | | | |
| 6. Tax Revenues | / | / | | | / | / | | | | | | | |
| 7. Property Values | | X | | | X | X | | | | | | | |
| 8. Public Facilities | X | | | | | X | X | | | | | | |
| 9. Public Services | | | X | | | | | | | | | | |
| 10. (Desired) Regional Growth | | | | | | | | | | | | | |
| 11. Employment/Labor Force | | | | | | | | | | | / | | |
| 12. Business/Industrial Activity | | | X | | X | X | | | | | | | |
| 13. Displacement of Farms | | | | | | | | | | | | | |
| 14. Man-Made Resources | | | X | | X | X | | | | | | | X |
| 15. Natural Resources | / | / | | | X | X | | | | | | | |
| 16. Air Quality | | | X | | | | | | | | X | / | / |
| 17. Water Quality/Quantity | | | | | | | | | | | | | |

KEY

- ☒ Significant Direct Impact
- ☒ No direct Impact, Indirect Impacts May Need Further Assessment
- ☐ Negligible Direct Impact
- ☐ No Direct Impact

NOTE: Significant Direct Impacts and Indirect Impacts which may need further assessment are shown and measured individual assessment. Impacts may be either positive or negative.

IMPACT ASSESSMENT SUMMARY

RECOMMENDATION NUMBER

| IMPACTS | 1027 | 1028 | 1029 | 1030 | 1031 | 1032 | 1033 | 1034 | 1035 | 1036 | 1037 | 1038 | 1039 |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1. Noise | | | | | | | | | | | | | |
| 2. Displacement of People | | | | | | | | | | | | | |
| 3. Aesthetic Values | / | X | | | | | | | | | | | |
| 4. Community Cohesion | | | | | | | | | | | | | |
| 5. (Desired) Community Growth | | | | | | | | | | | | | |
| 6. Tax Revenues | | / | | | | | X | X | | | | | |
| 7. Property Values | | | | | | | X | X | X | | | | |
| 8. Public Facilities | | | | | | | | / | | X | X | | |
| 9. Public Services | | X | | X | | | | / | | | | | |
| 10. (Desired) Regional Growth | | | | X | | | | / | | | | | |
| 11. Employment/Labor Force | | | | X | | | | / | | | | | |
| 12. Business/Industrial Activity | | | | | | | | / | | / | | | |
| 13. Displacement of Farms | | | | | | | | | | | | | |
| 14. Man-Made Resources | | | | | | | | X | | X | X | | |
| 15. Natural Resources | X | X | | | | | | | / | | / | | |
| 16. Air Quality | / | / | | | | | | | | | | | |
| 17. Water Quality/Quantity | / | / | | | | | | | | | | | |

KEY

- ☒ Significant Direct Impact
- ☒ No Direct Impact, Indirect Impacts May Need Further Assessment
- ☐ Negligible Direct Impact
- ☐ No Direct Impact

NOTE: Significant Direct Impacts and Indirect Impacts which may need further assessment are shown and measured individual assessment. Impacts may be either positive or negative.

IMPACT ASSESSMENT SUMMARY

RECOMMENDATION NUMBER

| IMPACTS | 1040 | 1041 | 1042 | 1043 | 1044 | 1045 | 1046 | 1047 | 1048 | 1049 | 1050 | 1051 | 1052 |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1. Noise | | | | | | | | | | | | | |
| 2. Displacement of People | | | | | | | | | | | | | |
| 3. Aesthetic Values | | | | | | | | | | | | | |
| 4. Community Cohesion | | | | | | | | | | | | | |
| 5. (Desired) Community Growth | | | | | | | | | | | | | |
| 6. Tax Revenues | | | | | | | | | | | | | |
| 7. Property Values | | | | | | | | | | | | | |
| 8. Public Facilities | | | | | | | | | | | | | |
| 9. Public Services | | | | | | | | | | | | | |
| 10. (Desired) Regional Growth | | | | | | | | | | | | | |
| 11. Employment/Labor Force | | | | | | | | | | | | | |
| 12. Business/Industrial Activity | | | | | | | | | | | | | |
| 13. Displacement of Farms | | | | | | | | | | | | | |
| 14. Non-Male Resources | | | | | | | | | | | | | |
| 15. Natural Resources | | | | | | | | | | | | | |
| 16. Air Quality | | | | | | | | | | | | | |
| 17. Water Quality/Quantity | | | | | | | | | | | | | |

KEY

- ☒ Significant Direct Impact
- ☒ No Direct Impact, Indirect Impacts May Need Further Assessment
- ☐ Negligible Direct Impact
- ☐ No Direct Impact

NOTE: Significant Direct Impacts and Indirect Impacts which may need further assessment are shown and measured individual assessment. Impacts may be either positive or negative.

IMPACT ASSESSMENT SUMMARY

RECOMMENDATION NUMBER

| IMPACTS | 1053 | 1054 | 1055 | 1056 | 1057 | 1058 | 1059 | 1060 | 1061 | 1062 | 1063 | 1064 |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1. Noise | | | | | | | | | | | | |
| 2. Displacement of People | | | | | | | | | | | | |
| 3. Aesthetic Values | / | / | / | / | / | / | / | / | / | / | | |
| 4. Community Cohesion | | | | | | | | | | | | |
| 5. (Desired) Community Growth | | | | | | | | | | | | |
| 6. Tax Revenues | | | | | | | | | | | | |
| 7. Property Values | | | | | | | | | | | | |
| 8. Public Facilities | / | / | / | / | / | / | / | / | / | / | / | / |
| 9. Public Services | | | | | | | | | | | | |
| 10. (Desired) Regional Growth | | | | | | | | | | | | |
| 11. Employment/Labor Force | | | | | | | | | | | | |
| 12. Business/Industrial Activity | | | | | | | | | | | | |
| 13. Displacement of Farms | | | | | | | | | | | | |
| 14. Man-Made Resources | | | | | | | | | | | | |
| 15. Natural Resources | X | X | X | X | X | X | X | X | X | X | X | X |
| 16. Air Quality | | | | | | | | | | | | |
| 17. Water Quality/Quantity | / | / | / | / | / | / | / | / | / | / | / | / |

KEY

- ☒ Significant Direct Impact
- ☒ No direct Impact, Indirect Impacts May Need Further Assessment
- ☐ Negligible Direct Impact
- ☐ No Direct Impact

NOTE: Significant Direct Impacts and Indirect Impacts which may need further assessment are shown and measured individual assessment. Impacts may be either positive or negative.

IV. B. 2. General Recommendations

The following recommendations represent the general alternatives identified by the Recreation Work Group to meet the problems listed in II. D. of this appendix. The recommendations are in the form in which they were submitted to the Plan Formulation Work Group for their review.

Although these recommendations apply to all pools in the GREAT II area, they were written in response to pool-specific or site-specific concerns raised by the public and others in the problem identification phase. Time and funding was not available that would have allowed the Work Group to do the field work necessary to make valid site-specific recommendations. The few exceptions to that limitation are contained in IV. B. 3. - Pool Specific Recommendations.

The following listing is intended to serve as a subject index for the general recommendations. The actual recommendations and their impact assessments follow the index in numerical order.

| General Topics | Recommendation Subject | Number | Page |
|----------------------------------|--|--------|------|
| Aesthetics | Noise levels of recreational Watercraft | 1012 | |
| | Barge terminal development | 1018 | |
| | Protection of river corridor aesthetic qualities | 1023 | |
| | Litter control on recreation sites | 1028 | |
| Cottage Sites | Use of Corps of Engineers cottage site lease areas for public recreation facilities | 1006 | |
| Future Coordination and Planning | Continuation of GREAT II On-Site Inspection Team and consideration of recreation needs | 1001 | |
| | Establish a River Coordinating Committee to continue GREAT II coordination | 1007 | |
| | Establish recreation management objectives for each pool | 1008 | |
| | Develop a reliable recreation use data base and monitoring system | 1021 | |
| | State Comprehensive Outdoor Recreation Plans | 1033 | |

| General Topics | Recommendation Subject | Number | Page |
|------------------------|---|--------|------|
| Legal Responsibilities | Ownership and management responsibilities along river | 1017 | |
| | Affects of dredge spoil on Land and Water Conservation Fund Sites | 1031 | |
| | Expand Corps of Engineers' recreation management authority | 1037 | |
| Levees | Affects of recreation activities on levees | 1004 | |
| Locking Conflicts | Locking conflicts between recreational and commercial users | 1005 | |
| | Recreational lockage fees | 1029 | |
| Natural Resources | Identification of valuable natural and scenic resources | 1022 | |
| Recreation Facilities | Locate dredge spoil sites to minimize erosion and to re-establish beaches | 1002 | |
| | Apply development guidelines when establishing or nourishing beaches | 1003 | |
| | Provide additional recreation sites with shoreline access | 1010 | |
| | Recreation trail needs | 1011 | |
| | Sedimentation of access areas and harbors | 1013 | |
| | Coordinate development of new access areas | 1019 | |
| | Public information about recreation facilities and opportunities | 1020 | |
| | Supply inventory of recreation facilities | 1032 | |
| | Maintenance of recreation facilities | 1034 | |

| General Topics | Recommendation Subject | Number | Page |
|----------------|--|--------|------|
| | Affects of watercraft wakes on recreation facilities | 1036 | |
| | Public access guidelines | 1050 | |
| Safety | Improved public safety programs | 1030 | |
| Water Quality | Prevent erosion on dredge spoil sites | 1009 | |
| | Disposal of sanitary wastes from recreational watercraft | 1016 | |
| | Improve water quality at recreation sites | 1024 | |
| | Monitor water quality at recreation sites | 1025 | |



RECOMMENDATION: 1001

The need for a coordinated effort to consider all benefits of dredged material placement is essential to minimize the impacts and promote proper utilization of such dredged material. In order to properly consider and enhance the river resources, the Rock Island District, Corps of Engineers must formally establish an "On Site Inspection Team" (OSIT) as an ongoing organization. Such an activity should give recreation as well as the other disciplines a full voice in dredged material placement. Recreation should be considered during the placement of dredged material by using the guidelines attached as part of this recommendation.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1001
Pool Number General
River Mile _____
Date Approved by Work Group June '79

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

The need for a coordinated effort to consider all benefits of dredged material placement.

3. Sub-objective addressed:

Enhance recreational benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

- 1) Johnson Report
- 2) Work Group Discussion

5. Listing of alternatives to problem: (OSIT = On Site Inspection Team)

- a. Formally establish and support an OSIT as an ongoing organization which gives recreation a full voice in dredged material placement.
- b. OSIT should consider recreation as a factor in dredged material placement.
- c. OSIT should consider recreation as a factor in dredged material placement with attached guidelines.
- d. OSIT should not consider recreation as a factor in dredged material placement.
- e. Rely on Corps of Engineers expertise
- f. Rely on fish and wildlife interest.

6. Selected alternative a & c.

7. Rationale for selection of alternative:

Recreation is an important use of the river socially and economically. Over 16 million recreation activity days occurred in 1978 in the GREAT II area. Therefore, OSIT should respond to recreation needs within limited or guidelines.

8. References used to select alternative:

- 1) Preliminary Feasibility Report
- 2) Plan of Action
- 3) Johnson Report "Determining means of Enhancing and Maintaining Recreation Areas with Dredged Material"

9. Rationale for elimination of other alternatives:

Recreation beach enhancement is an important use of dredged material but needs guidelines for proper development.

10. Preliminary impact assessment of selected alternative:

- 1) cost
- 2) institutional relationship
- 3) better coordination
- 4) reduced conflicts

11. Implementing Agency: Corps of Engineers lead, FWS, EPA and States

12. Reason for work group rejection of recommendation: None

RECOMMENDED GUIDELINES

Sufficient water depth for adequate boat access is important for island dredged beaches, but is not necessary for main shore dredged beaches.

Sites with shallow underwater obstructions such as submerged wing dams or stump fields should be avoided.

Sites should be located adjacent to the water as opposed to being located inland. Inland sites are not highly visible from the water and receive little or no recreation use.

To provide recreational diversity, disposal sites can range from small to large.

Some overstory vegetation on a potential site is highly desirable and should be preserved where existing. This vegetation helps slow erosion and helps maintain several desirable recreational characteristics.

An orientation of south to west helps slow revegetation and increases the useful recreational life of a dredged material site.

Existing sites should be capable of accepting new dredged material deposits without exceeding slopes of 15% or covering overstory vegetation by more than ten feet and doesn't change the flood level more than a foot.

RECOMMENDATION # 1001

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|----------------------------|--|---|--|---|
| Cost of Implementation | Dollars | The OSIT only exist as a request of GREAT II. Without GREAT their is no complete coordination. | No Cost and no comprehensive coordination. | The cost is the manpower required to participate on OSIT \$1000/visit/day | \$1000/visit/day |
| Institutional relationship and better coordination | Relationship | The state and federal agencies are working together on a common problem as a result of GREAT II. | The coordination will become fragmented. | The continued coordination of the agencies involved in the management of the river after GREAT. This will include all the resources and alternatives to be evaluated from all disciplines. | Will accommodate the interest of disciplines involved and will develop mechanism for intercooperation and comprehensive planning. |
| Reduced conflicts | + | Under the existing GREAT OSIT conflict, concerns and needs are being evaluated. | Fragmentation of responsibilities, the concerns of the different disciplines may not be considered. | The coordination of the managers of the River Resource obtaining a common objective to the benefits of elements affected. | Minimize damage to fish and wildlife habitat and enhancement of the recreation opportunities. |

RECOMMENDATION # 1001 (Continued)

LOCATION (RIVER MILE) _____

POOL General

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------|----------------------------|---|---|---|---|
| Fish and Wildlife | + | Fish and Wildlife resource are being considered in the decision making process. | Nature resource may not fully be considered in the placement of the dredged material. | This action would insure the nature resources be considered prior to placement of the dredged material. | Insure proper consideration of the natural resources. |
| Recreation | Quality (+) | Recreation resource is being considered in the decision making process. | Recreation may not fully be considered in the placement of the dredged material. | The action would insure Recreation be considered prior to placement of the dredged material. | Increase the quality of recreation activity days for the Mississippi users. |

RECOMMENDATION: 1002

Dredge material should be placed on or near the river or island banks, but not indiscriminately for best recreation utilization as beaches. Consideration must be given to the requirements for the beach and the safety of those persons using the site prior to placement of any material. Proper use and placement of dredge material will reflect a savings in cost and manpower due to the recreation activities benefit derived from such utilization. Guidelines have been recommended to minimize erosion of the sites and for reestablishment of beaches as valuable recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1002
Pool Number General
River Mile _____
Date Approved by Work Group June '79

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Dredged material has not always been placed with recreation use potential in mind.

3. Sub-objective addressed:

Enhance recreational benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

- 1) Work Group Discussion
- 2) Johnson Report

5. Listing of alternatives to problem:

- a. Dredged material sites located adjacent to the water should be located to minimize erosion with attached guidelines.
- b. Dredged material sites should be located anywhere with no guidelines.
- c. Dredged material sites should not be located adjacent to the water.
- d. Beach nourishment should be used to reestablish existing recreation areas during dredging operations, with attached guidelines.
- e. Beach nourishment should be used to reestablish recreation areas, without guidelines.
- f. Beach nourishment should not be used to reestablish recreation areas.

6. Selected alternative a & d.

7. Rationale for selection of alternative:

For best recreation utilization, dredge material must be placed near water but not indiscriminately. Consideration must be given to the requirements of the beach and the safety of those persons using the site prior to placement of any material. Proper use and placement of dredge material will reflect a savings in cost and manpower.

8. References used to select alternatives:

- 1) PFR, P50, problem #1
- 2) Plan of Action, objective #2
- 3) Johnson Report
- 4) Work Group Discussion

9. Rationale for elimination of other alternatives:

Dredged beaches effective for recreation use have identified site characteristics and should be located near water.

10. Preliminary impact assessment of selected alternative:

- 1) enhance recreation use
- 2) potential for fish and wildlife habitat destruction
- 3) minimize impacts of erosion
- 4) leisure opportunities
- 5) dredging cost
- 6) existing dredging equipment
- 7) efficient use of resources

11. Implementing Agency: Corps of Engineers as lead, other agencies identified through OSIT

12. Reason for work group rejection of recommendation: None

RECOMMENDED GUIDELINES

In chronic dredging areas, beach nourishment is an excellent way of re-establishing beach areas and retarding encroachment of vegetation.

Beach nourishment provides an opportunity to establish topographic variety on a site and promote desirable revegetation patterns.

Existing sites should be developed to their maximum desirable dredged material carrying capacity before establishing new sites in the same area. Large sites usually provide greater recreational opportunity than small sites and attract greater recreational use. The carrying capacity is reached when the site cannot be expanded without great environmental degradation, sand slopes exceed 15%, sand mounds will exceed 15 to 20 feet in height, and overstory vegetation has received up to 10 feet of cover.

Sites should ideally be located on the accretion side of the channel to minimize current erosion.

Sites should ideally be located on the downstream end of small islands. This minimizes the effect of wind erosion.

Sites should ideally be located at least 400 feet from the channel centerline. The farther the site is located away from the main channel the less the effect of wave action erosion.

Sites should be located away from river locations which have dangerous channel restrictions or limitations for barge traffic movements.

RECOMMENDATION # 1002

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General _____

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|----------------------------|---|---|--|---|
| Enhance recreation use and leisure opportunities | Quality activity days | 314,000 activity days per year | 350,000 activity days per year | 350,000 activities per year | The quality of the recreation experience will increase and type of use will vary. |
| Potential for fish and wildlife habitat | + | Dredge disposal site will be used without guidelines, possibility of destroying more habitat and/or nonuseable by any species. | Same as present | The use of guidelines will reduce erosion and protect existing plant species bordering the sites. Beach nourishment will restrict the development of new habitats. | The use of the guidelines would benefit the habitat by reducing the erosion potential. Beach nourishment may destroy potential habitat sites. |
| Minimize impacts of erosion | + | Dredge disposal site developed without guideline have the potential to enter into the river system immediately. Erosion problems may not be taken into consideration for placement. | Same as present | Will result in clearer water and in time have less dredge material downstream. | Clearer water and less sedimentation. |

RECOMMENDATION # 1002 (Continued)

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General _____

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------------------|----------------------------|--|---|---|---|
| Dredging Cost | Dollars | No additional cost | Same as present | 4 hours of dredging (\$2300/site) but the cost maybe affected by placement charged for another disposal site. Therefore, there may not be a cost. | \$0-2300 cost or may result in a reduction in cost in some locations. |
| Existing dredging equipment | Dollars | Dredging equipment has not always been used to enhance the recreational aspects of the resource. | Present condition will continue. | Existing equipment can be utilized to meet these guidelines. | Utilization of existing equipment. Saving of funds in order that they may be used on another project. |
| Efficient use of the resources | Visitation | Beach enhancement may not be considered in dredge material placement | Same as present | Increase in number of activity days and the quality of the experience. | Increase in number of activity days and the quality of the experience. |

RECOMMENDATION: 1003

Potential dredge sites should be evaluated for recreation benefits by the OSIT. If the site has recreation potential, it should be developed using the recommended guidelines during the dredging operation, so as to maximize stability, recreational appeal and increase longevity of the site.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1003
Pool Number General
River Mile _____
Date Approved by Work Group June '79

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Dredged disposal practices do not consider natural features for recreation enhancement

3. Sub-objective addressed:

Enhance recreational benefits of the river corridor from channel maintenance activities

4. Tasks accomplished to address problem:

- 1) Johnson Report
- 2) Work Group Discussion

5. Listing of alternatives to problem:

- a. In accordance with recreation needs, dredge site characteristics of a potential dredge placement site should be assessed and if appropriate developed for recreation benefits with attached guidelines.
- b. Dredge sites characteristics of a potential dredge site should be assessed for recreation benefits.
- c. No action.

6. Selected alternative a.

7. Rationale for selection of alternative:

The recreation experience may be enhanced through natural amenities. Natural physical characteristics that enhance the recreational experience should be maintained. Negative physical characteristics should be minimized or eliminated during the dredged material disposal operation with guidelines. Dredged material sites should be shaped with guidelines during the dredging operation so as to maximize stability, recreational appeal and increase longevity of the site.

8. References used to select alternatives:

- 1) PFR, p50, problem #1
- 2) Plan of Action, objective #2
- 3) Johnson Report

9. Rationale for elimination of other alternatives:

The existing resource base should be assessed to limit or minimize problem areas for quality experience enhancement. The use of guidelines will help increase appeal and stability, without shaping the recreation experience is lowered in quality and longevity is decreased.

10. Preliminary impact assessment of selected alternative:

- 1) enhance recreation and leisure time opportunities
- 2) fish and wildlife
- 3) safety
- 4) water quality
- 5) existing equipment utilized

11. Implementing Agency: Corps of Engineers and OSIT

12. Reason for work group rejection of recommendation: None

RECOMMENDED GUIDELINES

Maintain sand areas and good sand beaches. These large sand areas should be reduced to a more human scale by taking advantage of revegetation patterns that occur in the swales between sand mounds. These revegetation patterns should not break up the beach frontal area. The beach front should be one continuous sand strip joining the smaller sand spaces.

Beach slopes should be ten percent or less for at least 50 feet inland from the mean waterline. Slopes steeper than ten percent make access by users difficult. Steeper slopes make a site more susceptible to the effects of water and wind erosion.

Overstory vegetation over a portion of the site or surrounding the site is highly desirable. Depositing less than one foot of sand under a portion of this overstory vegetation eliminates woods nettles (*Laportia canadensis*) in that area.

During dredging maintain good access to any overstory woods surrounding the sites.

Keep sandbar willow (*Salix interior*) growths on the site to a minimum. If these growths are located between the site and the overstory woods, portions of them should be removed during preparation for dredged material disposal. If these willows are not removed they will prevent access to the overstory woods.

RECOMMENDATION # 1003

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---|----------------------------|---|---|--|---|
| Enhance recreation and leisure time opportunities | Quality | Same dredge site are unsafe or not useable by recreationists. | Same as present, may increase in number of non-useable sites. | Increase the recreational opportunity along the river and enhance the experience. | Increase the recreation opportunities along the river and enhance the recreation experience. Increase the number of activity days. |
| Fish and wildlife habitat | Acres | Dredge disposal sites will be used without guidelines, possibility of destroying more habitat and/or nonuseable by any species. | Same as present | The use of guidelines will reduce erosion and protect existing plant species bordering the site. | The use of guidelines would benefit the habitat by the sloping restrictions on sand depth and location of beach. Recreation will have unavoidable biological impacts. |
| Safety | + | Some recreation beaches are no longer being used because of erosion and condition of site. | Same as present | Proper placement of dredge material and shaping will prolong the user satisfaction | Saving of lives/injuries and damage to personal property |

RECOMMENDATION # 1003 (Continued)

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL.5-COL.4) |
|-----------------------------|------------------------------------|--|---|---|-------------------------------------|
| Existing equipment utilized | Dollars | Disposal costs are minimized under existing practice. | Same as present | Same as present | Same as present |
| Water quality | Suspended sediment concentration + | In some cases improper dredge disposal have eliminated potential recreation use areas. | Same as present | Decrease in the suspended solids, turbidity and reduction of erosion of dredge piles. | Decrease in sedimentation |

RECOMMENDATION: 1004

Within the GREAT II Study area, the levees along the Mississippi are constructed of sandy material and restrict access to the river by the recreationists. As a result, these same levees are being affected by wave action from wind, wakes from recreational craft, and from improper access over levees. Solutions to the problem as identified can only be evaluated on a site by site basis. No one alternative selected would meet the need to enhance recreation opportunities of the river corridor, protect the levees from weakening and provide safe access to recreation areas. Each problem area must be carefully reviewed and the proper alternative or alternatives must be selected to act as a design criteria for development of recreation facilities. The following alternatives are potential solutions to the problem being addressed:

- in environmentally acceptable areas provide a land buffer between the river and the levee. The buffer may be created by establishing a land mass on the riverside side of the levee or by moving the levee landward.
- improve road access over levees and provide adequate parking on either side of levee.
- install planting buffers for wildlife and fencing to direct traffic away from levees toes and retard wave action upon levees.
- increase funding for recreation access improvements over levees (i.e. LAWCON, Great River Road and/or State grant programs).

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1004
Pool Number General
River Mile _____
Date Approved by Work Group 10/4/79

1. General problem addressed:

Levees along channel are seriously affected by wakes from recreational craft and from recreation access over levees (#22 & 79).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Maintain the integrity of the recreation viewshed

4. Tasks accomplished to address problem:

- 1) Presentation from Levee District
- 2) Meeting with Levee District
- 3) Work Group Discussion

5. Listing of alternatives to problem:

- a. When necessary, provide land buffer on riverside of levee
- b. Move the levee landward by 200 ft. to create the buffer zone for levee protection
- c. Riprap levees toes
- d. Lower pool levels
- e. Improve road access over levees and provide adequate parking on either side of levee
- f. Install planting buffers for wildlife and fencing to direct traffic away from levees and retard wave action upon levees
- g. Increase funding for recreation access improvements over levees (i.e., LAWCON, Great River Road and/or State grant programs)
- h. Do nothing.

6. Selected alternative a, e, f, & g*.

* depending on site specific conditions

7. Rationale for selection of alternative:

Solutions to problem must be selected on a site by site base. No one alternative selected would meet the need to enhance recreation opportunities of the river corridor, protect the levees from weakening and provide safe access to recreation areas. Each problem area must be carefully reviewed and the proper alternative or alternatives must be selected to act as a design criteria for development of new recreation facilities. Local agencies must be willing to apply for all available funds.

8. References used to select alternative:

- 1) Levee District Meeting
- 2) Presentation by Levee District Representative
- 3) Work Group Discussion

9. Rationale for elimination of other alternatives:

The alternatives do not address problems or due to physical and economical considerations are not feasible.

10. Preliminary impact assessment of selected alternative:

- 1) affect land use both recreation and agriculture potential
- 2) erosion control (water quality)
- 3) safety
- 4) increase facility life (man-made reservoir)
- 5) cost of implementation

11. Implementing Agency: Corps of Engineer, levee districts and other agencies as appropriate

12. Reason for work group rejection of recommendation: None.

RECOMMENDATION # 1004

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---|----------------------------|--|---|--|--|
| Affect land use both recreation and agriculture potential | Acres | Damage to the existing levee do to improper protection and design. | Continue as present | Adequate facilities could be developed. Loss in both agriculture and flood plain due to levee realignment. | Effect 3200 acres of land. |
| Erosion Control (Water Quality) | + | Erosion is occurring as a result of improper protection and design. | Continue as present | Erosion control will be implemented in the design development. | Protection of the soil, habitat and levee. |
| Safety | + | Dangerous condition exist to the recreationist user because of improper use and erosion. | Same as present | The safety of the user. | Protection of lives and property. |
| Increase facility life (man made resources) | Dollars | Without proper protection levees will continue to deteriorate. (\$500/mil maint.) | Continue deterioration of the levees (\$103,000/yr) | With proper protection and design levee life can be longer and provide good access to the river resource. | Saving of \$700,400 |

RECOMMENDATION # 1004 (Continued)

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL.5-COL.4) |
|--------------------|----------------------------|---|---|---|--|
| Natural Resources | Acres | Destruction on the habitat due to erosion and uncontrolled uses of the recreationist and wave action. | Continues as present | With the installation of a buffer, fencing and plants, wildlife habitat will be protected and/or enhanced. | Development of 2300 acres of wildlife habitat. |
| Implementation | Dollars | Levees are being effected by improving useage and wave action. Normal maintenance is being performed. | Same as present | Implementing a program that would protect the levee against use and provide needed access. (206 miles of levees X 200 feet - existing buffer= 2000 acres X \$2000=\$4/M plus road repair & etc.) | \$6,400,000 cost for roads, plants, fencing and levee realignment. |

RECOMMENDATION: 1005

Locking conflicts at navigation locks have resulted between the recreation and commercial interests. The economic/time loss and safety of the users are concerns for both the recreation and commercial users. The Corps of Engineers should consider some short term, as well as long term solutions to this problem. Short term alternatives are:

- develop time schedule.
- provide information signs for locking recreation crafts.
- establish holding areas.

Long term alternative:

- Develop auxiliary locks for recreational craft use. The construction of subject auxiliary locks should be during the replacement or rehabilitating phase of the existing locks. Such development must be coordinated with the resource agencies to minimize damage to the natural resources.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1005
Pool Number General
River Mile _____
Date Approved by Work Group October 4, 1979

1. General problem addressed:

Locking conflict between recreation use and commercial use at locks.

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of river corridor

4. Tasks accomplished to address problem:

Work Group Discussion

5 Listing of alternatives to problem:

- a. Develop auxiliary lock for recreational craft use. Should be done during replacement or reconstruction of existing locks and coordinate with the resource agencies to minimize damage to fish and wildlife resources.
- b. No action
- c. Develop time schedule, provide information signs for locking recreation craft
- d. Eliminate commercial lockages on Sundays and Holidays
- e. Establish holding areas
- f. Build access ramps above and below each dam
- g. Information signs for locking recreation craft
- h. Don't allow recreation craft to lock
- i. Amend Corps regulation to give recreation boats priority during peak use periods (time of day and day of week)
- j. Alternate recreation and commercial traffic on every lockage during peak recreational use periods.

6. Selected alternative a, c & e.

- a - is the long-term alternative
- c - is the short-term alternative

7. Rationale for selection of alternative:

The major consideration is to reduce the conflicts between recreation and commercial crafts. Both the economic/time lost and safety of the recreation users is a consideration to both the recreation and commercial interest. Therefore, the short-term solution is the least costly method, most effective and is favored by the public to minimize conflicts. The long-term alternative best meets the needs to minimize lockings conflicts.

8. References used to select alternative:

- 1) Work Group Discussion
- 2) MRI Small Craft Locks Study, p. 71 (volume 1) shows there is some uneven concern and regression analysis did reveal that level of commercial traffic at locks does impact recreation traffic.
- 3) Recreation Craft Locks Study, St. Paul District
- 4) Public Recommendation
- 5) Fish and Wildlife Work Group, GREAT II

9. Rationale for elimination of other alternatives:

Other methods increase cost, increase waiting times, not practical for all craft, and not easy to implement.

10. Preliminary impact assessment of selected alternative:

- 1) cost of setting up schedule and waiting times for community traffic
- 2) cost savings - in schedule time
- 3) increase leisure opportunities
- 4) better transportation relation
- 5) cost of construction of recreation locks

11. Implementing Agency: COE

12. Reason for work group rejection of recommendation: None

RECOMMENDATION # 1005

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASUREMENT OF IMPACTS (COL. 5-COL. 4) |
|--------------------------------|----------------------------|--|---|--|---|
| Cost saving schedule time | \$ | Delay time in dollars on a per lock basis Com. \$26,000 Rec. 26,000 Loss \$52,000 | As conflict and delays increase the cost will increase \$52,000 | Reduce waiting time to normal operation time, saving of \$52,000 | Saving of delay time - Total \$52,000 |
| Increase leisure opportunities | + | Present system is a first come-first served basis. i.e. rec. have to wait longer to lock. | Reduce leisure time continued. | Reduce waiting time for both com. and rec. interest. | More time can be spent recreating to and not waiting to be locked. |
| Better transportation relation | + | Present system is a first come-first served basis. As a result causing undue conflicts between rec. & com. crafts. | Will continue to get worse as traffic increases. | With established times for lockages or provide lockages as needed with locks for both com. & rec. users. | Less conflicts between rec. and com. users. The auxiliary lock sized to handle limited numbers of barges would provide com. transportation benefits in the event of lock failure. |

RECOMMENDATION # 1005 (Continued)

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|------------------------------------|----------------------------|---|---|---|---|
| Cost of construction of facilities | Dollars | None | None | Short term 10,000/yr longterm - \$4-14 mill/lock pending on type of lock used at specific site. | Short term \$10,000/yr. Long term - \$4 - 14 million/lock pending on type of lock used at site. |
| Fish & Wildlife Habitat | Acres | No construction planned | None | Constructing of auxiliary locks may impact benthos and fish habitat. Potential loss of wildlife habitat through expansion of facilities | Unknown loss of habitat |

RECOMMENDATION: 1006

Present and future needs for expansion of some existing and creation of some new public access and use sites are precluded by existence of cottages on federal lease sites prior to November 30, 1988. Where public recreation needs are identified by various public agencies, for a given parcel of public land with a private cottage lease on the land, the private leases should be terminated before 1988.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1006
Pool Number General
River Mile _____
Date Approved by Work Group October 5, 1979

1. General problem addressed:

Present and future needs for expansion of some existing and creation of some new public access and use sites are precluded by the existence of cottages on federal lease sites. (#75)

2. Sub-problem addressed:

Present and future needs for expansion of some existing and creation of some new public access and use sites are precluded by the existence of cottages on federal lease sites prior to November 30, 1988.

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussion

5. Listing of alternatives to problem:

- a. Revert cottage site lease properties to recreation/open space after termination
- b. Terminate leases where there is a need for expansion of existing or creation of new public facilities and use areas
- c. Maintain leased sites in present form
- d. Purchase and develop additional land for public use.

6. Selected alternative b.

7. Rationale for selection of alternative:

Alternative is most feasible, appropriate and economical to meet the needs for public recreation as identified by various public agencies. Under the Public Identification Guidelines of the UMRBC current COE policies concerning cottage lease termination were not addressed.

8. References used to select alternatives:

- 1) Work Group Discussions
- 2) Facility Inventory
- 3) Recreation Needs Analysis Report
- 4) Master Plans
- 5) SCORP's
- 6) Recreational Use Survey

9. Rationale for elimination of other alternatives:

Less cost effective and/or does not address need for public recreation enhancement.

10. Preliminary impact assessment of selected alternative:

- 1) leisure opportunities (39)
- 2) most effective use of resource
- 3) increased opportunity for public recreation facilities
- 4) aesthetics values enhanced
- 5) cost of lease terminations
- 6) cost for recreation sites
- 7) lease income lost

11. Implementing Agency: COE as requested by public agencies

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1006

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---|----------------------------|---|---|---|--|
| a. Leisure opportunities b. Most effective use of resource c. Increased opportunity for public rec. fac. d. Aesthetics values enhanced | | As public facilities require development, existing leases will require termination to permit development/expansion. This will provide a greater opportunity for the general public to enjoy, use and value this resource. | Under current direction from Corps of Engineers existing leases will be cancelled prior to year 2025 with or without GREAT. | | |
| Cost of lease termination | Dollars | (\$25 and up to terminate lease) | Under current direction from Corps of Engineers existing leases will be cancelled prior to year 2025 with or without GREAT. | | |
| Cost for Recreation | Dollars | \$2-3000/unit | \$2-3000/unit | \$2-3000/unit | 0 |
| Lease income cost | Dollars | \$25-100 loss in lease rental per site. | Under current direction from Corps of Engineers existing leases will be cancelled prior to year 2025 with or without GREAT. | | |
| Fish & Wildlife Habitat | Habitat quality | Public access limited to existing developed sites | Sites available for development after 1988 for both recreation and increase habitat development. | Access maybe improved before 1988 with resulting increase of recreation pressure. | Unmeasurable increase in rec. encroachment and resulting degradation in habitat quality. |

RECOMMENDATION: 1007

The growing concern for the natural resources and the developing activities along the Mississippi River necessitates provision for continuity of the GREAT effort. Therefore, the creation of a River Coordinating Committee by the COE in conjunction with States and other Federal agencies and public interest would coordinate the development and use of the total river resource and not just portions. This committee would be comprised of many disciplines concerned with the river and its resource. As discussed in Recommendation 1001, the OSIT would be selected from members of the River Coordinating Committee.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1007
Pool Number General
River Mile _____
Date Approved by Work Group October 5, 1979

1. General problem addressed:

Insure that the coordinating activities of the GREAT effort are continued after the completion of the GREAT studies.

2. Sub-problem addressed: None

3. Sub-objective addressed:

Eliminate adverse effects to recreation resulting from channel operation and maintenance activities. Enhance recreational benefits of the river corridor from channel maintenance activities. Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreational opportunities.

4. Tasks accomplished to address problem:

Work Group Discussion

5. Listing of alternatives to problem:

- a. No action
- b. Formulate River Coordinating Committee
- c. Utilize existing coordinating efforts outside of GREAT (i.e., UMRCC and other interagency coordination)
- d. Recreational Coordination Committee.

6. Selected alternative b.

7. Rationale for selection of alternative:

Provide mechanism for continuation of GREAT and establish implementing agency to coordinate agencies, public concerns and activities relative to river resources, including recreational resources, opportunities and uses. This committee could coordinate development and use of the total resources and not just portions.

8. References used to select alternative:

Work Group Discussion

9. Rationale for elimination of other alternatives:

Does not fully meet the needs of the Recreation Work Group interests for public needs.

10. Preliminary impact assessment of selected alternative:

- 1) cost of implementation
- 2) institutional impacts
- 3) number of agencies
- 4) conflicts with existing agencies or regulations
- 5) reduced conflicts on management
- 6) reduced coordination costs

11. Implementing Agency: Corps of Engineer and other Federal and State agencies

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1007

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General _____

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|----------------------------|--|--|--|---|
| Cost of Implementation | Dollars | If the recommendation is not implemented there is no cost. | None | 300/man day/yr plus travel | Total cost \$50,000 |
| Institutional Impacts Reduced Coordination Cost | Dollars | Same coordination between agencies as required by law, regulation and conflicts (\$150,000) | Coordination will only be as necessary with little prior or long range planning. | Increase in effort will reduce cost by \$100,000. | Decrease in overall cost to \$50,000 and improves communication and coordination. |
| Number of Agencies | Numbers | Little coordinated planning each agency at independent or coordinate among just a few. Lack any direction or encompassing outlook. | Continue as present | Coordinating the activities and concerns of more than 25 agencies (Federal, State, local) on the Resource. | The working together of more than 25 agencies toward one goal. |
| Conflicts with existing agencies regulation and management | + | Lack of continuous coordination has caused conflicts and misunderstanding between agencies. | Continue as present | Coordination will reduce conflicts, improve the development and protection of the resource. This action will get all interest involved and informed. | Reduces the number of conflicts between agencies. Create a working relationship with all interest. Should be no change in regulations required. |

RECOMMENDATION: 1008

On several occasions, the public has expressed an interest for additional access and recreational sites on the river. The resource managers of the different resource agencies lack the information on carrying capacity for the river to make adequate judgments. The River Coordinating Committee with the coordination of the associated agencies must establish management objectives for each pool and/or pool segment of the river to determine proper recreation use levels, activities and facilities.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1008
Pool Number General
River Mile _____
Date Approved by Work Group October 5, 1979

1. General problem addressed:

- a. The future "need" for developed and undeveloped recreation areas is unknown (#18).
- b. The recreational carrying capacity of the river is unknown.
- c. Need additional access and recreation sites on River (#31, 32, 33, 36, 37, 40, 42, 44, 45, 46, 51, 52, 53, 56, 57, 58, 64, 65, 68, 69, 73, 74, and 78).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreational opportunities.
Maintain the integrity of the recreation viewshed.

4. Tasks accomplished to address problem:

Work Group Discussion

5. Listing of alternatives to problem:

- a. Establish recreational carrying capacity guidelines (will require study).
- b. Do nothing.
- c. Establish management objectives for each Pool segment of the river (will require further study) to determine proper recreation use levels, activities and facilities.

6. Selected alternative c.

7. Rationale for selection of alternative:

Will ensure proper levels of facilities to protect the river resource values and enhance the recreation experience. The need for the establishment of approved objections is to enable agencies and the private sector to determine the future needs and limitation of the river to avoid conflicts among recreationist and between recreational and industrial and fish and wildlife preservation activities.

8. References used to select alternative:

- 1) Work Group Discussion
- 2) UMRBC - Environmental Studies Sub-Work Teams, Mississippi Master Plan Study
- 3) COE Pool Master Plan

9. Rationale for elimination of other alternatives:

Would have adverse effect on recreational and other river resource values. Without management objectives improper development or adverse impacts to the resource may occur.

10. Preliminary impact assessment of selected alternative:

- 1) recreation opportunity
- 2) most efficient use of a resource
- 3) protection of natural resources
- 4) aesthetic concerns and values
- 5) economic effects (positive and negative)
- 6) better institutional relationship
- 7) reduced conflicts
- 8) reduce waste of recreation funds due to wrong development

11. Implementing Agency: UMRBC Master Plan Study/River Coordinating Committee

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1008

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General _____

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------|----------------------------|--|---|--|---------------------------------------|
| Further Study | Dollars | The management objectives program study has been identified as a task for the master Plan Study being conducted by the Upper Mississippi River Basin Commission on the Upper Mississippi River System. | | | |

RECOMMENDATION: 1009

Some dredged material beaches experience moderate to severe erosion problems. These sites are badly affected by river current and/or wave action. Existing dredged material sites that are not stabilized provide limited recreational opportunities. It is recommended that those dredged material sites that are badly eroded should be stabilized with guidelines attached to this recommendation and not maintained in the future for recreation use.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1009
Pool Number General
River Mi'
Date Approved by Work Group June '79

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Some dredged material beaches experience moderate to severe erosion problems.

3. Sub-objective addressed:

Enhance recreational benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Work Group Discussion

5. Listing of alternatives to problem:

- a. Existing dredged disposal sites that are badly effected by current and wave action should be stabilized with attached guidelines but not maintained in the future for recreation.
- b. Existing dredged disposal sites should be stabilized without guidelines.
- c. Existing dredging disposal sites should not be stabilized.
- d. No action.

6. Selected alternative a.

7. Rationale for selection of alternative:

Stabilization increases longevity of existing site. Development of properly placed dredged sites will enhance recreation opportunities for the public. The stabilization of dredged disposal sites will assist in the reduction of dredged material back into the river system.

8. References used to select alternative:

- 1) PFR, p50, problem #1
- 2) POA #2
- 3) Johnson Report
- 4) Fish and Wildlife Work Group, GREAT II

9. Rationale for elimination of other alternatives:

Erosion from sites may reduce the need for future dredging and increase longevity of resource for recreation use, therefore it should be stabilized.

10. Preliminary impact assessment of selected alternative:

- 1) enhance recreation/leisure time opportunities
- 2) reduce erosion
- 3) fish and wildlife
- 4) aesthetics
- 5) O & M
- 6) site extension

11. Implementing Agency: Corps, with identification of OSIT

12. Reason for work group rejection of recommendation: None

RECOMMENDED GUIDELINES

Sites that have large dredged material piles with steep slopes could be stabilized with riprap. The riprap should only be placed on the vulnerable areas of the site. Too much riprap on any one area would appear dangerous and uninviting to the casual observer.

To soften the harshness of riprap, soil and seeds should be put among the rocks during installation to promote vegetative growth. The combination of riprap and vegetative cover would help reduce the erosion problems.

Planting vegetation directly on dredged material should not be attempted without proper planning. U.S. Fish and Wildlife Service has had success in planting sand areas. Allowing natural plant succession to take place will create much hardier plants.

Reevaluate site for potential new recreation areas.

RECOMMENDATION # 1009

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|----------------------------|--|---|---|---|
| Enhance recreation/leisure time opportunities and aesthetics | Activity days | Some dredge sites are unsafe or not useable by recreationists. | Same as present May increase the number of nonuseable sites. | Increase the recreational opportunity along the river and enhance the experience. | Increase the recreational opportunity along the river and enhance the recreational experience. Increase the quality and may increase the number |
| Reduce erosion | Suspended sediment + | In some cases improve and dredge disposal have increased the long term amount of suspended sediment concentration. | Same as present | Decrease in the amount of suspended solids, and reduction of erosion of dredge piles. | Decrease in sedimentation into the main system. |
| Fish and Wildlife | + | Dredged disposal sites will be used without guidelines or recommendations, may cause more destruction of habitat because of erosion and sedimentation. | Same as present | The use of guidelines will reduce erosion and protect existing plant species bordering the site. (Small extension may cause some loss in plant life.) | Will benefit the habitat. |

RECOMMENDATION # 1009 (Continued)

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------|----------------------------|---|---|---|--|
| O & M | Dollars | No additional cost | Same as present | Dredging and protection of site (4600). However, this cost may be offset by the placement of material at another location. | \$0 to 4600/site. Cost could be offset by transportation cost to a different site. |
| Site Extension | Acres | Disposal sites will only expand because of existing amount of material being placed on site. | Same as present | The use of guidelines may limit the amount of material placed on a site or cause the extension on the site to accommodate the material. | In order to enhance recreation, sites may be required to be extended. |
| Water quality | + | Consideration is not given at all times to stabilizing the dredge material. This has caused more material returning to the system. Increase in suspended solids and turbidity | Same as present | Control the amount of material returning to the river system. | Improvement of water quality. |

RECOMMENDATION: 1010

Public land access to the river is unevenly distributed along the river corridor. Those recreational users without boats are prohibited or restricted from using some areas. Therefore, recreational sites accessible by automobile should be developed and managed whenever possible to provide recreation opportunities to users without boats. Where potential or existing recreation sites occur, efforts should be made to obtain such access. (May include those areas presently not in public use, see recommendation #1006)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1010
Pool Number General
River Mile _____
Date Approved by Work Group November 1, 1979

1. General problem addressed:

Land access sites are few and unevenly distributed along river corridor.
Lack of quality recreation sites accessible by recreational users without boats.

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

- 1) Johnson Report
- 2) Work Group Discussion

5. Listing of alternatives to problem:

- a. Recreational sites accessible by automobile should be developed and managed whenever possible to provide recreational opportunities to users without boats (may include those areas presently not in public use, see recommendation #1006).
- b. Where potential or existing mainland recreation sites occur, but no legal and/or physical public access exists, efforts should be made to obtain such access.
- c. No action.

6. Selected alternative a & b.

7. Rationale for selection of alternative:

The alternatives selected would provide adequate opportunities for a variety of recreational users. Proper access to the land accessible areas would provide adequate maintenance, user opportunities and site protection.

8. References used to select alternatives:

- 1) GREAT II Recreation Supply Inventory
- 2) Work Group Discussion
- 3) Johnson Report on "Determining Means of Enhancing and Maintaining Recreation Areas with Dredged Material"

9. Rationale for elimination of other alternatives:

The alternative does not support the objectives of this work group.

10. Preliminary impact assessment of selected alternative:

- 1) increase recreation opportunities
- 2) cost of development
- 3) cost of maintenance
- 4) land use
- 5) enhance recreation use

11. Implementing Agency: Corps of Engineer and State and local agencies

12. Reason for work group rejection of recommendation:

RECOMMENDATION

RECOMMENDATION # 1010

IMPACT

LOCATION (RIVER MILE)

ASSESSMENT FORM

POOL General

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL.5-COL.4) |
|--|----------------------------|---|---|---|--|
| Increase recreation opportunities and enhance recreation use | Activity Days and quality | Recreation will be limited to the existing few. | Continue as present | Increase in recreation opportunities and an improved quality experience for some users. | Addition recreation opportunities will be made available to all users. |
| Cost of Development | Dollars | No cost for new development | Minimal cost | \$50,000 to 175,000/site for development | \$50,000 to 175,000/site for development. (Depends on site specifications) |
| Cost of maintenance | Dollars | No cost for new facilities | Minimal cost depends on developments | \$30,000/site | \$30,000/site (Depends on site specifications) |
| Land use | Acres | No Change | No change | Land would be converted to recreational related activities | Change in land use. The amount of change will depend on location. |

RECOMMENDATION # 1010 (Continued)

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------|----------------------------|--|---|--|--|
| Fish and Wildlife | Acres (+,-) | No effect on existing fish and wildlife activities other than normal problems associated with use. | Same as present | May reduce habitat by changing the vegetation and cover on site. But may improve the habitat by enhancing food systems or creating open space. | If properly coordinated the development of the facilities could enhance the resource problem. Unmeasurable increase in rec. encroachment and may result in degradation of habitat quality |

RECOMMENDATION: 1011

The States have recognized the need of preserving abandoned rights-of-way for wildlife habitat, natural areas preservation and recreational trail opportunities. These rights-of-way provide essential habitat that is lacking in certain locations. The railroad rights-of-way are of extreme importance in terms of their values in helping the public to understand and appreciate our natural heritage. Therefore, abandoned railroad rights-of-way which meet the agencies criteria along the river should be maintained in public ownership. Trails should be developed along these rights-of-way and coordinated with Great River Road activities and State trail programs. These potential trails would enhance opportunities for recreation use and appreciation of our natural heritage by the users.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1011
Pool Number General
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

The future "need" for developed and undeveloped recreation areas is unknown (#18).

2. Sub-problem addressed:

Recreational trail needs

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Maintain those abandoned railroad rights-of-ways along the river in public ownership for recreation use, wildlife habitats and natural areas preservation which meet the agencies criteria for development.
- b. Allow abandoned railroad rights of way to revert to adjacent land owners.
- c. Acquire and develop new trails and coordinate with the Great River Road activities and State trail programs.
- d. Do not develop recreation trails.

6. Selected alternative a & c.

7. Rationale for selection of alternative:

The States have recognized the need of preserving abandoned rights of way for wildlife habitat, natural areas preservation and recreational trail development. These rights of way provide essential habitat that is lacking in certain locations. The railroad rights of way are of extreme importance in terms of their values in helping to understand and appreciate our natural heritage.

Trail development will enhance opportunities for recreation use of the river corridor as well as providing recreation corridors which link points of interests and/or facilities.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) Facility Inventories

9. Rationale for elimination of other alternatives:

Alternatives b & d will not enhance recreation use of the river corridor and therefore not meet the recreation work group objectives.

10. Preliminary impact assessment of selected alternative:

- 1) cost to acquire, develop and maintain
- 2) increase leisure opportunities
- 3) impact on the resource from recreation use
- 4) impact on natural resources
- 5) impact on fish and wildlife habitat
- 6) land use change

11. Implementing Agency: State agencies

12. Reason for work group rejection of recommendation:

RECOMMENDATION

RECOMMENDATION # 1011

LOCATION (RIVER MILE)

POOL General ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---|----------------------------|--|---|---|--|
| 1. Cost to acquire, develop and maintain | \$ | | Limited number of areas protected in developed. (\$6 million) | \$13 million/total | \$7 million/total |
| 2. Leisure opportunities | + | Limited trail opportunities, vanishing wildlife habitat and nature areas. | Same as #3 | Abandoned Railroad right-of-way can provide the opportunity for several types of recreational activities. | Increase leisure opportunities. |
| 3. Impact on the resources (natural, fish and wildlife) from recreation use | + | Abandoned Railroad ROW provides wildlife habitat until adjacent landowners clear for other uses. | Same as #3 | With abandoned ROW under public ownership protection, corridors may be protected from destruction. | Preservation of wildlife habitat and natural areas preservation. |
| 4. Land use change | + | Clearing of ROW and loss of a corridor. | Same as #3 | Preservation of the natural landscape with minimum development for public use such as trails. | Landscape preservation. |

RECOMMENDATION: 1012

Recreation experience may have adverse impacts on the river environment because some water craft are excessively noisy. Noise abatement would enhance recreation use of the river and corridor without reducing recreational opportunities. Noise reduction would reduce the conflicts between different types of recreation users. The appropriate state agencies should encourage manufacturers to reduce noise levels on new engines. The states should establish decibel limits and enforcement of these new limits.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1012
Pool Number General
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

Recreation use/areas may have adverse impacts on the environment (#6)

2. Sub problem-addressed:

Some crafts are excessively noisy

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Do nothing
- b. Encourage manufacturers to reduce noise levels on new engines
- c. Establishment of decibel limits and enforcement of these limits.

6. Selected alternative b & c.

7. Rationale for selection of alternative:

Noise abatement would enhance recreation use of the river corridor without reducing recreation opportunities. It would also reduce conflicts between different types of recreation users.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

Would not meet work group objectives to enhance recreation use of the river corridor

10. Preliminary impact assessment of selected alternative:

- 1) noise pollution reduction
- 2) enhance recreation opportunities
- 3) cost of compliance and enforcement

11. Implementing Agency: Appropriate State agencies and Federal EPA

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1012

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. # 5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---------------------------------------|-------------------------------------|--|---|---|---|
| Noise pollution reduction | + | some recreation craft are excessively noisy | will continue as present rate | reduce the noise levels of the recreation craft on the Mississippi River | reduction of noise |
| Enhance recreation opportunities | Quality | noise pollution has ad- verse impacts on recreation experience of some users | will continue | the quality of the recreation experience will increase as the noise levels decrease | improved recrea- tion experience |
| Cost of compliance and enforcement | dollars | no cost | no cost | \$20,000 for establish- ment of decibel limit and \$136,000 for enforcement. The enforcement would be- come the total State's enforcements responsi- bilities. | \$156,000 total cost for estab- lishment and enforcement |
| Wildlife | + | excessive noise from recreation craft disturb the wildlife population in the area | continue as present | less disturbance to the wildlife | less disturbance to the wildlife |

RECOMMENDATION: 1013

Some public harbors and access areas in the river corridor are having sedimentation problems. In general, these facilities lacked proper design or appropriate location. The characteristics of the river were not considered in development of existing facilities. Those public facilities which are having sedimentation problems may require relocation or redesign of the facilities to minimize the sedimentation problems.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1013
Pool Number General
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

Problems with boat/access filling in through sedimentation (#50)

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. A public agency should own and operate a small dredge and dozer for recreation enhancement work
- b. Establish a public fund for private contractors to carry out the work
- c. Allow marina access to close through sedimentation
- d. Relocate or redesign problem public harbors and access areas, i.e., Warsaw, Jackoak Slough, Bear Creek Access, Quincy Park Marina, Quincy Bay Access and Hamilton Harbor
- e. Require local governments to maintain marinas
- f. Require that the cost to maintain boat access be paid by the user (User tax or user fees)
- g. Restructure existing fundings sources to provide for required maintenance of facilities.

6. Selected alternative d.

7. Rationale for selection of alternative:

Some access or marina sites must be relocated or redesigned to eliminate existing problems. These facilities lack proper design and the characteristics of the river were not considered in development of the existing facilities.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

If the facilities were properly designed, the requirement for maintenance would be reduced.

10. Preliminary impact assessment of selected alternative:

- 1) cost of design and relocation of facilities
- 2) enhance recreation opportunities
- 3) impacts on natural resources
- 4) increasing facility life

11. Implementing Agency: Corps of Engineers

12. Reason for work group rejection of recommendation: None

RECOMMENDATION

IMPACT

ASSESSMENT FORM

RECOMMENDATION # 1013

LOCATION (RIVER MILE) _____

POOL General

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMEN- DATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---|-------------------------------------|--|--|--|--|
| Cost of design and relocation of facilities | dollars | \$8,000/site for dredg- ing (annual) | \$400,000/site for dredging if the CoE continued to provide this service (50 yrs) | Relocate 6 harbors will cost \$1.3 mil- lion/site; 15 access points | \$50,000 to \$1.3 million/site |
| Enhance recreation opportunities | + | With a continual prob- lem with sedimentation, recreation use of that area or facilities will decrease or reduce the quality of experience | Without dredging, some areas will be closed, therefore, providing no recreation oppor- tunity | Continue to provide needed recreation facilities, increase in recreation oppor- tunity and quality | Increase in number of different users, activities days spent, the quality of experience |
| Impacts on natural resources | +,- | As a result of improper designing, the sedimen- tation problems at the facility may be effect- ing fisheries habitat adjacent to and near the facility | Same as present | Consideration must be given to the fish and wildlife habitat and their protection when relocating and rede- signing harbors. Proper locating or design could improve the natural resources by changing users pat- terns and waterflows | Depending on site specific the natural resources can have both a negative and a positive impact |
| Increasing facility life | + | Increase in sedimenta- tion has limited use of some facilities | Without some type of dredging or redesign- ing marinas and boat accesses could close through sedimentation | Less maintenance cost longer life for the project resulting in smaller development cost/unit of time | Increase in pro- ject life |

RECOMMENDATION: 1016

Sanitary pump out facilities are limited for the recreational uses along the river corridor. This limitation has caused users to discharge directly into the river system. In order to encourage better water quality, it is recommended that:

- sanitary pump outs be provided at marinas and at major public recreation facilities.
- sanitary pump outs be provided at urban areas along the river.
- existing public health laws need to be changed to require marinas to provide such services.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1016
Pool Number General
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

- a. Water quality limits some recreation uses (#16)
- b. Sanitary pump outs for recreational crafts are limited (#27)
- c. Will holding tanks on boats be enforced/required (#77)?

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation quality of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Provide pump outs at locks
- b. Provide sanitary pump outs at marinas and at major public facilities
- c. Provide sanitary pump outs at urban areas along the river
- d. Do nothing
- e. Existing public health laws need to be changed to require marinas to provide such services.

6. Selected alternative b, c, & e.

7. Rationale for selection of alternative:

The selected alternatives are the most cost effective to provide facilities in the vicinity of high recreation use areas. Providing such services would assist in eliminating direct discharge into the river.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

Locks may be potentially too congested possibly creating additional conflicts with the commercial interest, and only serve a small percentage of recreation boats. Alternative (d) would not meet work group objectives.

10. Preliminary impact assessment of selected alternative:

- 1) improved water quality
- 2) enhanced recreation opportunities and quality
- 3) cost of facility development
- 4) cost of maintenance
- 5) health factors
- 6) cleaner river

11. Implementing Agency: State agencies and private

12. Reason for work group rejection of recommendation: None

RECOMMENDATION # 1016

LOCATION (RIVER MILE) _____

POOL General

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. # 5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5-DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|-------------------------------------|---|---|---|--|
| Improved water qualities - cleaner river | + | water quality limits some types of recreated use | same as present | recreation holding tanks are not a majority pollution factor but controls on all pollution sources are needed | improvement of water quality in high use areas |
| Health factors | + | Continue degradation of the river system | same as present | cleaner water would reduce some public health problem | cleaner water provides for a safer environment |
| Enhance recreation opportunities | + | water quality limits some types of recreation use or experience | same as present | quality of the experience will be enhanced in high use areas | increase in quality recreation experience |
| Cost of facility development and maintenance | dollars | None | None | cost of development - \$8 - 12,000 maintenance - \$3,000/yr. | cost of development and maintenance of facility \$12-16,000 maintenance \$3,000/ yr. |
| Legislative action | change in laws | N/A | N/A | public health laws will have to modify to reflect new standards for marinas services | same as 5 |

RECOMMENDATION: 1017

Legal and institutional authorities are unclear for many recreational users regarding ownership, jurisdiction, maintenance responsibilities for the Upper Mississippi River. As the river and the associated resources have no boundaries, the different restriction or management objectives will not be effective to enhance the river resource. Closer coordination between management agencies are needed to provide for a protected resource and to enhance the recreation experience on the UMR. Therefore, it is recommended that:

1. The States should assess and clarify land ownership and management of the river corridor.
2. The States should standardize land ownership boundaries in the river corridor.
3. The States should coordinate laws and/or regulations regarding public recreation use of the river corridor.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1017

Pool Number General

River Mile

Date Approved by Work Group August 16, 1979

1. General problem addressed:

Legal and institutional authorities are unclear regarding ownership, jurisdiction, maintenance and policing responsibilities (#1).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problems:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Assess and clarify land ownership and management in the river corridor
- b. State should standardize land ownership boundaries in the river corridor
- c. Coordinate laws and/or regulations regarding public recreation use of the river corridor
- d. Do nothing.

6. Selected alternative a, b, & c.

7. Rationale for selection of alternative:

States should standardize or agree to recognize each others laws as it relates to river recreation activities. As the river and the associated resources have no boundaries, the different restriction or management objectives will not be effective to enhance the resource nor the river. Closer coordination is needed to provide for a protected resource and to enhance the recreation experience on the UMR.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) Legal and Institutional Report

9. Rationale for elimination of other alternatives:

Would not meet work group objectives

10. Preliminary impact assessment of selected alternative:

- 1) improved institutional relationships
- 2) clarify recreational conflicts
- 3) cost of coordination
- 4) benefits of coordination

11. Implementing Agency: States

12. Reason for work group rejection of recommendation: None

RECOMMENDATION

RECOMMENDATION # 1017

IMPACT

LOCATION (RIVER MILE)

ASSESSMENT FORM

POOL General

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|----------------------------|----------------------------|---|---|---|---|
| Institutional relationship | + | Presently, there is some coordination to reduce the confusion and conflicts among the recreationists and resource planners. | Same as present. | Coordination of State and Federal agencies would strengthen the use and management of the river corridor. | Improved institutional relationship between agencies. |
| Clarify conflicts | + | Confusion among some users as to different laws and ownership. | Same as present. | Reduction of conflicts less confusion on the part of the recreation users and enforcement agencies. | Reduction in violations and confusion over laws. |
| Cost of coordination | \$ | Coordination is taking place presently (boating and fishing regulations). | Limited improvement. | Emphasis in coordinating total regulatory authority in the river corridor to enhance the resource. | Range from \$2,000 to \$20 million (includes possible land rights acquisition). |
| Benefits of coordination | + | Ease of enforcement. | Same as #3. | Ease of enforcement and understanding of the laws governing the corridor. | Public satisfaction and standardizations. |

RECOMMENDATION: 1018

Recreation use of the river corridor sometimes conflicts with existing or potential commercial uses. Uncontrolled industrial/commercial development adversely impacts the aesthetics and natural habitat of the river corridor. The uncontrolled development will result in increased costs for development of essential utilities and transportation systems for these sites. Industrial development in the form of commercial terminal complexes should be encouraged through tax incentives or through municipal development as a means to limit strip development. All levels of government should encourage development of the terminal complexes through the coordination process in obtaining a permit.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1018
Pool Number General
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

Recreation sometimes conflicts with commercial uses

2. Sub-problem addressed: None

3. Sub-objective addressed:

Maintain the integrity of the recreation viewshed

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Encourage development of the terminal complexes through the coordination process in obtaining a permit
- b. Allow strip commercial development
- c. Do nothing
- d. Encourage industrial development in the form of commercial terminal complexes through tax incentives, municipal development, etc., as a means of limiting strip development (refer to recommendations #1008 and 1023).

6. Selected alternative a & d.

7. Rationale for selection of alternative:

Uncontrolled industrial/commercial development adversely impacts aesthetics of the river corridor. The development of commercial terminal complexes would reduce development and transportation cost and limit the impact on the total environment.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

Degradation of aesthetics will not enhance recreation use of the river corridor.

10. Preliminary impact assessment of selected alternative:

- 1) enhance aesthetics
- 2) land use
- 3) business and industrial activity
- 4) natural resources
- 5) quality recreation
- 6) institutional constraints
- 7) costs

11. Implementing Agency: River Coordinating Committee, State and local

12. Reason for work group rejection of recommendation:

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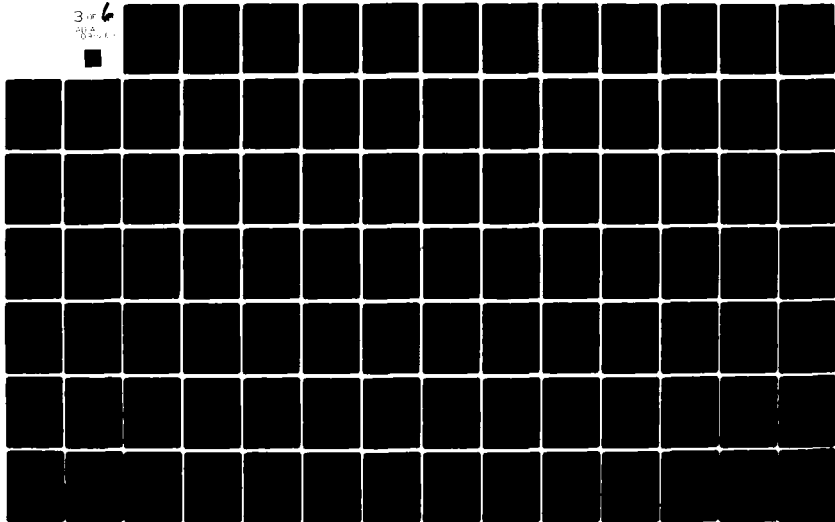
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RECOMMENDATION # 1018

LOCATION (RIVER MILE) _____

POOL General _____

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. # 5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------------------------|-------------------------------------|---|---|--|---|
| Enhance Aesthetic | + | degradation of the view as more individual sites are developed | more of the present | commercial sites will be located in complexes reducing the number of breaks in the natural landscape | enhancement of the view |
| Land use | acres | lands are being con- verted from agriculture/ recreation/habitat to commercial uses | continue to change | less land will be changed to commercial use since complexes re- quire less land than several individual sites | less land use change |
| Business and industrial activity | cost | high cost of development of individual terminal and related services | increase cost of development of individual terminal | less cost to develop roads, utilities, terminal and less cost for environment impacts | less cost for development |
| Natural resources | + | the natural resources are continually under pres- sure by the development in a checkerboard fashion of commercial interest. Degradation slow but complete | continue process from the present | the protection from continuous development minimize the commercial development impact | the natural resources will be enhanced and protected from continuous degrada- tion |
| Quality recreation | activity days+ | commercial use conflicts with recreation use. Scattered development has effected the esthetic value for some recreation use | continuance of the present | recreation development can be planned so it will not interfere with commercial activities. The aesthetic value will be enhanced by con- centrating the develop- ment. | |

RECOMMENDATION # 1018 (continued)

LOCATION (RIVER MILE) _____

POOL General _____

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. # 5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------------------------|-------------------------------------|--|---|--|--|
| Quality recreation (continued) | | | | Less of an impact on the whole to the natural resources. In total improvement of the quality of the recreationist experience | improve the quality of experience for recreation users protection of the aesthetic and natural resources |
| Institutional constraints | + | presently no policies to require terminal complex- es; all development is on a one to one basis | continuation as present with some development of complexes because of high cost | may require some form of land use zoning and approved master plan | will require action at part at both the State and Federal level. |
| Costs | dollars | with separate facilities cost for individual development of public services, impact assess- ment and permit review | increase in devel- opment and permit review costs | savings in cost by requiring less utili- ties, other incentive programs. Cost to permit and resource agencies would be less as the developments are at concentrated loca- tions with less multiple impact | cost to the industrial interest would be less as the needs for different utili- ties are less |

RECOMMENDATION: 1019

On several occasions the public has expressed an interest for additional access to recreational sites on the river. When the River Coordinating Committee has established the management objectives for each pool of the river, the development of a total river management plan can be completed.

In order to have a quality recreation experience upon the river, access development must be coordinated and be a part of the total river management plan (recommendations 1008 and 1011).

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1019
Pool Number General
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

Recreation use sometimes conflicts with commercial uses (#10) and environmental concerns (#23).

2. Sub-problem addressed:

- a. Recreation access development has not always taken into account total river uses or management.
- b. Significant areas of water surface use must be identified to reduce or avoid conflicts (#3).

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussion

5. Listing of alternatives to problem:

- a. Coordinate recreation access development within the frame work of a total river management plan (recommendation 1008)
- b. Develop recreation access without regard to river resources and other river uses
- c. Do not consider recreation as a project purpose.

6. Selected alternative a.

7. Rationale for selection of alternative:

Present recreation access problems that derive from inadequate access or no coordination among resource managers or among river users can be lessened in impact if recreation access development is coordinated to gather input from all users of the resource.

8. References used to select alternatives:

- 1) Needs analysis
- 2) Boating Safety Report
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The lack of coordination in recreation access developments can lead to safety, maintenance, environmental, aesthetic, levee, etc., problems. These problems lower the quality of the recreation experience and tend to conflict with other uses of the river corridor.

10. Preliminary impact assessment of selected alternative:

- 1) safety
- 2) aesthetics
- 3) habitat
- 4) maintenance costs
- 5) initial costs
- 6) economic impacts

11. Implementing Agency: River Coordinating Committee and Corps of Engineers

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1019

LOCATION (RIVER MILE)

POOL General

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|---|----------------------------|--|---|--|---|
| Safety of user | + | Lack of overall plan has resulted in poor placement of facilities; is in existing congested areas, next to commercial operation. | Continue as in present condition | Properly prepare development taking in consideration all users which will result in less conflict and better satisfaction. | Better protection for the recreation users. |
| Aesthetic values scenic characteristics | + | The aesthetic qualities have been degraded in some locations because of poor coordination of effort and conflict of uses. | Same as present | The enhancement of the total system. | Better quality recreation. |
| Habitat | + | Habitat degradation due to the lack of overall planning is not being totally evaluated. | Same as present | The enhancement of the total system. | Maintenance and enhancement of natural resources. |
| Maintenance Cost | Dollars | \$30,000/site/year | Cost of maintenance will increase. | May increase developed sites - \$30,000/site/yr. however, reduce maintenance cost on existing and future sites as a result of proposed planning. | If increased development, increase costs, |

RECOMMENDATION # 1019 (Continued)

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General _____

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---------------------|----------------------------|--|---|--|--|
| Initial costs | Dollars | Little or no coordination between agencies at any level. COE has no authority to develop additional recreation facilities. | No organizational development to meet the needs of the public. | High cost to implement coordination. Better planning, development and utilization of facilities. | Enhancement and additional recreation benefit. |
| Economic Impact | Dollars | Developments are not planned, cost is high due to improper design. Duplication of services in adjacent area, i.e., more roads, utilities, etc. | Same as present with ineffective use of dollars. | Planned development meeting the needs of the recreation users enabling the COE and other agencies to develop needed recreation facilities. Generating wise use of our resources and additional income for local areas. | Saving on a properly designed facility. |
| Legislative changes | + dollars | Presently COE is not authorized to develop additional recreation facilities on the River without local funds. | Less recreation development or maintenance. | Will require action by Congress. | Will require action by Congress. |

RECOMMENDATION: 1020

There is a need to provide public information that will increase public knowledge and understanding of the river resource. Identifying recreation access opportunities and distribution of that information will channel the number of users more evenly into available facilities, thus relieving congested areas. Appropriate information will enable the user to have a better understanding of his or her surroundings. The River Coordinating Committee should provide more and improved signage, common logo; create pamphlets and facility guides including updates, canned programs and slide shows available for public use.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1020
Pool Number General
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

Many people do not know what facilities are available/recreation opportunities/environmental education (#4)

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

- 1) Facility Inventory
- 2) Work Group Discussions

5. Listing of alternatives to problem:

- a. Improve signage - better placement, common logo and more signage
- b. Development of visitor centers/more public relations people, enforcement people and naturalists
- c. Pamphlets, facility guides and the continual update and distribution of these items
- d. Canned programs, films, slide shows, etc., available for public use
- e. Do nothing.

6. Selected alternative a, c & d.

7. Rationale for selection of alternative:

There is a need to assist the public by identifying recreation access opportunities and the distribution of that information and distribution of the user over the area will lessen the impact of recreation use.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

If recreation facility information is not distributed to the public, there is a waste of public and private dollars for facility development. Provision of information helps take pressure off of heavily used and congested facilities.

10. Preliminary impact assessment of selected alternative:

- 1) increased public awareness of leisure opportunities
- 2) cost to develop and maintain program
- 3) educational opportunities
- 4) resource utilization
- 5) distribution of the use

11. Implementing Agency: River Coordinating Committee

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1020

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|----------------------------|---|---|---|--|
| Public awareness of leisure opportunities (including Activity Day) | + | Because of cost of energy the public is asking for information on local facilities and concerns. | Continue to increase as present demand will create additional need for information. | Increase public awareness of recreational opportunities. | Better distribution of the user and public understanding of this resource. |
| Cost to develop program | \$ | | | \$50,000 | \$50,000 |
| Maintain program | \$ | | | \$10,000 | \$10,000 |
| Educational opportunities | + | Some education programs are available at present time from government agencies and private sources. | Same as #3. | Make more information available to the public. | Reaching more users. |
| Resource utilization and distribution of the use | + | Uneven distribution of use of the resource. | Same as #3. | Will increase use but will distribute the use over the resource and time. | Better overall use of the resource. |

RECOMMENDATION: 1021

Information is needed about total aspects of river recreation use to determine appropriate planning and management of recreation resources. In order to work toward a set of common goals, all recreation management agencies should coordinate through the River Coordination Committee. In the past, little information was available on river recreationists, use patterns and resource perception. This data was partially obtained through the facilities inventory, monitoring study and the partial user survey conducted by Recreation Work Group.

In order to supplement the existing data or lack thereof, a statistically reliable recreation survey of the total river corridor be developed and conducted. Once the basic data has been provided, a long term monitoring program be implemented to continuously update user trends.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1021
Pool Number General
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

Additional recreation use information is needed

2. Sub-problem addressed:

- a. Little is known about the river recreationists, use patterns, resource perceptions, etc. (#2)
- b. The future demand for developed and undeveloped recreation areas are unknown (#5)

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

- 1) Recreation Use Survey
- 2) Recreation Monitoring Methodology
- 3) Work Group Discussions

5. Listing of alternatives to problem:

- a. Develop and conduct a statistically reliable recreation survey of the total river corridor and the total use incurred
- b. Study individual pools on a pool by pool basis/UMRCC approach
- c. Survey a sample of pools and interpolate for the entire GREAT II area
- d. Survey each recreation activity
- e. Implement a recreation use monitoring system including a facility inventory and use data
- f. Develop an increased and indepth monitoring of recreation use through the performance monitoring system at each lock
- g. All recreation management agencies thru RCC should coordinate recreation aspects to work toward a set of common goals
- h. Do nothing.

6. Selected alternative a, e & g.

7. Rationale for selection of alternative:

Information is needed about total aspects of river recreation use to determine appropriate planning and management of recreation resources. The recommended alternatives selected are the most cost effective and statistically reliable to achieve the data required.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) Recreation Use Survey
- 3) Recreation Monitoring Study

9. Rationale for elimination of other alternatives:

Without the user information inaccuracies in planning and management reduce user enjoyment. It may also result in poor resource utilization and negative environmental impact.

10. Preliminary impact assessment of selected alternative:

- 1) cost to conduct study
- 2) positive long-range leisure opportunities
- 3) natural resource utilization
- 4) cost of monitoring study

11. Implementing Agency: River Coordination Committee

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1021

LOCATION (RIVER MILE)

POOL

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|----------------------------------|----------------------------|---|---|---|--|
| Cost of conduct study | Dollars | 0 | 0 | \$75,000/survey \$50,000/monitoring | \$75,000/survey \$50,000/ monitoring |
| Long range leisure opportunities | + | Limited | Limited | To understand the number and type of users who are using the river will enable the managers/planners to meet the need of the users. | To meet the need of the users. |
| Resource utilization | + | The resource is unused in some locations and overused in other locations. | Same as present | Enhancing the use and proper management should lessen the damage to the resources. | Better utilization and less damage to the resources. |

RECOMMENDATION: 1022

Fragile natural, scenic and cultural areas must be identified in order that they may be protected for future generations. All States in the GREAT II area, as part of their natural heritage programs, should complete a natural history survey to identify those natural, scenic and cultural areas needing protection.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1022
Pool Number General
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

Additional study needs: identify natural/scenic areas

2. Sub-problem addressed:

Recreation use/areas may have adverse impacts on the environment (#6)

3. Sub-objective addressed:

Eliminate adverse effects to recreation resulting from channel operation and maintenance activities

4. Tasks accomplished to address problem:

- 1) Work Group Discussions
- 2) Facility Inventory

5. Listing of alternatives to problem:

- a. Complete natural history survey of important natural/scenic and cultural areas
- b. Do nothing.

6. Selected alternative a.

7. Rationale for selection of alternative:

Fragile natural, scenic, and culture areas must be identified in order that they may be protected for future generations

8. References used to select alternative:

- 1) Work Group Discussions
- 2) Facility Inventory

9. Rationale for elimination of other alternatives:

Areas cannot be protected without identification as being important natural and scenic areas. Without this information the broad objective of GREAT (developing a total river resource management plan) would not be possible.

10. Preliminary impact assessment of selected alternative:

- 1) cost to gather and record information
- 2) increased knowledge of historical and scenic areas
- 3) preservation of environmental options for future decisions

11. Implementing Agency: States

12. Reason for work group rejection of recommendation: None

RECOMMENDATION # 1022

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---|----------------------------|---|---|--|--|
| Cost to conduct Study | \$ | Illinois is completed, No study. | 0 | \$450,000 for study. | \$450,000 |
| Increase knowledge Historic and Scenic Areas | + | Lack of knowledge exist along the river of the natural and culture areas. | Same as #3. | Increase our understanding of both historic and natural heritage. | Preservation of our natural and cultural heritage. |
| Preservation of environmental options for future decisions. | + | Complete data has not been collected. | May or may not be completed. | The complete system can be identified and protected as needed. | The protection of the natural heritage. |

RECOMMENDATION: 1023

Degradation of our natural heritage is occurring as a result of changing land uses without proper controls or protections. In order to maintain the integrity of the natural landscape, the States should prepare land use base plans and develop a system to protect from loss those areas identified in the natural history survey. The plans should include guidelines to change the existing controls or to establish control entities in areas where none exist.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1023
Pool Number General
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

Land use protection/aesthetics

2. Sub-problem addressed:

There is a threat of degradation of the viewshed (#14)

3. Sub-objective addressed:

Maintain the integrity of the recreation viewshed

4. Tasks accomplished to address problem:

- 1) Work Group Discussions
- 2) Recreation Use Survey

5. Listing of alternatives to problem:

- a. Prepare land use base plan for the river corridor and develop a system to protect from loss those areas identified in the natural history survey. Control entities should be established in areas where none exist
- b. Make agencies and entities with land use control aware of the visual and resource impacts of their decision-making process
- c. Do nothing.

6. Selected alternative a.

7. Rationale for selection of alternative:

A base plan will allow all control entities to work toward the same agreed upon common goals and introduce protective control where none exists.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

Under the present system, natural and scenic areas are being lost or inconsistently protected between different entities and over time.

10. Preliminary impact assessment of selected alternative:

- 1) improved aesthetic concerns and values
- 2) land use
- 3) costs for development of base plan and program management
- 4) institutional relationship
- 5) identifications of areas

11. Implementing Agency: States

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1023

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|----------------------------|----------------------------|---|---|---|---------------------------------------|
| Esthetic | + | The landscape is subject to change. | Same as #3. | Control the development and use of landscape would protect the esthetic quality. | Protection of the natural landscape. |
| Land use | +, - | Lack of control and development which reduce the natural habitat. | Commercial, marinas and agriculture expansion. | Restriction of limitation of development and change. | Little land use change. |
| Cost of development | \$ | | | \$5,000 for maps | \$5,000 for maps |
| Implementation of program | \$ | | | \$100,000/year for 10 years | \$100,000/year for 10 years |
| Institutional relationship | + | | | Coordination between local, State and Federal agencies would be required. | Interagency coordination. |
| Identification of areas | \$ | Natural areas are being identified and some being protected. | Slow process of the present. | Major components of the landscape can be protected for wildlife habitat, esthetic and recreation. | \$52,000 for Study. |

RECOMMENDATION: 1024

In certain areas, poor water quality limits body contact recreation and reduces the quality of the recreation experience. There are insufficient funds to meet the 1983 water quality standards. As a result, only the worst pollution areas may be rehabilitated with available funding. Improvement of these areas may have little impact on the most valued recreation resource areas. Therefore, Federal and States funding should be directed toward the improvement of pollution discharge sources that directly affect the most heavily used recreation areas and resources. State selection processes funding priority of public wastewater treatment systems should include a weighting factor for recreation benefits of the proposed project.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1024
Pool Number General
River Mile _____
Date Approved by Work Group 8/15/79

1. General problem addressed

Water quality limits some recreation uses (#16)

2. Sub-problem addressed

3. Sub-objective addressed

Enhance recreation use of the river

4. Tasks accomplished to address problem

Work group discussions

5. Listing of alternatives to problem:

- a. Fund construction of water pollution control equipment of the worst public waste water dischargers in rank order
- b. Fund construction of water pollution control equipment at public facilities that directly benefits major recreation resources use areas and opportunities
- c. State selection process for priority for funding of public wastewater treatment systems should include a weighting factor for recreation benefits of the proposed project
- d. Do nothing.

6. Selected alternative c

7. Rationale for selection of alternative:

Protection of major recreation resources, use areas and opportunities would direct funding to clean up problem areas that adversely impact water related recreation the greatest.

8. References used to select alternative (use tasks, support documents and/or discussions, studies, articles, etc.):

Work group discussions

9. Rationale for elimination of other alternatives:

There are insufficient funds in time to meet 1983 standards. The worst pollution areas may have little impact on the most valued recreation resources, use areas and opportunities.

10. Preliminary impact assessment of selected alternative. (List below all general impacts which can be identified by the work group. The level of detail required is only that for which the information is readily available.)

Cost of construction, operation and maintenance
Water quality improvement
Leisure opportunities improvement
Health benefits
Policy changes within States

10a. Implementing Agency: Federal, State and local Water Quality Agencies

11. Reason for work group rejection of recommendation: None

RECOMMENDATION

1024

IMPACT

LOCATION (RIVER MILE) _____

ASSESSMENT FORM

POOL General

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|------------------------------|----------------------------|---|---|--|---|
| Cost of construction O & M | \$ | Progress is slow in meeting the EPA standards | By this date, EPA standards should have been obtained. | Recommendation is intended to prioritize the funding to meet EPA standards. | Cost should be the same with or without GREAT. |
| Water quality improvement | + | Water quality is improving along the Mississippi River. | Quality will be improving. | Emphasis on improving source pollution control near recreation sites. | Improved water quality. |
| Health benefits | + | Health conditions are improving as action toward meeting EPA standards are being completed. | By this date, EPA standards should have been obtained. | To accelerate pollution control near recreation areas to improve areas for water contact sports. | Safe waters for water activities. |
| Policy changes within States | + | No change. | No change. | Pollution problems near recreation resource use areas should be given priority to available funds. | Improve water quality near recreational use areas and change in funding priority. |

RECOMMENDATION: 1025

Lack of water quality information present health hazard problems for recreational users. Adequate information would allow resource managers to manage the use of the body contact activities accordingly. The States should develop a coordinated program to monitor water quality for fecalcoliform and industrial chemicals at major recreation areas for whole body water contact recreation activities.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1025
Pool Number General
River Mile _____
Date Approved by Work Group 8/15/79

1. General problem addressed

Water quality limits some recreation use

2. Sub-problem addressed

Water quality/testing

3. Sub-objective addressed

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem

Work group discussions

5. Listing of alternatives to problem:

- a. Periodically monitor water quality at recreation areas
1-10 miles below major urban discharges for body contact
recreation
- b. Monitor all discharges
- c. Monitor the entire river
- d. Monitor water quality for fecalcoloform and industrial chemicals
which would effect body water contact recreation at major recreation use
areas along the Mississippi River
- e. Do nothing.

6. Selected alternative d

7. Rationale for selection of alternative:

It is more cost effective to monitor water quality at heavy recreation use
areas to determine if body contact recreation standards are being exceeded.

8. References used to select alternatives (use tasks. support documents
and/or discussions. studies, articles, etc.):

9. Rationale for elimination of other alternatives:

Other measures were not as cost effective and information is still lacking on water quality at recreation use areas.

10. Preliminary impact assessment of selected alternative. (List below all general impacts which can be identified by the work group. The level of detail required is only that for which the information is readily available.)

Cost to monitor

Increase knowledge about water problem and sources of pollutants.

Other recommendations will depend on information recorded.

10a. Implementing Agency: State Water Quality Agencies in coordination with each other.

11. Reason for work group rejection of recommendation: None

RECOMMENDATION # 1025

LOCATION (RIVER MILE)

POOL General

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|----------------------------|---|---|--|--|
| Cost to monitor | \$ | No cost. | | \$150,000 to start monitor system and \$75,000 to continue the monitoring program. | \$150,000 to start monitor system and \$75,000 to continue the monitoring program. |
| Increase knowledge about water problems and sources of pollutants. | + | Some information is collected on a case by case basis. | Same as #3. | A continuous monitoring of the river system will develop an understanding of the problems, actions and sources of the pollutants. | Increase in understanding of the resource. |
| Other recommendations will depend on information recorded | + | | | As a result of the information from the monitoring system additional recommendations should be made to eliminate pollution problems. | |

RECOMMENDATION: 1028

Litter is degrading the quality of existing recreational sites. There are two approaches to resolving litter problems. These approaches would be directed at educating the public and actual clean-up activities. Federal and State resource management agencies should promote additional public education programs to deal with litter problems on the UMR. All Federal, State and local resource management agencies should provide increased protection of recreation areas from litter degradation through the following activities:

- coordinate the enforcement of litter laws at peak use periods.
- provide trash receptacles at all marinas and access points.
- promote local litter clean-up activities through local clubs and public interest groups.
- promote a "take it home" campaign.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1028
Pool Number General
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

Litter exists on some dredge material beaches, access points and recreation facilities (19-81).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

- 1) Recreation Use Survey
- 2) Boating Safety Report
- 3) Maintenance and Enhancement of Island Beach Report
- 4) Work Group Discussion

5. Listing of alternatives to problem:

- a. Hire additional maintenance staff and add additional trash receptacles
- b. Hire or contract clean-up services
- c. Coordinate the enforcement of litter laws on peak occasions
- d. Organize clubs, citizens, etc., through coordinated agency campaigns for litter pick up
- e. Promote a "take it home" campaign
- f. Provide trash receptacles at all marinas and access points
- g. Public education programs
- h. Do nothing.

6. Selected alternative c thru g*.

* depends on location

7. Rationale for selection of alternative:

Removal of litter would enhance recreation use and aesthetics of the river corridor. In order to have an effective litter removal campaign, it will require a combination of actions. Local boating clubs, Jaycees, Kiwanis, etc., could be organized to provide periodic clean-up of sandbar areas and other areas within the river corridor. Local clean-ups encourage local control of litter problems and instills pride in keeping areas clean.

8. References used to select alternatives:

- 1) Recreation Use Survey
- 2) Boating Safety Report
- 3) Maintenance and Enhancement Report
- 4) Recreation Work Group Discussions

9. Rationale for elimination of other alternatives:

Programmed litter clean-up by any agency would be very expensive.

10. Preliminary impact assessment of selected alternative:

- 1) improve recreation use enjoyment
- 2) improved aesthetics
- 3) improved safety
- 4) cost of program operation

11. Implementing Agency: All resource and recreation agencies; Federal,
State and local

12. Reason for work group rejection of recommendation: None

RECOMMENDATION # 1028

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL

General

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|------------------------------------|----------------------------|--|---|--|--|
| Improve recreation use (enjoyment) | + | Problems will continue reducing the quality of recreation | The amount of litter, may eliminate some recreation use of specific areas | Have a clean and satisfactory area that user can enjoy their experience. | USER Satisfaction |
| Improved aesthetic | + | Litter has detracted from the recreation uses and experience. | Sites will continue to be effected by the amount of litter present. | Clean areas will improve the aesthetic values, user experiences, and less polluted water resource. | USER Satisfaction |
| Improved safety | + | Litter can cause health problem and injuries to both the users and wildlife. | Same as #3 | Would eliminate potential dangerous areas. | Less injuries and health problems. |
| Cost of program operation | | \$200,000 | \$200,000 | \$500,000 | \$300,000 |

RECOMMENDATION: 1029

User charges are being developed for the Upper Mississippi River. There are concerns that recreationists may be required to pay for recreational craft lockages. If recreational user charges were imposed, recreational use of the river would decline.

Implementation of recreational user charges would not result in a reduced waiting time for recreational craft lockages, and the administration cost for the collection of recreation lockage fees would be greater than the amount collected.

Therefore, the Recreation Work Group recommends that there be no lockage fees for recreation craft lockages.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1029
Pool Number General
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

No fee for recreation lockages (#43)

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

a. Do not charge for recreation craft lockages

b. Charge for recreation craft lockages

c. Charge partial fee for recreation craft lockage

6. Selected alternative a.

7. Rationale for selection of alternative:

Locks and dams were constructed for commercial navigation. Implementation of recreational user charges would not result in a reduced waiting time for recreational craft lockages, and the administrative cost for the collection of recreation lockage fees would be greater than the amount collected. Recreation use of the river would exist without the locks and dams. If recreational user charges were imposed, recreational use could decline. The recreational use would not be distributed over several pools.

8. References used to select alternatives:

Work Group Discussions

9. Rationale for elimination of other alternatives:

The action would only act as a deterrent to recreation use and definitely would not enhance it.

10. Preliminary impact assessment of selected alternative:

No impacts

11. Implementing Agency: None

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1029

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------|----------------------------|---|---|--|---------------------------------------|
| No Impacts | | | | | |

RECOMMENDATION: 1030

There are many natural and man-induced hazards to recreational users of the UMR. People inexperienced in use of the river are not familiar with the associated hazards. Also, law enforcement is insufficient to meet the increasing demands of the UMR System. The RID/COE in coordination with the USCG and State resource agencies should continue to promote boater safety and enhance the recreational experience on the UMR. This program would include legislative, hazard identification and enforcement measures.

New laws should include but not be limited to:

- requirement of a boat operators' safety certificate.
- require additional side running lights for barge tows for night operations.
- outlawing consumption of alcohol during operation of craft.

Hazard identification measures would include at a minimum:

- establishment of no-wake areas in high density use areas.
- marking of common boat hazard areas.
- equipping new survey boats with the capability to mark hazard areas.

Enforcement measures would include:

- a public education program.
- increased patrolling
- enforce speed limits in no-wake zones in high use areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1030
Pool Number General
River Mile _____
Date Approved by Work Group 10/5/79

1. General problem addressed

Boating Safety is a problem (#9)

2. Sub-problem addressed

- a. Expand safety education program (#9 #39)
- b. Areas above and below dams are quite hazardous
- c. People renting boats may have no experience with boating on the Mississippi River.
- d. Many recreationists are unfamiliar with river hazards
- e. Need for a no-wake area below lock and dam 12 (pleasure craft) #35
- f. Law enforcement is limited on the river (#25)

3. Sub-objective addressed

Enhance recreational use of the river corridor

4. Tasks accomplished to address problem

Boating safety report
Work Group Discussions

5. Listing of alternatives to problem:

- a. No action
- b. Increase the educational programs
- c. Increase safety education/enforcement officers and patrolling
- d. Require users to obtain an operator safety certificate prior to operations of water craft
- e. Mark hazards that are most commonly involved in boating accidents
- f. Require better craft lighting for night operations - recreation and commercial, i.e., side lighting
- g. Enforce speed limits in no wake zones in high use areas
- h. Outlaw consumption of alcohol while water craft is in operation

- i. Channel control structure should be marked, notched, lowered or modified when suitable to allow increase access and safe passage of recreational craft.
 - j. Equip new survey boats with capability to mark hazard areas
 - k. The establishment of no-wake areas in high dense use area (i.e., around lock and dams, holding areas and in marinas
6. Selected alternative b through k
7. Rationale for selection of alternative:
- Alternatives would promote safety, proper use of recreational craft, save lives and property, in turn enhancing the total river recreation experience.
8. References used to select alternative (use tasks, support documents and/or discussions, studies, articles, etc.):
- RWG Boating Safety Report
- Work Group Discussion
9. Rationale for elimination of other alternatives:
- Does not enhance recreation use of river corridor
10. Preliminary impact assessment of selected alternative. (List below all general impacts which can be identified by the work group. The level of detail required is only that for which the information is readily available.)
- a. Improve safety and decrease loss of life and property
 - b. Improve leisure opportunities
 - c. Increase cost to administer programs
 - d. Increase the education opportunities
- 10a. Implementing Agency: All public enforcement/managing agencies
11. Reason for work group rejection of recommendation: None

RECOMMENDATION

RECOMMENDATION # 1030

IMPACT

LOCATION (RIVER MILE) _____

ASSESSMENT FORM

POOL General

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|-------------------------|----------------------------|---|---|---|---------------------------------------|
| Safety | + | Based on problems addressed by the public, there are safety problems existing. | Will continue with some action to correct problems. | More emphasis will be placed on safety programs and design. | More protection and action. |
| Leisure opportunities | + | Because of some problems or incident the quality of the recreation experience has been diminished for some users. | Same as present. | Improvement programs, design and implementation will enhance the recreation opportunities for the public. | Increase the experience value. |
| Cost of program | \$ | \$800,000 | \$1.0 million | 2.5 million | 1.5 million |
| Education opportunities | + | Some education programs are available at present time from federal and state agencies. | Same as #3. | Additional programs need to be developed and distributed to all interest groups. | Increase in program. |
| Legislative change | + | Little action - (reason for recommendation). | Some changes will occur over time. | Some recommendations will require changes in existing laws. | Upgrading of existing laws. |

RECOMMENDATION: 1031

Areas funded by the Land and Water Conservation Fund (LAWCON), may be adversely affected by the deposition of dredged material. Placement of dredge material on such sites will require prior approval from Heritage Conservation and Recreation Service (HCRS). Such approval is required to protect the project purpose of that LAWCON site and the financial responsibilities related thereto. Current regulations provide the most flexibility for meeting both recreation and dredge material placement needs. In order to assist both HCRS and the COE, the Recreational Work Group has developed a listing of current (1979) LAWCON funded sites (See III K) adjacent to the Mississippi River. The Rock Island District, Corps of Engineers, should utilize the listing of LAWCON funded sites developed by GREAT and that the Rock Island District continue to update the list and coordinate with HCRS.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1031
Pool Number General
River Mile _____
Date Approved by Work Group October 5, 1979

1. General problem addressed:

Areas funded by Land and Water Conservation Fund may be adversely affected or the original project purpose may be amended by the deposition of dredged material.

2. Sub-problem addressed:

Areas funded by LAWCON need HCRS approval prior to any alteration of the original recreation purpose as a result of dredge material placement.

3. Sub-objective addressed:

Maintain the integrity of the recreation viewshed

4. Tasks accomplished to address problem:

- 1) Work Group Discussions
- 2) LAWCON project inventory

5. Listing of alternatives to problem:

- a. Obtain Heritage Conservation and Recreation Service approval as needed
- b. Restructure Land and Water Conservation Funds guidelines
- c. Prohibit dredge spoil on all Land and Water Conservation Funded sites
- d. Do nothing.

6. Selected alternative a.

7. Rationale for selection of alternative:

Compliance with current regulations provides most flexibility for meeting both recreation and dredge spoil needs. To change the purpose of the site or alter the Federally funded recreation site requires the approval of HCRS.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) HCRS Regulations
- 3) LAWCON project inventory

9. Rationale for elimination of other alternatives:

Selected alternative most efficient solution to resolving recreation and dredge spoil needs.

10. Preliminary impact assessment of selected alternative:

- 1) less time consuming (long-term)
- 2) recreation concerns and values
- 3) aesthetic concerns and values

11. Implementing Agency:

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1031

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

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|---------------------|----------------------------|---|--|--|--|
| Less time consuming | Dollars | Problems have resulted in the lack of knowledge or understanding of the LAWCON Act. | As a result of this GRFAT II Study this recommendation will most likely be adhered to. | Better coordination and understanding between agencies | Same as #5 |

RECOMMENDATION: 1032

The Recreational Work Group inventoried existing recreational facilities along the river. However, additional information is required to assist in establishing management objectives for river resources. Therefore, a complete inventory of undeveloped areas used by the public should be completed. This should include an inventory of those areas that have potential for recreation development. The information collected will assist planners and developers in deciding where it is most suitable to locate various facilities.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1032
Pool Number General
River Mile _____
Date Approved by Work Group October 4, 1979

1. General problem addressed:

The supply of existing developed and undeveloped recreation areas is unknown.

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreational opportunities.

4. Tasks accomplished to address problem:

5. Listing of alternatives to problem:

- a. Utilize existing facility inventory
- b. Inventory undeveloped areas used by the public
- c. Inventory undeveloped areas that have potential for recreation development
- d. Do nothing.

6. Selected alternative a, b & c.

7. Rational for selection of alternative:

Determine known and potential recreational areas (developed or undeveloped) to assist in establishing the management objectives of the river resource. This information will assist planners and developers on where to locate what facilities when.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) 1977 GREAT II Recreational Facility Inventory

9. Rationale for elimination of other alternatives:

The alternative does not address problem.

10. Preliminary impact assessment of selected alternative:

- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of areas

11. Implementing Agency: River Coordinating Committee and State Agencies

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1032

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------|----------------------------|---|---|---|--|
| Cost of study | Dollars | No study no cost | no cost | \$35,000 for study | \$35,000 for study |
| Utilization of resources | + | Lack of understanding of the user and his use of areas has caused under/over utilization of the resource. | Will continue | Knowledge of the areas will enable the Planners to develop, restrict and distribute the use of areas. | Better utilization and distribution of the user. |
| Knowledge of areas | + | Limited knowledge | Same as #3 | Better understanding of the type of use and resource of the area. | Same as #5 |

RECOMMENDATION: 1033

At the present time, State Comprehensive Outdoor Recreation Plans (SCORP) do not place enough emphasis on the Mississippi River resource. In order to properly manage and enhance the natural and recreational opportunities of the Mississippi River, planning activities should be coordinated between adjacent States and Federal agencies to promote proper use, protection and development of the River recreation resources.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1033
Pool Number General
River Mile _____
Date Approved by Work Group October 5, 1979

1. General problem addressed:

State Comprehensive Outdoor Recreation Plans do not place enough emphasis on the Mississippi River (#23).

2. Sub-problem addressed:

SCORP's are not coordinated between states to promote use and development of river.

3. Sub-objective addressed:

To enhance recreational use of the river corridor consistent with maintaining quality of the corridors natural resources by adequate distribution of related recreational opportunities.

4. Tasks accomplished to address problem:

- 1) Work Group Discussions
- 2) Recreation Need Analysis
- 3) Use Projection Report
- 4) Facility Inventory

5. Listing of alternatives to problem:

- a. Coordinate activities of the SCORP planners
- b. Include Mississippi River as a SCORP subject
- c. Do nothing.

6. Selected alternative a & b.

7. Rationale for selection of alternative:

Selected alternatives provide most efficient mechanisms to address problems that effect the enhancement of recreation opportunities along the Mississippi River. Little or no attention has been given to its river resource in most State SCORP's in the past.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) Recreation Needs Analysis
- 3) Use projection reports
- 4) Selected SCORPs
- 5) Facility Inventory

9. Rationale for elimination of other alternatives:

The alternative selected provides the most comprehensive solution to management and identification of the total Mississippi River resource.

10. Preliminary impact assessment of selected alternative:

- 1) increased opportunity
- 2) public facilities
- 3) natural resources
- 4) aesthetic concerns and values
- 5) effects on ecosystems
- 6) effects on animals and plants
- 7) leisure opportunities
- 8) more efficient use of a resource
- 9) cost
- 10) institutional relationship

11. Implementing Agency: States

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1033

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|----------------------------|----------------------------|---|--|--|---|
| Cost of coordination | \$ | The Mississippi River has not always been given proper consideration in state-wide planning. Duplication of some efforts could occur. | Same as #3, however, this problem is known to exist and therefore, more effort to resolve this will occur. | Coordination between State planning and development functions will enhance the river resource. | \$+2,000 cost for coordination. Lack of duplication could save more funds than cost of implementation of recommendation. |
| Institutional relationship | + | Some interreaction between States but no comprehensive planning. | Same as #3, however, the problem is recognized therefore steps are most likely to be taken. | Four states are planning for the use and protection of the same resource. | Four states working together. |
| Use of the resource | + | Fragmented planning and development of the resource. | Same as present | Well coordinated effort will serve the resource and the general public. | More efficient use of the resource. |

RECOMMENDATION: 1034

Resource managers and planners at all levels of government have expressed concern in meeting future recreation use with existing man power and funds for such purposes. In researching the funding alternatives, no one source or solution would be appropriate to address the overall problem. It was determined that funding sources and mechanisms existed. However, some modifications to meet increased needs will be required.

The following programs could be modified to provide the required funds for meeting future recreation needs:

- continue to upgrade and expand recreation facilities under the Bicentennial Land Heritage Program and continue funding under that program.
- increased funding and restructuring of the cost share ratios are needed for the Land and Water Conservation Fund Program.
- increase state funding for state facilities through general funds, Marine Fuel Tax funds, registration fees and special use taxes.
- continue funding of the Great River Road Program.
- increase Corps of Engineers Recreation Resource funding.
- increase local monies for operations and maintenance.
- provide government assisted loans, Small Business Administration loans and technical assistance to help private businesses provide recreation opportunities that are available to general public use.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1034
Pool Number General
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

There is limited manpower and funds available among agencies who are responsible for maintaining existing and future recreation areas (#26 and 82).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor.

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Provide government assisted loans, Small Business Administration loans and technical assistance to help private businesses to provide recreation opportunities that are available to general public use.
- b. Continue to upgrade and expand recreation facilities under the Bicentennial Land Heritage Program and continue the program funding.
- c. Land and Water Conservation Fund; increased funding and restructuring of cost share ratios are needed.
- d. Increase State funding for State facilities through general funds, Marine Fuel Tax funds, registration fees and special use taxes.
- e. Continue funding of the Great River Road Program.
- f. Increase Corps of Engineers Recreation Resource funding.
- g. Increase locally generated monies for operation and maintenance.
- h. Establish a Mississippi River recreation fund derived from special use fees and taxes and federal appropriations.

6. Selected alternative a thru g as appropriate.

7. Rationale for selection of alternative:

The selected alternative to address the problem will depend on local needs. Therefore, no one source or solution would be appropriate to address the general problem. Necessary funding sources and mechanisms exists, however, some modification to meet changed situation and needs is required.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) Funding regulations

9. Rationale for elimination of other alternatives:

Alternative "h" is duplication of existing funding sources and mechanisms and create new bureaucracy.

10. Preliminary impact assessment of selected alternative:

- 1) cost of funding and administering the program
- 2) legislative change
- 3) improved land use, public facilities and public services

11. Implementing Agency: Appropriate Funding Agencies

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1034

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---|----------------------------|---|--|--|--|
| Cost | \$ | Local agencies have limited funds available, maintenance of existing facilities and development of additional facilities. | Same as #3 or less funds available. | More available funds to meet the needs of increased recreation. | \$1.5 million/yr. |
| Land use, public facilities and service | + | Minimum development and maintenance of facilities | Gradual deterioration of existing facilities and lack of new facilities. | Additional funds will provide the needed services to meet the needs of the public, and protect and enhance the resource. | Increase facility life and development of additional opportunities for the public. |
| Legislative Change | + | No action. | | In order to implement, Congress and State Legislative Branch will need to change existing laws and policy. | Awareness of recreation needs. |

RECOMMENDATION: 1036

Recreation facilities and moored water craft within marinas are damaged by wakes created by moving water craft. Proper measures should be taken by appropriate agencies to protect lives and property within these high density use areas. The following recommendations are potential solutions to most of these problem areas:

- provide no wake zones for recreation craft within designated distances of marinas entrance and within marinas themselves;*
- construct protective structures (i.e., jetties and floating wave breakers) around recreation facilities; *
- relocation of recreation facilities.*

* site specific situation.
specific recommendations or coordination thereof will depend on site specific conditions.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1036
Pool Number General
River Mile _____
Date Approved by Work Group October 4, 1979

1. General problem addressed:

Recreation facilities along the channel are seriously affected by wakes from commercial and recreation craft #35.

2. Sub-problem addressed: None

3. Sub-objective addressed:

Maintain the integrity of the recreation viewshed

4. Tasks accomplished to address problem:

Work Group Discussion

5. Listing of alternatives to problem:

- a. No action
- b. Provide no wake zones within a designated distance from recreation facilities
- c. Relocation of recreation facilities
- d. Protective structures (i.e., jetties and/or flooding wavebreaks) around recreation facilities.

6. Selected alternative b, c, & d *.
*depends on site specific situation

7. Rationale for selection of alternative:

Solution to problem must be selected on site by site basis. Damage to facilities and water crafts has been caused by wakes created by speeding water crafts. Proper measures shall be taken to protect lives and property within those high density use areas.

8. References used to select alternative:

- 1) Work Group Discussion
- 2) Boat Safety Report
- 3) Coast Guard publication
- 4) Public concerns

9. Rationale for elimination of other alternatives:

The alternative does not address public concern.

10. Preliminary impact assessment of selected alternative:

- 1) damage reduction is cost saving
- 2) erosion control
- 3) safety
- 4) increasing facility life
- 5) cost of study

11. Implementing Agency: All controlling agencies

12. Reason for work group rejection of recommendation: None

RECOMMENDATION

RECOMMENDATION # 1036

IMPACT

LOCATION (RIVER MILE)

ASSESSMENT FORM

POOL General

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-----------------------------|----------------------------|--|--|--|---|
| Cost of Study (site review) | \$ | No cost. | Problem areas (facilities) will close or solutions to problem will be implemented. \$1,000 to \$35,000 | Problem areas will be studied and solution recommended. \$1,000 - \$35,000 | The timing involved and recognition of problem will determine when cost is occurred. |
| Damage reduction | + | Water craft wave action cause damage to moored crafts and facilities. | If no positive action is taken, the problem will continue. | The use of protective measures will reduce the property loss and damage caused by wave action. | Reduction in the loss of property or personal injury; increase the useful life of the property. |
| Erosion control | + | Soil and bank erosion will continue; limited amount of erosion prevention has been developed. | Continuation of problem with some action toward decreasing the effect of wave action. | Implementation of preventive measures will lessen the degree of damage caused by wave action of water craft movement and wind. | Reduction of erosion caused by wave actions at recreation areas. |
| Safety | + | Personal injuries are caused as a result of wave action on moored boats and from soil erosion areas. | Same as #3. | Reduction of body injuries. | Reduction of injuries. |

RECOMMENDATION # 1036 (cont.)

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------|----------------------------|---|---|--|---------------------------------------|
| Facility life | + | Structure damage to property will continue to occur. | Continuous damage to the facility will reduce the life of the property. | Proper protection will increase facility life. | Increase in facility life. |

RECOMMENDATION: 1037

Presently, the Rock Island District, Corps of Engineers is restricted from developing and maintaining additional recreational areas on Corps lands without a cost sharing partner. There is a need to include recreation as a project purpose and to amend Public Law 89-72 to allow the COE to develop and maintain recreation areas on Corp managed lands without local cost sharing. Such action would include management and maintain dredge material beaches and expand the existing range. staff. These changes would greatly enhance the recreational potential, development and use of the river for the benefit of the general public.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1037

Pool Number General

River Mile

Date Approved by Work Group August 16, 1979

1. General problem addressed:

- a. Public Law 89-72 limits Corps authority for recreation development (#24).
- b. Recreation is not project purpose of the 9-foot channel (#21).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor.

4. Tasks accomplished to address problem:

Work Group Discussion

5. Listing of alternatives to problem:

- a. Amend Public Law 89-72 to allow Corps to develop and maintain recreation areas on Corp managed land without local cost sharing, create and maintain dredge material beaches and expand the ranger staff.
- b. Include recreation as a project purpose of the 9-foot channel.
- c. Expand Rock Island District's role to provide additional recreation/resource management.
- d. Amend Public Law 89-72 to allow the Corps to develop and maintain recreation areas on Corps managed land with local cost sharing, create and maintain dredge material beaches and expand the ranger staff.
- e. Do nothing.

6. Selected alternative a, b, & c.

7. Rationale for selection of alternative:

If recreation was included as a project purpose of the 9-foot channel, and Public Law 89-72 was amended, the RID-COE would be able to develop and maintain recreational areas on Corps lands without a cost sharing partner. This would greatly enhance the recreational potential, development and use of the river for the benefit of the general public.

In addition, new flood control projects related to the river could possibly be developed with certain types of recreational facilities. The federal government could possibly fund 100% of the cost of the development of the recreational facilities. The cost for facilities could be the responsibility of the local government entity who requested the project.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

Does not meet objectives of the work group.

10. Preliminary impact assessment of selected alternative:

- 1) cost of increased authority (operation maintenance and personnel)
- 2) cost of legislative change
- 3) increased recreation opportunities
- 4) enhanced recreation
- 5) maintenance of beaches
- 6) reduced conflicts

11. Implementing Agency: U.S. Congress implemented by the Corps

12. Reason for work group rejection of recommendation: None

RECOMMENDATION # 1037

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------------------------|----------------------------|---|---|---|--|
| Legislative Change | + | No action. | No action. | In order to implement this change, Congress will need to amend existing laws to provide recreation as a priority activity for COE | Positive change the COE project purposes/ Legislative changes. |
| Cost of authority | \$ | \$700,000/year | \$700,000/year | \$1.4 million/year | \$700,000/year |
| Recreation enhancement opportunities | + | Limited amount of recreation facilities or areas are being developed, maintained or enhanced. | Same as #3 | Existing facilities can be upgraded and additional facilities and services provided. | Increase in quality & number of facilities available for public use. |
| Reduced conflicts | + | Some recreation sites are heavily used. | Overuse | Reduce pressure on existing facilities and sites. | Easy public use on existing sites. |
| Fish and wildlife Habitat (indirect) | Habitat quality | Public use limited to existing developed sites | Limited use of the resources. | Increase use may degradation of wildlife habitat | Encroachment on the habitat quality |

RECOMMENDATION: 1050

In reviewing the problems and concerns of the public, a need for the establishment of planning and design guidelines for public access areas has been identified. Many access areas have been developed along the river with little apparent consideration of the potential hazards created by hostile site factors. Even though the Mississippi River is a changing resource, the Rock Island District should develop generalized planning guidelines to be used in locating and designing public access areas by resource planners/managers.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1050
Pool Number General
River Mile _____
Date Approved by Work Group February 4, 1980

1. General problem addressed

Need for planning and design guidelines for public access areas

2. Sub-problem addressed

3. Sub-objective addressed

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem

Work Group discussion

5. Listing of alternatives to problem:

a. No Action

b. RID, COE, should develop a set of generalized planning guidelines to be used in locating and designing public access areas.

6. Selected alternative b

7. Rationale for selection alternative: The concern is for public safety, particularly the safety of these boaters who either have had little boating experience at all or have had little experience on the Mississippi River. Many access areas and ramps have been developed along the river with little apparent consideration of the potential hazards created by location of ramps in relation to other site factors.

8. References used to select alternative (use tasks, support documents and/or discussions, studies, articles, etc.):

public meetings
Work group discussion

9. Rationale for elimination of other alternatives:

The other alternative does not meet Work Group objectives

10. Preliminary impact assessment of selected alternative. (List below all general impacts which can be identified by the work group. The level of detail required is only that for which the information is readily available.)

Cost of Study

10a. Implementing Agency: Corps of Engineers

11. Reason for work group rejection of recommendation:

RECOMMENDATION # 1050

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL General

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--------------------|----------------------------|---|---|--|---------------------------------------|
| Cost of Study | Dollars | No cost. | No cost. | Cost of Study \$30,000. | \$30,000 for cost of study. |

IV. B. 3. Pool Specific Recommendations

The following is intended to serve as a subject index for the pool-specific recommendations. The recommendations follow the index in pool and recommendation number order.

| Pool Number | Recommendation Subject | Number | Page |
|-------------|--|--------|------|
| Pool 11 | Potential use and development | 1038 | |
| | Dredged Beach Recommendations | 1051 | |
| | Extension of a protective wall | 1063 | |
| Pool 12 | Potential use and development | 1039 | |
| | Dredged Beach Recommendations | 1052 | |
| | Improve access channel & boat ramp | 1064 | |
| Pool 13 | Creation of new island | 1026 | |
| | Potential use and development | 1040 | |
| | Dredged Beach Recommendations | 1053 | |
| Pool 14 | Locking conflicts at L&D 14 | 1014 | |
| | Potential use and development | 1041 | |
| | Dredged Beach Recommendations | 1054 | |
| Pool 15 | Locking Conflicts at L&D 15 | 1015 | |
| | Potential use and development | 1042 | |
| | Dredged Beach Recommendations | 1055 | |
| Pool 16 | Potential use and development | 1043 | |
| | Dredged Beach Recommendations | 1056 | |
| Pool 17 | Potential use and development | 1044 | |
| | Dredged Beach Recommendations | 1057 | |
| Pool 18 | Potential use and development | 1045 | |
| | Dredged Beach Recommendations | 1058 | |
| Pool 19 | Creation of new island | 1027 | |
| | Improve public access and recreation opportunities | 1035 | |
| | Potential use and development | 1046 | |
| | Dredged Beach Recommendations | 1059 | |
| Pool 20 | Potential use and development | 1047 | |
| | Dredged Beach Recommendations | 1060 | |
| Pool 21 | Potential use and development | 1048 | |
| | Dredged Beach Recommendations | 1061 | |
| Pool 22 | Potential use and development | 1049 | |
| | Dredged Beach Recommendations | 1062 | |

Pool 11

A. POOL DESCRIPTION:

Pool 11 is the uppermost pool in the Rock Island, COE District reach of the Upper Mississippi. Pool 11 is formed by Lock and Dam 11. The dam was placed in operation on September 14, 1937 and is located at river mile 583.0, just north of Dubuque, Iowa. The pool extends from Dubuque northwesterly, about 32.1 river miles to Lock and Dam 10 at Guttenberg, Iowa. Based on flat pool elevations, the maximum lift at Lock and Dam 10 is 8 feet, and 11 feet at Lock and Dam 11. Depth of the pool within the main channel ranges from nine feet at the upper end to almost 20 feet at Dam 11. The pool averages 1.7 miles in width and has a water surface area of 21,000 acres.

Clayton and Dubuque Counties in Iowa, and Grant County in Wisconsin comprise the boundaries of Pool 11. Mean annual precipitation in the Pool 11 drainage area is 28.3 inches, and mean annual runoff is 7.22 inches. The infiltration rate of the soils in the drainage area of Pool 11 range from 0.10 inch per hour in the lower portions to 0.15 inch per hour in the upper regions.

Principal features of Pool 11 are summarized below:

| | |
|--------------------------------------|----------------------|
| 1. Length of pool | 32.1 river miles |
| 2. River miles | 615.1 to 583.0 |
| 3. Pool elevation (flat pool) | 603' |
| 4. Water area of pool (flat pool) | 15,000 acres (Total) |
| channel | 3,000 acres |
| off channel | 12,000 acres |
| 5. Shoreline miles (islands & banks) | 312 miles (Total) |
| COE - owned | 170 miles |
| Fish & Wildlife Service-owned | 105 miles |
| Other (state, local, private) | 37 miles |
| 6. Land acreage (federal lands only) | 7,103 acres (Total) |

| | <u>Owns</u> | <u>Manages</u> |
|-------|-------------|----------------|
| COE | 4,851 acres | 543 acres |
| USFWS | 2,252 acres | 4,308 acres |

B. RECREATION OPPORTUNITIES

Recreational sites are scattered along the banks of Pool 11, but the major facilities are in or near the urbanized areas. A total of 13 boat docks or launching sites exist within the pool; others are provided as part of municipal parks. The beaches, made from dredge material above the Turkey River from mile 608 to 611, are extensively used by boaters for recreation.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|----------------------------------|
| 610.7 | Muddy Creek Launching Area |
| 610-608 | Nelson Dewey Memorial State Park |
| 608.5 | Stonefield Village |
| 607.3 | Furnace Branch Public Use Area |
| 601.7 | Bertom Lake Public Use Area |
| 590.7 | Grant River Public Use Area |
| 583.3 | Sinnippee Public Use Area |
| 582.9 | Eagle Point Park |

The Nelson Dewey Memorial State Park, in Wisconsin between miles 608 and 610, contains about 600 acres, and includes the Stonefield Village historical site and areas for camping, picnicking, and hiking.

Within the village limits of Cassville and along the Mississippi River lies a 30-acre community park. Inside the park are a two-acre camp area, a two-acre picnic area, a boat launch, and a public beach consisting of approximately one acre. There are two other boat launches. One, known as Stan's Landing, is to the north at the Wisconsin Power and Light generating plant and the other is to the south near the airport.

The Bertom Lake Public Use Area is at river mile 601, about four miles downstream from Cassville, Wisconsin. The two-acre area is very popular with local fishermen. Facilities consist of a parking area for 22 cars, a maneuvering area, and two graveled boat ramps.

The Village of Potosi Recreation Area contains 15 acres of land and is located at river mile 592.1. Picnic facilities, a boat launching ramp and parking for 20 auto-trailer units are provided.

The Great River Public Use Area is a nine-acre tract of land at river mile 591, three miles downstream from Potosi, Wisconsin. Facilities include picnic areas, camping sites, and an unimproved launching ramp.

The South Potosi Launching Area is a one-acre tract located at river mile 591. The site is little used except by commercial fishermen. It provides a launching ramp and space for about ten car-trailer units.

The Mud Lake Recreation Area is a 57 acre tract of land at river mile 589.4. The area provides camp sites, picnic tables, two boat launching ramps, and parking for 45 cars and 30 car-trailer units. There is also a marina with covered dock facilities for approximately 45 boats.

C. WATER-ORIENTED RECREATION FACILITIES

The sales and services facilities in Pool 11 cater primarily to the recreational boater. The table below lists the names and locations of these facilities.

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-------------------|----------------------------|-----------------------|----------------|-----------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 614.8 | Guttenberg Boat Line | | X | X |
| 614.7 | Kenny's Boat Line | X | X | X |
| 613.4 | Schleicker's Boat Dock | X | X | X |
| 612.2 | Hensel Boat Dock | X | | |
| 606.3 | Municipal Public Use Area | X | | |
| 605.9 | Stan's Landing | | X | X |
| 603.6 | Hefel Boat Dock | X | X | X |
| 601.6 | Bertom Lake Launching Area | X | | |
| 599.9 | Anthony's Boat Dock | X | X | X |
| 598.6 | McCartney Launching Area | X | | |
| 596.5 | Lynn Hollow Launching Area | X | | |
| 590.5 | South Potosi Launch. Area | X | | |
| 589.4 | Mud Lake Recreation Area | | | |
| 582.1 | Eagle Point Marina | X | | |

D. RECREATION ACTIVITIES AND THEIR RELATIVE NEEDS

Pool 11 is noted for its excellent hunting and ice fishing opportunities. Fishing is the largest recreation use activity in Pool 11. Projections call for this use to increase dramatically in comparison to other pools. The adequacy indicators show no major need for additional facilities.

Boating activity use will increase in importance in comparison to other pools. For the entire pool, parking spaces and ramps are relatively adequate, but Wisconsin displays a need for marina slippage. Future trends could also indicate a need for slippage in Guttenberg.

Picnicking ranks a distant third behind fishing and boating in activity use in Pool 11 at 72,000+ activity days. Pool 11 is relatively well supplied for picnicking but closer inspection of the data reveals Iowa would better serve potential use with additional facilities.

Developed camping is relatively adequate in Pool 11 and should continue to provide reasonable service in the future. Potential camp sites are in the midpoint in comparing Pool 11 with other pools.

Swimming is an active use in Pool 11, ranking fourth among the 12 pools. The pool seems to be relatively well supplied in comparison to the other pools, but beaches with car/pedestrian access would be readily used.

Waterskiing use in Pool 11 ranks relatively low in comparison to the other pools and is in the middle range of relative adequacy indicators. Several new hard-surfaced ramps are scheduled for construction in Guttenberg which should alleviate major facility needs.

RECOMMENDATION: 1038

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1038
Pool Number 11
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.

b. No action.

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

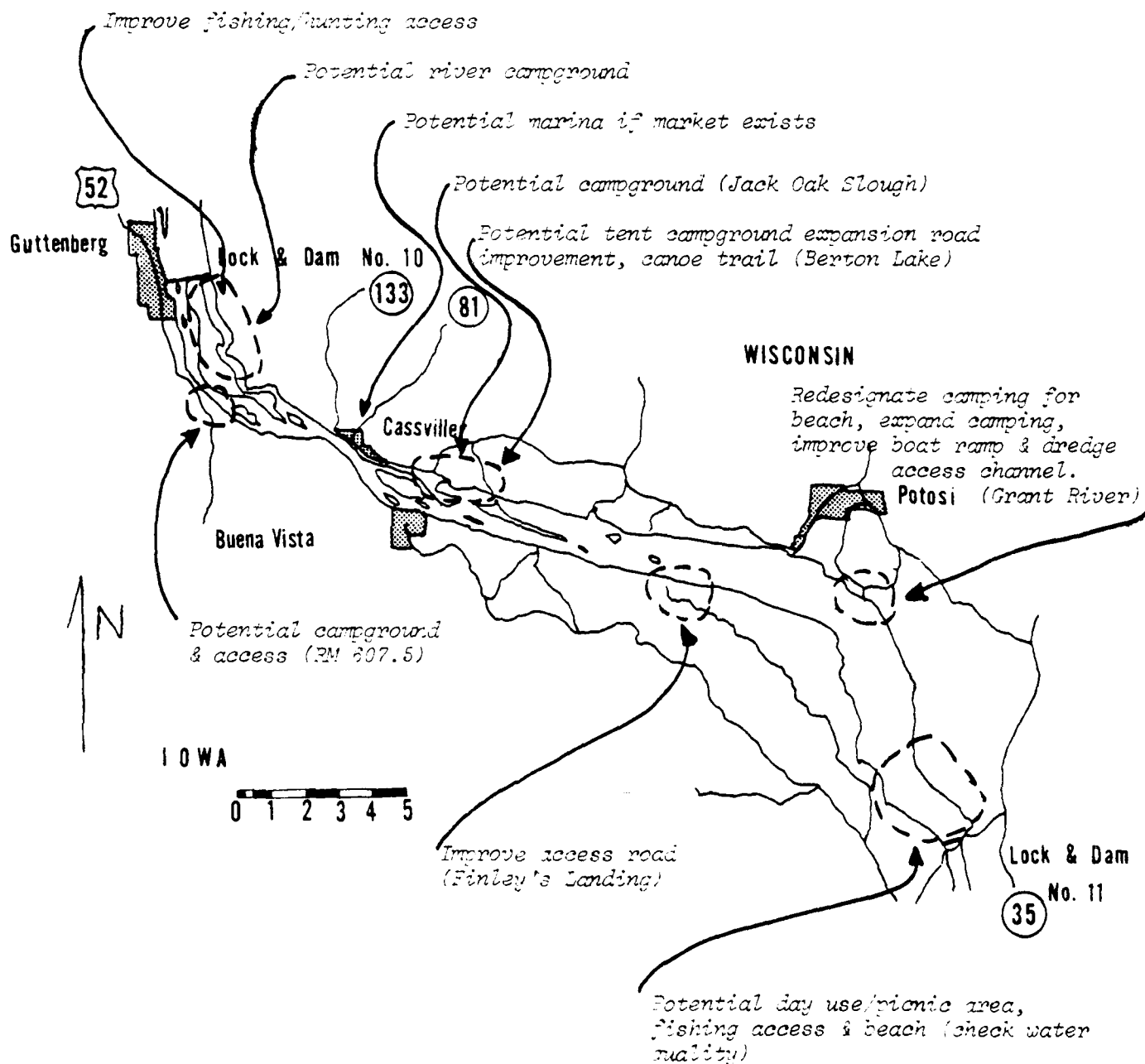
- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 11



RECOMMENDATION # 1038

RECOMMENDATION

LOCATION (RIVER MILE) See map

IMPACT

POOL 11

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITIONS AS OF JAN. 1, 1970 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------|----------------------------|--|---|--|---|
| Cost of Study | dollars | No Study No cost | No Cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the resource and existing facilities and services. | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utilization and distribution of the use & user |
| Knowledge of area | + | Limited or no knowledge | Same as #3 | Better understanding of the natural resource and the compatibility of the potential areas. | Same as #5 |

RECOMMENDATION: 1051

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 595.6 - 596.0 R (Finley's Landing)
- b. 610.4 - 611.0 L (no name)
- c. 609.5 - 610.2 R (no name)
- d. 613.3 R (no name)
- e. 589.5 R - (Mudlake)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1051
Pool Number 11
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Need for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

5. Listing of alternatives to problem:

- a. 595.6 - 596.0 R (Finley's Landing)
- b. 610.4 - 610.7 L (no name)
- c. 609.5 - 610.2 R (no name)
- d. 613.3 R (no name)
- e. 589.5 R - (Mudlake)

* Notes:

1. Additional material placement for beach enhanced is only on an "as needed" basis.
2. If river current, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a thru g.

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river current, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative:

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps of Engineers

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1051

LOCATION (RIVER MILE)

POOL 11

RECOMMENDATION
IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1051 Continued

LOCATION (RIVER MILE) _____

POOL 11 _____

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

RECOMMENDATION: 1063

Wave action now prevents use of the existing boat ramp by recreation users on windy days which are very frequently.

In order to enhance the use and provide a safe condition for the recreational users, during loading and unloading of the users recreation craft, it is recommended that the protective wall be extended eastwardly 150 to 200 feet.

Assistance from the Wisconsin Department of Natural Resources, HCRS and Rock Island District, COE will be required for the township of Jamestown, Wisconsin to consider implementation of this project.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1063
Pool Number 11
River Mile 583L
Date Approved by Work Group 1 April 80

1. General problem addressed:

Use of recreational boat access is prohibited due to wave action.

2. Sub-problem addressed:

None

3. Sub-objective addressed:

Enhance recreation use of the river.

4. Tasks accomplished to address problem:

Work Group personnel from Iowa and Wisconsin inspected the problem area and reviewed complaints from the public.

5. Listing of alternatives to problem:

- a. No action
- b. Remove access site.
- d. Extension of the protective wall eastwardly.

6. Selected alternative c.

7. Rationale for selection of alternative:

The proposed extension will reduce wave action to the recreational boat access ramp in pool 11" 0' Leary Lake. The extension of the protective wall will increase use by providing calm condition at the access site. Wave action now prevent boat launching on windy days.

8. References used to select alternative:

On-site inspection public complaints.

9. Rationale for elimination of other alternatives:

Would not meet the needs of the recreation interest.

10. Preliminary impact assessment of selected alternative:

- 1) Cost of Construction
- 2) Fish and Wildlife

11. Implementing Agency: Would be Township of Jamestown, Wisconsin, Wis DNR, HCRS and RID, COE.

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1063

RECOMMENDATION

LOCATION (RIVER MILE) 583 L

IMPACT

POOL 11

ASSESSMENT FORM

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-----------------------------|----------------------------|---|---|---|---------------------------------------|
| Cost of Construction | dollars | 0 | 0 | \$65,000 for construction cost. | Same as #5 |
| Fish habitat | + | Without implementation change in fish habitat | not known | minimum impact on fish habitat, long terms effect may be increase sedimentation behind wall | Same as #5 |
| Dredge material utilization | + | 0 | 0 | Dredge material may be utilized to create a portion of the protective wall. | Same as #5 |
| Leisure opportunities | + | Because of limited use and damage to personnel property, the quality of the recreation experience has been diminished for some users. | Same as present | Safe conditions will enhance the recreational opportunities for the general public. | Increase the experience value. |
| Recreation facilities | + | Limited use of the facilities on windy days. | same as #3 | more use | more use |

Pool 12

A. POOL DESCRIPTION

Pool 12 is formed by Lock and Dam 12 which is located at river mile 556.7, directly east of Bellevue, Iowa. The dam was placed in operation on May 14, 1939. The pool extends from Bellevue in a northwest direction for 26.3 river miles to Dam 11 (583.0). Based on flat pool elevations (592.0 at Dam 12), the maximum lift from Pool 13 to Pool 12 is 9 feet and from Pool 12 to Pool 11 is eleven feet. The width of Pool 12 varies from approximately 3/8 of a mile at Dubuque to 1 1/2 miles at river mile 561, and has a water surface area of 13,000 acres.

Dubuque and Jackson Counties in Iowa, Grant County in Wisconsin, and Jo Davies County in Illinois make up the border for Pool 12. Pool 12 drainage area exhibits a mean annual precipitation of 28.5 inches and a mean annual runoff of 7.25 inches. The infiltration rate of soils in the drainage area is 0.10 inch per hour.

Principal features of Pool 12 are summarized below:

| | |
|--------------------------------------|------------------------------|
| 1. Length of pool | 26.3 river miles |
| 2. River miles | 583.0 to 556.7 |
| 3. Pool elevation (flat pool) | 592' |
| 4. Water area of pool (flat pool) | 19,000 acres (Total) |
| channel | 3,000 acres |
| off channel | 16,000 acres |
| 5. Shoreline miles | 280 miles (Total) |
| COE | 240 miles |
| USFWS | 0 miles |
| Other (state, local, private) | 40 miles |
| 6. Land acreage (federal lands only) | 5,865 acres (Total) |
| | <u>Owms</u> <u>Manages</u> |
| COE | 5,198 acres 907 acres |
| USFWS | 487 acres 4,291 acres |
| Other (state, local, private) | |

B. RECREATION OPPORTUNITIES

There are ten recreational areas located on the river bank of Pool 12. Several more are inland. The following table lists the recreational facilities in Pool 12 by location.

PARK AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|--------------------------------|
| 582.9 | Eagle Point Park |
| 580.0 | Old Shot Tower |
| 577.6 | Julien Dubuque Grave |
| 573.5 | Massey Station |
| 561.0 | Chestnut Mountain Lodge Resort |
| 559.6 | Spruce Creek Public Use Area |
| 558.5 | Jack & Jean's Resort |
| 558.5 | Blanding's Landing |
| 557.0 | Public Launch |
| 583.0 | Fishing Barge |

There are also three extensively used dredged material beaches at river miles 564, 574, and 579.

Boating is the most popular recreational activity in Pool 12. The Dubuque Marina is the biggest marina in the tri-state area. Boaters from as far away as Des Moines and Cedar Rapids, Iowa, Chicago, Illinois, and Madison, Wisconsin, use these facilities.

Blanding's Landing at river mile 558.5 is administered by the Corps of Engineers. Its facilities are severely taxed by increasing usage. There are excellent hunting, fishing, and pleasure boating opportunities throughout most of the pool.

C. WATER-ORIENTED RECREATION FACILITIES

Most sales and service facilities in Pool 12 cater to recreational boating, fishing, and hunting. The following table lists those facilities in Pool 12.

PLEASURE-BOAT SALES AND SERVICES

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-------------------|--------------------------------|-----------------------|----------------|-----------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 582.4 | Dubuque Municipal Dock | X | X | X |
| 582.3 | Eagle Point Marina | X | X | X |
| 581.9 | Junnies Flat Boat Club | X | | |
| 580.9 | Dubuque Yacht Basin | | X | X |
| 580.6 | Bissill Harbor | | X | |
| 579.7 | Midtown Marina | X | X | X |
| 579.6 | East Dubuque Launching Site | X | | |
| 579.5 | Dubuque Launching Site | X | | |
| 579.4 | Bent Prop | | X | X |
| 579.3 | Dubuque Municipal Dock | | X | |
| 579.2 | Midtown Marina | X | X | X |
| 579.0 | Hynish Landing | | X | |
| 577.9 | Jungwirth Marina | X | X | X |
| 577.2 | Mulgrew's Dock | X | X | X |
| 576.2 | Fentress Lake Marina | X | | X |
| 576.1 | Charlie's Boat Dock | | X | X |
| 573.5 | Massev Station | X | X | X |
| 570.0 | Galena Boat Club | | | X |
| 568.9 | Beaver Valley Boat Harbor | X | X | X |
| 566.5 | Gear's Ferry Landing | X | X | X |
| 561.0 | Chestnut Mountain Lodge Resort | | X | X |
| 559.6 | Spruce Creek Public Use Area | | X | X |
| 558.5 | Jack and Jean's Resort | X | X | X |
| 558.5 | Blanding's Landing | X | | X |
| 557.8 | Doc's Marina | | X | X |
| 557.0 | Public Launch | X | | X |

Source: U.S. Army Corps of Engineers

D. RECREATION ACTIVITIES AND THEIR RELATIVE NEED

In Pool 12, fishing increases in relative popularity over the study period. The indicator analysis shows a moderate need for additional ramps that worsens by 2025. Hunting is moderately popular in Pool 12 with a moderate need for additional ramps. Picnicking on a pool-by-pool comparison is relatively well supplied. The analysis of the state unit breakdown indicates that Illinois could use additional facilities. Developed camping is popular in Pool 12 but is in need of additional units. Future use projections indicates that this relative need worsens in the future with no increase in present supplies. There is also a relative need for potential island beach areas for camping. Boating is popular in the pool. The indicator analysis shows a moderate need for additional ramps and a low need for parking spaces and marina slippage. Waterskiing is not a relatively popular pastime in comparison to the other pools in the GREAT II Study area. The analysis indicates a low need for additional hard-surfaced ramps. Swimming is not a relatively popular activity in Pool 12, however, the relative adequacy indicator analysis shows a moderate need for additional swimming beaches. Beaches with car/pedestrian access would be utilized by the urban populations in the pool.

RECOMMENDATION: 1039

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION 4
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1039
Pool Number 12
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.

b. No action

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate
Federal and State agencies

12. Reason for work group rejection of recommendation:

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GREAT RIVER ENVIRONMENTAL ACTION TEAM

F/G 13/2

GREAT RIVER ENVIRONMENTAL ACTION TEAM II. (GREAT II). UPPER MIS--ETC(U)

DEC 80

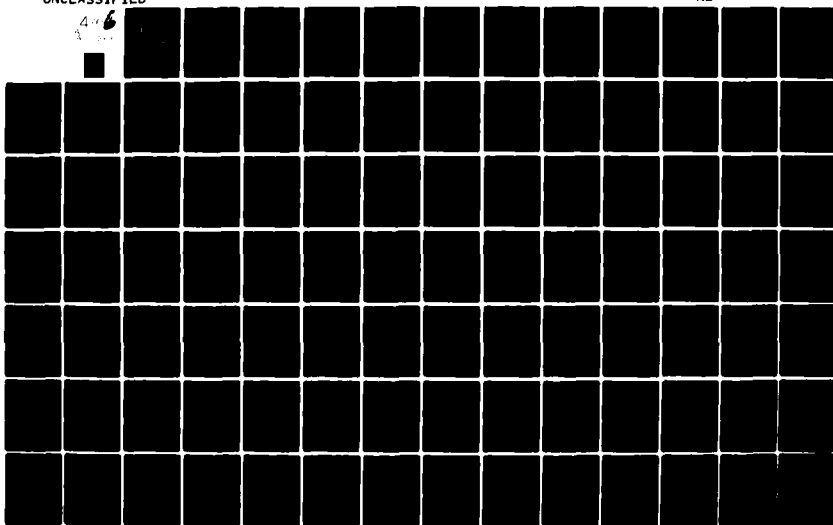
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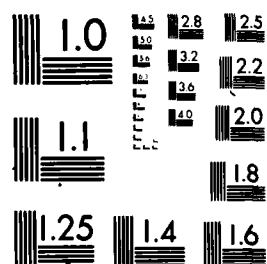
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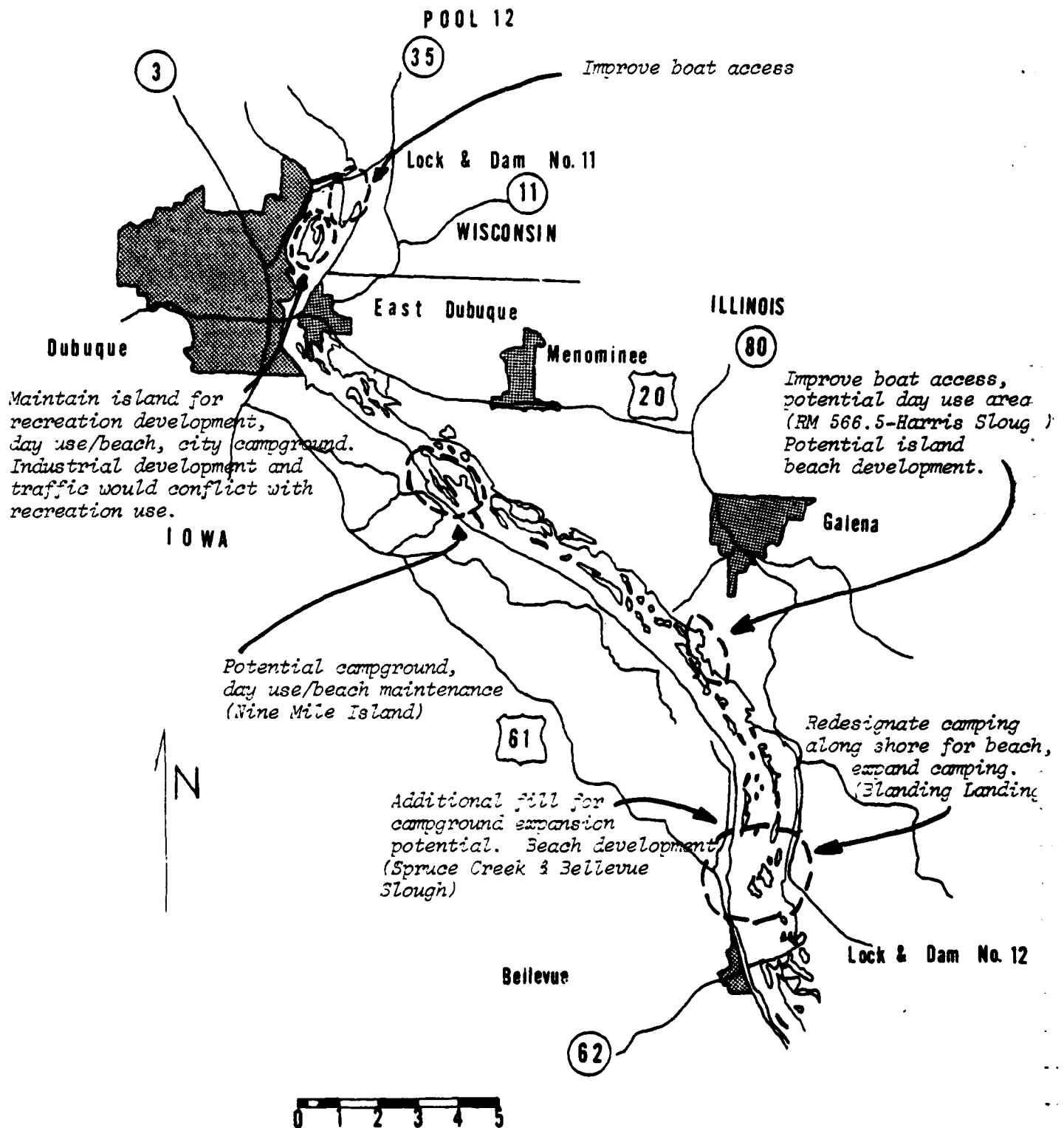
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

GENERAL RECREATIONAL NEEDS AND POTENTIALS



RECOMMENDATION # 1039

RECOMMENDATION

LOCATION (RIVER MILE) See map

IMPACT

POOL 12

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMEN- DATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1052

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 581.5 L, 581.6 - 581.9 L (no name)
- b. 582.3 L (no name)
- c. 574.3 R & L (Nine Mile Island and Main Shore) From pipeline crossing construction, not navigation channel maintenance
- d. 564.2 - 564.3 L (no name)
- e. 560.8 L (no name)
- f. 582.9 (O'Leary's Lake)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1052
Pool Number 12
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Need for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a. 581.5 L, 581.6 - 581.9 L (no name)
- b. 582.3 L (no name)
- c. 574.3 R & L (Nine Mile Island and Main Shore) From pipeline crossing construction, not navigation channel maintenance.
- d. 564.2 - 564.3 L (no name)
- e. 560.8 L (no name)
- f. 582.9 (O'Leary's Lake)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.

*Notes Continued

2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.
6. Selected alternative a-f.
7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river current, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
8. References used to select alternative:
 - 1) Disposal Site Selection
 - 2) Recreation Needs Analysis
 - 3) Work Group Discussions
9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.
10. Preliminary impact assessment of selected alternative:
 - 1) increased leisure opportunities
 - 2) fish and wildlife habitat
 - 3) dredge material utilization
 - 4) dredging equipment and methodology
 - 5) recreation facilities
 - 6) water quality
11. Implementing Agency: Corps
12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1052

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 12

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1052 Continued

LOCATION (RIVER MILE)

POOL 12

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

RECOMMENDATION: 1064

The existing access chute from O'Leary Lake into Pool 12 for recreation use is silting in. Because of this sedimentation problem, the fish habitat is being lost in addition to the recreation benefit. Furthermore, users are also having problems with the length of the ramp and parking at the existing boat ramp and located at this site. As a result of the site inspection, it is recommended that the access channel from O'Leary Lake to Pool 12 be wider and deeper and the boat ramp be upgraded. Assistance from the Wisconsin Department of Natural Resources, HCRS and Rock Island District, COE will be required for the township of Jamestown, Wisconsin to consider implementation of this project.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1064
Pool Number 12
River Mile 583 L
Date Approved by Work Group 1 April 80

1. General problem addressed:

Use of recreational boat access is prohibited due to sedimentation problems.

2. Sub-problem addressed:

None

3. Sub-objective addressed:

Enhance recreation use of the river

4. Tasks accomplished to address problem:

Work Group personnel from Iowa and Wisconsin field inspected and discussed problem, complaints from public to local agencies representatives.

5. Listing of alternatives to problem:

a. No Action

b. Widen and deepen access channel from O'Leary Lake to Pool 12
and improve boat ramp

c. Improve boat ramp only

d. Improve access channel only

6. Selected alternative b.

7. Rationale for selection of alternative:

The existing access chute from O'Leary Lake into Pool 12 for recreation use is silting in. Because of this sedimentation problem, the fish habitat is being lost in addition to the recreation benefit. Furthermore, users are also having problems with the length of the ramp and parking at the existing boat ramp and located at this site.

8. References used to select alternative:

On-site inspection public complaints

9. Rationale for elimination of other alternatives:

Would not meet the needs of the recreational interest.

10. Preliminary impact assessment of selected alternative:

- 1) Cost of construction
- 2) Fish habitat

11. Implementing Agency: Would be Township of Jamestown, Wisconsin, Wisconsin DNR, HCRS and RID, COE.

12. Reason for work group rejection of a recommendation:

RECOMMENDATION

RECOMMENDATION # 1064

IMPACT

LOCATION (RIVER MILE) 583 L

ASSESSMENT FORM

POOL 12

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL.5-COL.4) |
|------------------------|----------------------------|--|---|--|---|
| Cost of Implementation | dollars | 0 | 0 | \$15,000 for dredging \$15,000 for upgrading boat ramp. | \$30,000 |
| Fish Habitat | + | Decrease in quality habitat and water depth. Limited use because of siltation and design of access point. | Complete loss because of sedimentation. Siltation will continue to be a problem. | maintenance of the fishery habitat. Increase in use and will enhance recreational opportunities for the general public. | Improved fish habitat. Increase the recreational experience value. |
| Leisure opportunities | + | Limited use of the facilities because of water depth and access. | Siltation will prohibit all use and increase fish habitat loss. | Provide adequate access. | Longer life of facility and improve fish habitat. |
| Recreation facilities | + | | | | |

POOL 13

A. POOL DESCRIPTION

Pool 13 is formed by Lock and Dam 13, which is located at river mile 522.5 north of Clinton, Iowa and Fulton, Illinois. The dam was placed in operation on May 13, 1939. The pool extends from north of Fulton, Illinois, northwest to Bellevue, Iowa, a distance of 34.2 river miles. Based on flat pool elevations (583.0 feet at Dam 13), the maximum left from Pool 14 to Pool 13 is 11 feet and from Pool 13 into Pool 12 is 9 feet. The pool has an average width of 1.37 miles and has a water surface of approximately 29,103 acres. Jackson and Clinton Counties in Iowa and Jo Daviess, Carroll and Whiteside Counties in Illinois form the shoreline boundaries for this reach of the Mississippi River. Average annual precipitation in Pool 13 drainage area is 29.2 inches. The drainage area exhibits a corresponding mean annual runoff of 7.32 inches. Soils in the area have an infiltration rate of approximately 0.10 inches per hour.

Principal features of Pool 13 are summarized below:

| | |
|-----------------------------------|----------------------|
| 1. Length of pool | 34.2 river miles |
| 2. River miles | 556.7 to 522.5 |
| 3. Pool elevation (flat pool) | 583' |
| 4. Water area of pool (flat pool) | 29,103 acres (Total) |
| channel | 7,276 acres |
| off channel | 21,827 acres |
| 5. Shoreline miles | 503 miles (Total) |
| COE | 476 miles |
| USFWS | -- |
| Other (state, local, private) | 27 miles |
| 6. Land Acreage | 25,160 acres (Total) |

| | <u>Owms</u> | <u>Manages</u> |
|-------------------------|--------------|----------------|
| Corps | 10,233 acres | 2,601 acres |
| Savanna Ordinance Depot | 11,566 acres | -- |
| State | -- | -- |
| USFWS | 3,298 acres | 7,632 acres |

B. PUBLIC RECREATION OPPORTUNITIES

The following table lists the recreation facilities in Pool 13 by location:

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|---------------------------------------|
| 555.7 | Bellevue State Park |
| 552.9 | Pleasant Creek Public Use Area |
| 547.9 | Green Island Public Use Area |
| 541.0 | Mississippi Pallisades Park |
| 536.9 | Pipe Line Launching Ramp |
| 535.9 | Esmay Slough Launching Ramp |
| 535.7 | Sabula Public Use Area |
| 534.9 | Iowa State Conservation Fishery Stat. |

| <u>River Mile</u> | <u>Name</u> |
|-------------------|-------------------------------------|
| 534.8 | Echl's Harbor |
| 534.8 | C.M. St. P. & P. Public Launch Ramp |
| 534.4 | Public Use Area |
| 532.2 | Spring Lake Resort |
| 531.6 | Fin and Feather Resort |
| 531.0 | Big Slough Public Use Area |
| 526.0 | Thomson Causeway Public Use Area |
| 525.8 | Bulger's Hollow Public Use Area |
| 523.3 | Recreation Site with Ramp |
| 522.6 | Public Use Area |

There are three large state parks within Pool 13. The largest, located near Savanna, is the Mississippi Palisades State Park.

A small-boat launching ramp is located on Miller's Lake at mile 541.2. It is easily reached via Illinois Route 84 four miles north of Savanna. The northern entrance road to the Mississippi Palisades State Park also serves as the land access to the launching site. The facilities were constructed on Savanna Bay near Mississippi Palisades State Park by the Corps of Engineers in 1966 using local and federal funds. After completion, operation of the facility was turned over to the Illinois Department of Conservation. The Corps of Engineers maintains the channel (minimum depth of five feet). A launching ramp, fuel, and other river-related sales and services are available.

C. WATER-ORIENTED RECREATION FACILITIES

Most of the river related sales and services in Pool 13 cater to the recreational boater. The following table lists the name, location, and facilities available at the sales and service sites.

PLEASURE-BOAT SALES AND SERVICES

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-------------------|----------------------------|-----------------------|----------------|-----------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 556.6 | Bellevue Municipal Landing | X | | |
| 556.4 | Pat and Mike's | | X | X |
| 556.2 | Whitey's Boat Landing | X | X | X |
| 556.0 | Michael's Boat Landing | X | X | X |
| 555.0 | Jackson County Boat Ramp | X | | |
| 553.0 | Pleasant Creek | X | | |
| 547.9 | Green Island | X | | |
| 542.6 | Sandy Lane Resort | | X | |
| 539.6 | Miller's Hollow | X | X | X |
| 539.6 | Lazy River Marina | | X | X |
| 537.5 | Harriet's Marina | | X | X |
| 537.4 | Savanna Municipal Ramp | X | X | X |
| 537.2 | Greenley Elevator Co. | | X | X |
| 537.3 | Ritchie's Boat Dock | | X | X |
| 535.9 | PipeLine Launching Ramp | X | | |
| 536.3 | Spring lake Resort | X | X | X |

| <u>River Mile</u> | <u>Name</u> | <u>Launching Area</u> | <u>Docking</u> | <u>Other Services</u> |
|-------------------|-------------------------------------|-----------------------|----------------|-----------------------|
| 535.9 | Esmay South | X | | |
| 535.5 | Sabula Public Use Area | X | | |
| 535.2 | David's Marina | | X | X |
| 534.9 | Ehl's Harbor | X | X | X |
| 534.8 | C.M. St. P. & P. Public Launch Ramp | X | | |
| 534.4 | Public Use Area | | | |
| 533.0 | Spring Lake Resort | X | X | X |
| 532.0 | Fin-And-Feather | X | | X |
| 531.0 | Big Slough Public Use Area | X | | X |
| 536.0 | Thomson Causeway Public Use Area | X | | X |
| 525.5 | Bulger's Hollow | X | | X |
| 523.3 | Rec. Site with Ramp | X | | |
| 522.6 | Lock 13 Public Use Area | X | | |

Source: U.S. Army Corps of Engineers

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS:

Pool 13 has more recreational developments, both federal and non-federal, than any other pool in the Rock Island District.

Pleasant Creek Public Use Area, one of the most frequently used public areas, is a Corps developed area in the Rock Island District, located at mile 552.9. Developed with dredged material it provides camping, hunting and nature study areas.

Boating is the most important recreational activity in Pool 13. The Savanna and Sabula recreation facilities and several nearby beaches formed with dredged material are used by the recreational boater.

Boating is a moderately popular activity in comparing the 12 GREAT II Pools. The adequacy analysis indicates a low need for additional parking spaces at ramps or additional ramps. The waterskiing analysis did indicate a need for hard-surfaced ramps on the Iowa shore. The analysis points out a moderately high need for additional marina slippage. Fishing is moderately popular in Pool 13. The adequacy analysis shows a relatively low need for additional facilities. Hunting is moderately popular with a low to moderate relative need for additional ramp facilities. Picnicking is a moderately popular activity which increases in relative popularity over the study period. The adequacy analysis indicates that there is a relative low need for additional facilities. Developed camping is a highly popular activity in comparison to the other pools. This is due to the large numbers of existing facilities to absorb this use. The adequacy analysis indicates a relatively low need for additional developed camping facilities. The analysis did point out a relatively high need for potential beach campsites. Swimming use is relatively low in Pool 13 and the analysis indicates a low relative need for beach facilities. Additional beaches with car/pedestrian access would be highly beneficial.

RECOMMENDATION: 1026

There are no island recreation opportunities in the lower portion of pool 13, plus there is a need for an area of refuge during high winds and to serve as rest areas. The Rock Island District, Corps of Engineers, in conjunction with the Fish and Wildlife Service and States should investigate the feasibility of creating a multiple purpose island in the lower portion of the pool. The creation of an island would reduce the number of conflicts between recreationists and natural resources at other areas in the pool. The location and size of the proposed island must be coordinated with all interests to provide the desired benefits and minimize resource damage.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1026
Pool Number 13
River Mile _____
Date Approved by Work Group August 15, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities (#8).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor form channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site selection

5. Listing of alternatives to problem:

- a. Rock Island District in conjunction with the U.S. Fish and Wildlife Service and the States should investigate the feasibility of creating multiple purpose island in the lower portion of pool 13.
- b. Create beaches along the river banks.
- c. Do nothing.

6. Selected alternative a.

7. Rationale for selection of alternative:

There are no island recreation opportunities in the lower portion of this pool plus there is a need for an area of refuge during high winds and rest areas. The creation of the island would reduce the number of conflicts between the recreationist and natural resources on other areas. The location and size of the proposed island must be coordinated with the fish and wildlife interest to provide a beneficial island for all interest effected.

8. References used to select alternative:

- 1) Work Group Discussions
- 2) Recreation Needs Analysis

9. Rationale for elimination of other alternatives:

The other alternatives would not meet the objectives of the work group to enhance recreation use of the river corridor.

10. Preliminary impact assessment of selected alternative:

cost of study

11. Implementing Agency: Corps of Engineers

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1026 RECOMMENDATION

LOCATION (RIVER MILE) IMPACT

POOL 13 ASSESSMENT FORM

| 1. LISTS OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|---|----------------------------|---|---|---|--|
| Cost of Study | Dollars | 0 | 0 | \$200,000 to \$250,000 for the study & EIS | \$200,000 to \$250,000 for the study and EIS |
| Recreation Opportunities (Secondary Impact) | + | | | If study proved the project to be feasible, the creation of the island would enhance user satisfaction, protection for both the user and the natural resources. | Same as #5 |
| Dredge material utilization (secondary impact) | | | | If study proved the project to be feasible, dredge material could be utilized to create the island. | Same as #5 |

RECOMMENDATION: 1040

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1040
Pool Number 13
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

- a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.
- b. No action.

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

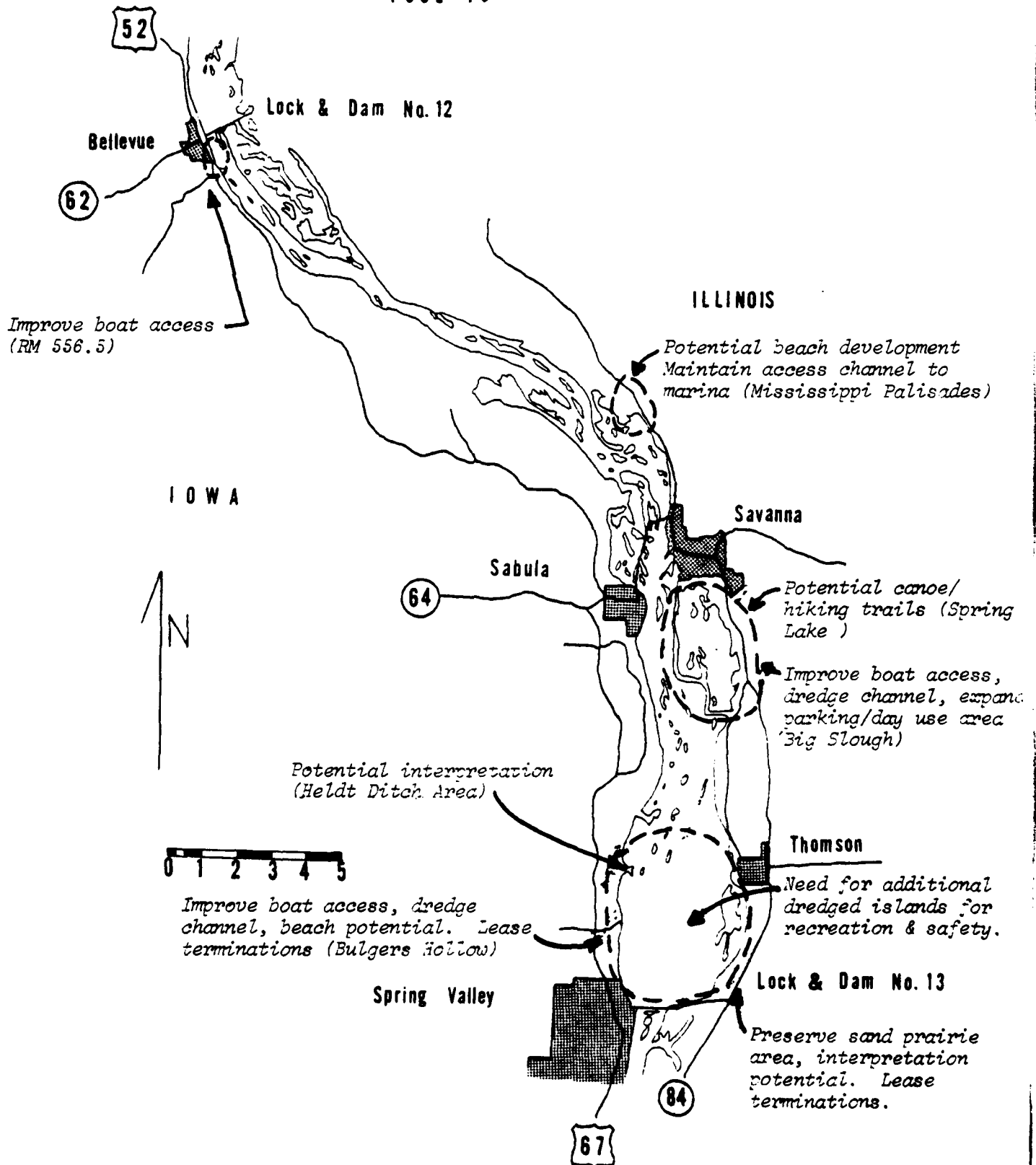
- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 13



RECOMMENDATION

IMPACT

ASSESSMENT FORM

RECOMMENDATION # 1040

LOCATION (RIVER MILE) See map

POOL 13

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDA- TIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1053

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 553.0 (Pleasant Creek)
- b. 550.7 - 551.1 L (Savanna Proving Grounds)
- c. 544.5 L (no name)
- d. 531.4 L (no name)
- e. 540.6 - 541.2 L (Sante Fe)
- f. 554.3 - 554.7 R
- g. 527.1 - 527.8 L (no name)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1053
Pool Number 13
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches.

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a. 553.0 (Pleasant Creek)
- b. 550.7 - 551.1 L (Savanna Proving Grounds)
- c. 544.5 L (no name)
- d. 531.4 L (no name)
- e. 540.6 - 541.2 L (Santa Fe)
- f. 554.3 - 554.7 R
- g. 527.1 - 527.8 L (no name)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

*Notes continued

3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-g.

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river current, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussion

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative.

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1053

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 13

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1053 Continued

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 13

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 14

A. POOL DESCRIPTION

Pool 14 is formed by Lock and Dam 14 which is located at river mile 493.3 just south of LeClaire, Iowa. The dam was placed in operation on May 13, 1939. The pool extends from just north of Clinton, Iowa for 29.2 miles to south of LeClaire. Based on flat pool elevations (572.0 feet at Dam 14), the maximum lift from Pool 15 into Pool 14 is 11 feet, and the maximum lift from Pool 14 to Pool 13 is 11 feet. Depth of the pool ranges from 9 feet at the upper end to 20 feet at the lower end. The pool has an average width of 0.86 miles and covers an area 10,450 acres with water.

Clinton and Scott Counties in Iowa and Whiteside and Rock Island Counties in Illinois form the shoreline boundaries of Pool 14. The drainage area for Pool 14 receives a mean annual precipitation of 29.8 inches and has a mean annual runoff rate of 7.33 inches. The soils in the drainage area have an infiltration rate of approximately 0.10 inches per hour.

Principal features of Pool 14 are summarized below:

| | |
|-----------------------------------|-------------------------------------|
| 1. Length of pool | 29.2 river miles |
| 2. River miles | 522.5 to 493.3 |
| 3. Pool elevation (flat pool) | 572' |
| 4. Water area of pool (flat pool) | 10,450 acres (Total) |
| channel | 1,190 acres |
| off channel | 9,260 acres |
| 5. Shoreline miles | 277 miles (total) |
| COE | 189 miles |
| USFWS | -- |
| Other (state, local, private) | 88 miles |
| 6. Land acreage (federal lands) | 4,983 acres (Total) |
| | Owns Manages |
| COE | 4,983 acres 419 acres |
| USFWS | -- 4,564 acres |
| Other (state, local, private) | -- -- |

B. RECREATION OPPORTUNITIES

The following table describes the locations of the parks and recreational use areas in Pool 14.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|-----------------------------|
| 522.5 | Eagle Point Park |
| 520.8 | Garfield Park |
| 520.5 | Pleasure Park |
| 520.4 | Riverfront Park |
| 520.2 | School Park |
| 519.5 | Willow Island |
| 519.5 | Joyce's Island Park |
| 519.0 | Riverview Park |
| 518.4 | Clinton Park |
| 518.2 | DeWitt Park |
| 518.1 | Highway Park, Clinton, Iowa |

| <u>River Mile</u> | <u>Name</u> |
|-------------------|-------------------------------------|
| 517.5 | Cattail Slough Public Use Area |
| 517.2 | Courtland Young Park |
| 516.8 | Chancy Park |
| 513.4 | Village Park, Albany, Illinois |
| 504.0 | Princeton Wildlife Area |
| 502.4 | Municipal Park, Princeton, Iowa |
| 497.8 | Dorrance Park, Port Byron, Illinois |
| 497.1 | City Park, LeClaire, Iowa |

C. WATER-ORIENTED RECREATION FACILITIES

Pleasure-boat sales and service facilities located along Pool 14 are listed in the following table:

PLEASURE-BOAT SALES AND SERVICES

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-------------------|------------------------------|-----------------------|----------------|-----------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 521.0 | Wystral's Marina | X | X | X |
| 519.9 | Matt's Marina | | X | X |
| 519.4 | Leteka Marina | X | X | X |
| 519.1 | Municipal Dock, Clinton, Ia. | X | | X |
| 519.0 | Andrews Anchorage | X | X | X |
| 517.7 | Cattail Slough | X | | |
| 513.8 | Veaver Slough Dock | X | | |
| 513.5 | Municipal Dock, Albany, IL | X | X | |
| 511.7 | Public Use Area, Camanche | X | | |
| 507.8 | Hanson's Boat Dock | X | X | X |
| 507.5 | Hass Boat and Motors | X | X | X |
| 504.0 | Public Use Area, Princeton | X | | |
| 503.1 | Cordova Legion Club | X | X | X |
| 502.4 | Midway Marina | X | X | X |
| 502.3 | Al's Boat Dock | X | X | X |
| 497.9 | Municipal Dock, Port Byron | X | | X |
| 497.1 | LeClaire, Iowa, Municipal | X | | |
| 495.7 | Anchor Club | X | X | X |
| 495.0 | Green Gables Boat Harbor | X | X | X |

Source: U.S. Army Corps of Engineers

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS

Throughout the length of Pool 14, recreational boating is popular, and there are a number of easily accessible boat docks. The four beaches in Pool 14 developed with dredged material are also used by the recreational boater. The beach at mile 514 in Albany, Illinois, can be reached by both land and water. The one above Princeton, Iowa, at mile 504 has one of the highest attendance rates in the Rock Island District because of its size and proximity to the Quad Cities area. Other recreational activities include fishing and picnicking.

Cattail Slough public use area, at mile 517.7 on the Illinois side of the Mississippi River, provides fishing, boating, swimming, and hunting opportunities. Numerous private facilities are available along other reaches of the pool.

Boating is a moderately popular activity which gains in relative popularity over the study period. The adequacy analysis points out a low need for additional ramps and marina slips. Analysis of state facility breakdowns indicates a need for additional slippage in Illinois. There is a moderate relative need for additional parking spaces. Waterskiing is a relatively popular activity in Pool 14. The adequacy analysis indicates a moderate need for additional hard-surfaced ramps. Swimming is a moderately popular activity with a moderately low need for additional facilities. Again, in respect to the Quad Cities area, beaches with car/pedestrian access would be highly desirable. Fishing is moderately popular and gains in relative popularity over the study period where as hunting is relative low in popularity and the adequacy analysis indicates a low need for additional ramps. The analysis for fishing and hunting shows a relatively low need for additional ramps. Picnicking is a popular activity in Pool 14 and increases in relative popularity over the study period. The adequacy analysis indicates a moderate need for additional facilities. The facility breakdown by state identifies the major need lies in Illinois. Camping is a moderately popular activity. The adequacy analysis indicates that there is a moderately low need for additional developed campsites; but this pool's close proximity to the major use generator, the Quad Cities, points toward the future need for additional upgraded facilities. There is also a relatively moderate need for potential beach campsite development.

RECOMMENDATION: 1014

Conflicts have occurred between the commercial and recreation interests at lock and dam operations where there are no auxiliary locks for recreation crafts. The existing auxiliary lock at Pool 14 enhances the recreational experience for the users by saving time and energy for both the commercial and recreation interests.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1014
Pool Number 14
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

Recreation use sometimes conflicts with commercial uses (#10).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor.

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Maintain auxiliary lock for recreation craft.
- b. Develop holding areas.
- c. Develop special lockage times for recreation craft during peak periods with locking time signs.
- d. Restrict recreation or prohibit recreation lockages.
- e. Develop access ramps/portage areas above and below each dam.

6. Selected alternative a.

7. Rationale for selection of alternative:

The existing auxiliary lock presently enhances recreation use.

8. References used to select alternatives:

Work Group Discussions

9. Rationale for elimination of other alternatives:

Other alternatives are not needed as auxiliary locks provide adequate recreation access between pools.

10. Preliminary impact assessment of selected alternative:

- 1) cost of operation and maintenance
- 2) enhance recreation opportunities
- 3) reduce interference with commercial navigation

11. Implementing Agency: Corps of Engineers

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1014

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 14

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMEN- DATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|-------------------------------------|--|---|--|--|
| Cost of operation | dollars | \$14,000/year | \$14,000/year | \$14,000/year | 0 |
| Maintenance cost | dollars | \$7 million/50 years | \$7 million/50 years | \$7 million/50 years | 0 |
| Enhance recreation opportunities | + | auxiliary lock is be- ing used to provide a benefit to the users leaving more time to recreate | same as present, if lock is maintained | more time can be spent recreating and not waiting to be locked if auxiliary lock is maintained | more time can be spent recre- ating and not waiting to be locked |
| Reduce interference with commercial navigation | dollars | no conflicts as long as locks are used for the recreation crafts saving in time and money \$52,000+/season | no conflicts as long as locks are used for the recre- ation craft | if not maintained, conflicts will be created between com- mercial and recrea- tion interest, as cost of \$52,000/ season | saving in time and money to the users if lock is main- tained saving of \$52,000/ season |
| Fish and wildlife habitat | acres | some recreation related impacts | same as #3 | same as #3 | same as #3 |

RECOMMENDATION: 1041

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1041
Pool Number 14
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

- a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.
- b. No action

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

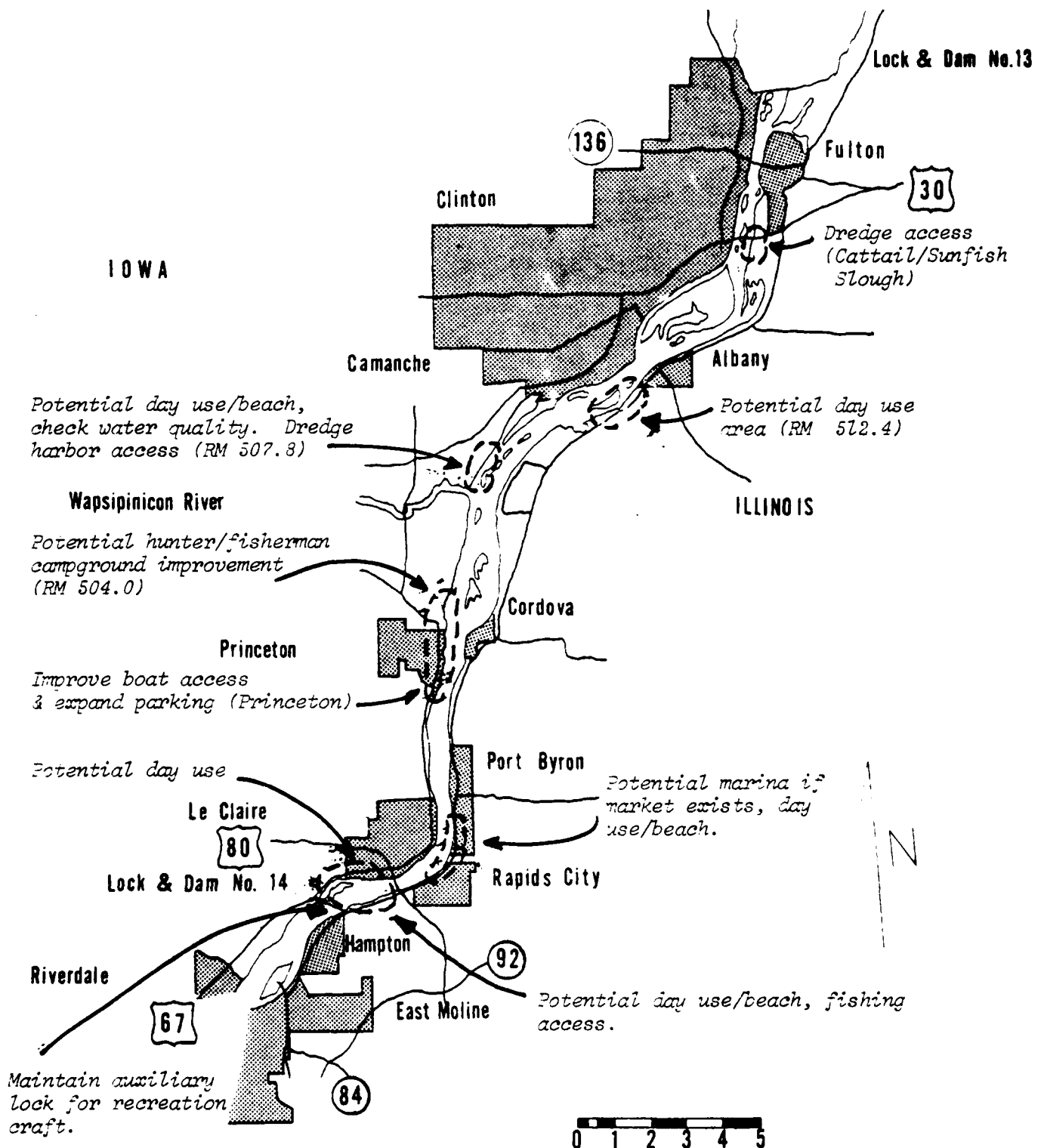
- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 14



RECOMMENDATION # 1041

RECOMMENDATION

LOCATION (RIVER MILE) See map

IMPACT

POOL 14

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDA- TIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1054

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 503.7 - 505.0 R, 503.5 L (no names) dike necessary & riprap)
- b. 508.7 - 509.0 R (no name)
- c. 513.5 L (Albany Beach)
- d. 517.3 - 517.4 L (main shore)
- e. 519.5 R (no name)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1054
Pool Number 14
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a. 503.7 - 505.0 R, 503.5 L (no names) (dike necessary and riprap)
- b. 508.7 - 509.0 R (no name)
- c. 513.5 L (Albany Beach)
- d. 517.3 - 517.4 L (main shore)
- e. 519.5 R (no name)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

*Notes Continued

3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-e .

7. Rationale for selection alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river current, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative:

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1054

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 14

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1054 Continued

LOCATION (RIVER MILE)

POOL 14

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 15

A. POOL DESCRIPTION

Pool 15 is formed by Lock and Dam 15 which is located at Davenport, Iowa (river mile 482.9). The dam was placed in operation on March 7, 1934. The pool extends from Davenport in an east to northeast direction to south of LeClaire, Iowa, a distance of only 10.2 river miles. Based on flat pool elevations (561.0 feet at Dam 15), the maximum lift from Pool 16 to Pool 15 is 16 feet and the maximum lift from Pool 15 to Pool 14 is 11 feet. Depth of the pool ranges from 9 feet to a maximum of 20 feet. The pool has an average width of .59 miles and covers 3,725 acres with water. This pool is the smallest pool within the Rock Island District of the Mississippi River.

Scott County, Iowa and Rock Island County, Illinois form the shoreline boundaries for Pool 15. Mean annual precipitation in the Pool 15 drainage area is 29.3 inches. Mean annual runoff is 7.33 inches. The soils in the Pool 15 drainage area have an infiltration rate of approximately 0.10 inches per hour.

Principal features of Pool 15 are summarized below:

| | |
|-----------------------------------|-------------------------------------|
| 1. Length of pool | 10.5 river miles |
| 2. River miles | 593.3 - 482.8 |
| 3. Pool elevation (flat pool) | 561' |
| 4. Water area of pool (flat pool) | 3,740 acres (Total) |
| channel | 524 acres |
| off channel | 3,216 acres |
| 5. Shoreline miles | 38 miles (Total) |
| COE | 8 miles |
| USFWS | -- |
| Other (state, private, local) | 30 miles |
| 6. Land Acreage (federal lands) | 1,011.5 acres (Total) |
| | <u>Owns</u> <u>Manages</u> |
| COE | 9 acres 20 acres |
| USFWS | -- -- |
| Other (state, local, private) | 25 acres 2.5 acres |
| Army Weapons Command | 1,000 acres -- acres |

B. RECREATION OPPORTUNITIES

Pool 15 is the shortest of the 12 navigational pools within the limits of the Rock Island District of the Corps of Engineers. Eleven recreational and park areas are located on the riverbank in Pool 15; many more are inland. There are no significant dredge material beach sites in Pool 15 because the basically rock-bottom channel of the river requires little, if any, channel dredging.

Of the 11 water-oriented park and recreation areas in Pool 15, one -- Fisherman's Corner Public Use Area -- has been established and maintained by the Corps of Engineers. The State of Illinois provides Campbell's Island State Park. Rock Island County has developed the Illiniwek Park. The Corps of Engineers and the U.S. Army Weapons Command have permitted public admittance to historical facilities on Arsenal Island. Bettendorf, Davenport, Moline,

and East Moline have established River Side Park and Marina, two Mississippi Parks, and Lindsay Park. The following table displays the parks within Pool 15.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|---|
| 493.1 | Fisherman's Corner |
| 492.9 | Illiniwek Forest Preserve |
| 491.0 | Long Grove Park |
| 490 | Campbell's State Park |
| 490 | Campbell's Island |
| 489.9 | Ship's Wheel |
| 489.8 | Island Anchorage |
| 489.8-488.2 | Mississippi Park |
| 489.5 | John Deere Park |
| 489.5 | First Sawmill |
| 489.4 | Butterworth Park |
| 488.6 | Radden Park |
| 488 | Devil's Glen Park |
| 488 | Mitchell Park |
| 487.9 | East End Park |
| 487.4 | Peterson Park |
| 487 | Riverside Park |
| 487 | Meersman Park |
| 486.6 | Middle Road Park |
| 486.5 | Sunny Crest Park |
| 486.3 | Edgewood Park |
| 486 | Browning Field |
| 485.7 | Riverside Park and Marina |
| 485.7 | McManus Park |
| 485.7 | Arsenal Island |
| 485.3 | Duck Creek Park |
| 485.3 | Jefferson Park |
| 485.3 | Deere & Co. Steel Plow Factory Site |
| 485.2 | National Cemetery |
| 485 | Sears Dam |
| 485 | Stephens Park |
| 484.7 | Confederate Cemetery |
| 484.7 | Sylvan Park |
| 484.7 | Bethany Park |
| 484.5 | Lindsay Park |
| 484.2 | Lincoln Park |
| 484.2 | John Barrel's House |
| 484 | Indian Springs Park |
| 483.6 | Prospect Terrace Park |
| 483.6 | Claim House |
| 483.5 | Colonel George Davenport Home |
| 483.4 | First Railroad to Mississippi |
| 483.5 | Garfield Park |
| 483.4 | Tyler Park |
| 483.3 | Site of First Bridge Across Mississippi |
| 483.3 | St. Katherine's School |
| 483.1 | Cork Hill Park |
| 483 | LeClaire Home |
| 482.9 | Fort Armstrong |
| 482.8 | Barrow's House |
| 482.7 | Vandervees Park |

Water access in Pool 15 is provided by three privately operated marinas and seven launching ramps. In addition, two privately operated excursion businesses, one in Davenport and the other in Moline, provide scenic tours on the river.

The Moline Boat Harbor is located on the extreme eastern side of Moline at River Drive between 51st and 53rd Streets near the Moline Municipal Waterfront Park. The harbor was constructed by the Corps of Engineers in 1971 using local and federal funds. The basic harbor was constructed by building dikes of rockfill and earth or sandfill. After construction, the harbor was turned over to the City of Moline. The Corps maintains both the harbor, at a minimum depth of five feet, and the dikes. The harbor was designed with slips to accomodate 208 small boats and to provide fuel.

The Lindsay Park Boat Harbor is located at the foot of Mound Street on the eastern side of Davenport, two miles west of the Iowa Illinois Memorial Bridge on U.S. 67 (River Drive). The harbor is across the channel from Arsenal Island (mile 484.0) and was constructed by the Corps of Engineers in 1961 using local and federal funds. The basic harbor was constructed by building dikes with rockfill. After completion, the harbor was turned over to the City of Davenport. The COE maintains both the harbor, at a minimum depth of five feet, and the dike. The harbor was designed with slips to accomodate 200 small boats and to provide fuel, sales, and services. Twelve thousand people used the facility in 1973.

C. WATER-ORIENTED RECREATION FACILITIES

Most of the river related sales and services cater to the recreational boater. The following table lists the name, location, and facilities provided at 13 sales and service sites in Pool 15:

PLEASURE-BOAT SALES AND SERVICES

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-----------------------|---|---------------------------|----------------|---------------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 493.1 | Fisherman's Corner Public Use Area | | | X |
| 492.9 | Boat Launching Ramp | X | | X |
| 492.9 | Illiniwek Forest Reserve | X | | X |
| 492.9 | Iowa Cons. Public Use Area | X | | |
| 492.9 | Boat Launching Ramp | X | | |
| 489.9 | Ship's Wheel | X | X | X |
| 489.8 | Island Anchorage | | X | X |
| 489.2 | East Moline Public Use Area | X | | |
| 486.7 | Moline Municipal Public Use Area | X | | X |
| 486.5 | Moline Municipal Boat Launching Ramp | X | | |
| 485.6 | Bettendorf Municipal Boat Launching Ramp | X | | |
| 484.0 | Lindsev Park Boat Club | X | X | X |
| 483.5 | Quad-City Marina | X | X | X |

Source: U.S. Army Corps of Engineers

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS

Pool 15 is the shortest of the 12 pools in the GREAT II Study area at 10.5 miles. Quad Cities metro area heavily influences the recreation use figures. Coupled with this heavy use potential is a shoreline with extensive commercial and industrial development. Due to these aspects, it is believed that moderate portions of use projected for Pool 15 will gravitate to Pools 14 and 16.

Picnicking is a relatively high use activity with a moderate need for additional facilities. Analysis of state facility breakdowns indicates Iowa needs additional picnic facilities. Camping is a relatively low use activity with a moderate need for developed facilities. The state facility figures show that Iowa has the greater need. Pool 15 ranks lowest of the 12 pools for potential beach campsites. This problem is compounded by the rocky nature of most material dredged in this pool.

Boating is a popular activity in the pool. The adequacy analysis indicates a relatively large need for additional ramps and parking spaces with Iowa showing the most severe need. There is a moderate need for additional marina slippage. Waterskiing is moderately popular with a relatively high need for additional hard-surfaced ramps. The state facility figures show the need is most pressing on the Iowa shore. The adequacy analysis indicates a need for additional swimming beaches. This especially applies for beaches with car/pedestrian access.

Fishing and hunting are relatively low use activities in comparison with the other pools. Again there is a high need for additional ramps, especially in Iowa. Also the more shoreline that is accessible to bank fishermen, the more use the pool can absorb.

RECOMMENDATION: 1015

Conflicts have occurred between the commercial and recreation interests at lock and dam operations where there are no auxiliary locks for recreation crafts. The existing auxiliary lock at pool 15 enhances the recreational experience for the users by saving time and energy for both the commercial and recreation interests.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1015
Pool Number 15
River Mile _____
Date Approved by Work Group August 16, 1979

1. General problem addressed:

Recreation use sometimes conflicts with comercial uses (#10).

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreation use of the river corridor

4. Tasks accomplished to address problem:

Work Group Discussions

5. Listing of alternatives to problem:

- a. Maintain auxilary lock for recreation craft
- b. Develop holding areas
- c. Implement special recreation lockage times during peak use periods with locking time signs
- d. Prohibit recreation craft lockages
- e. Construct access ramps/portages above and below each lock and dam

6. Selected alternative a.

7. Rationale for selection of alternative:

The existing auxilary lock presently enhances river recreation use.

8. References used to select alternative:

Work Group Discussions

9. Rationale for elimination of other alternatives:

Other alternatives are not needed as auxiliary locks are providing adequate recreation access between pools.

10. Preliminary impact assessment of selected alternative:

- 1) cost of operation and maintenance
- 2) enhanced recreation opportunities
- 3) reduce interference with commercial navigation

11. Implementing Agency: Corps of Engineers

12. Reason for work group rejection of recommendation:

RECOMMENDATION # _____ 1015

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL 15 _____

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMEN- DATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|--|-------------------------------------|--|---|---|---|
| Cost of operation | dollars | \$14,000/year | \$14,000/year | \$14,000/year | 0 |
| Maintenance cost | dollars | \$7 million/50 years | \$7 million/50 years | \$7 million/50 years | 0 |
| Enhance recreation opportunities | + | auxiliary lock is being used to provide a benefit to the users leaving more time to recreate | same as present, if lock is maintained | more time can be spent recreating and not waiting to be locked if auxiliary lock is maintained | more time can be spent recreating and not waiting to be locked |
| Reduce interference with commercial navigation | dollars | no conflicts as long as locks are used for the recreation crafts saving in time and money \$52,000+/season | no conflicts as long as locks are used for the recreation craft | if not maintained, conflicts will be created between commercial and recreation interest, as cost of \$52,000/season | saving in time and money to the users if lock is maintained saving of \$52,000/season |
| Fish and wildlife habitat | acres | some recreation related impacts | same as #3 | same as #3 | same as #3 |

RECOMMENDATION: 1042

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1042
Pool Number 15
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.

b. No action

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

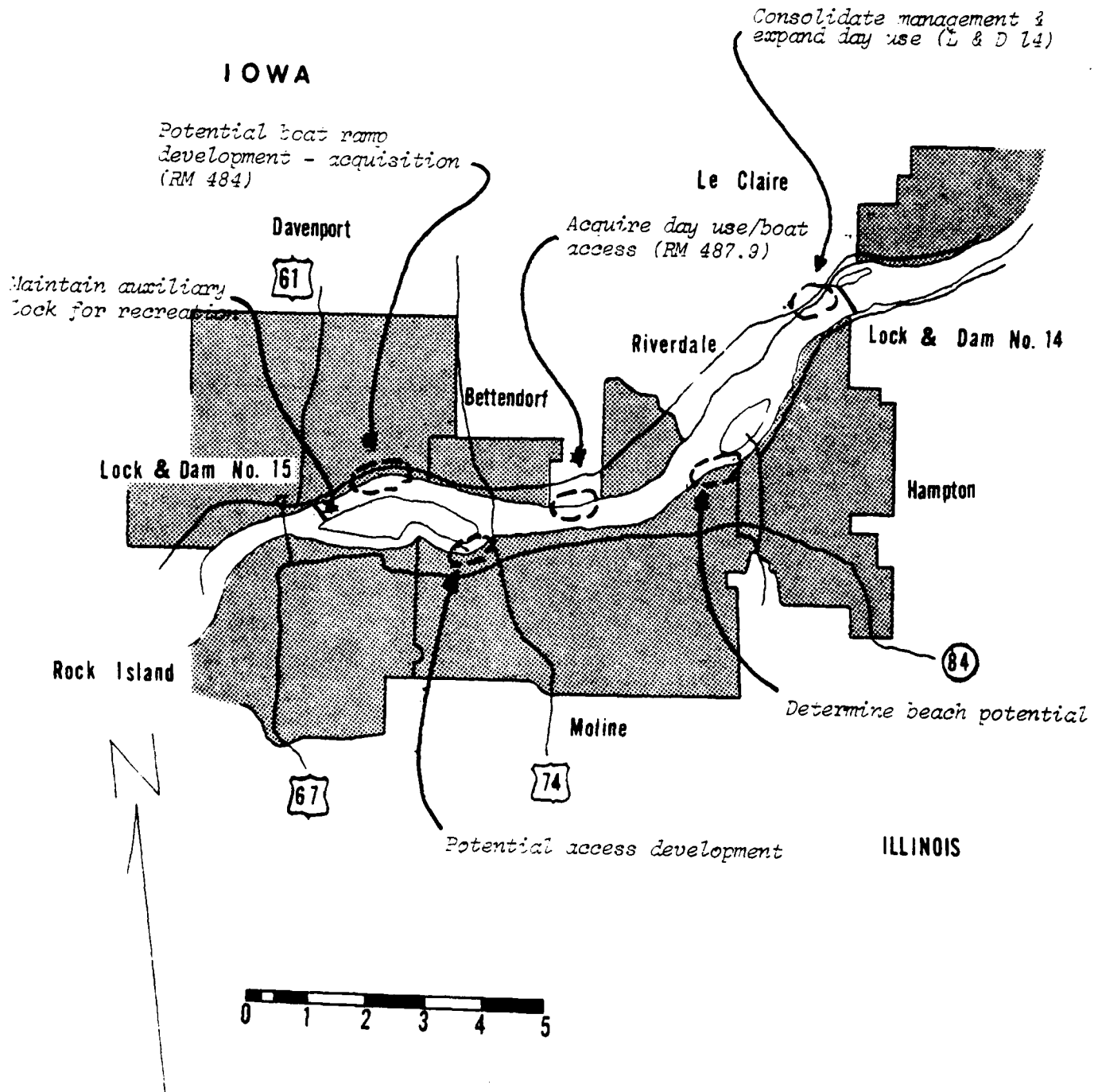
- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate
Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 15



RECOMMENDATION # 1042

RECOMMENDATION

LOCATION (RIVER MILE) See map

IMPACT

POOL 15

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMEN- DATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1055

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 489.8 L (Winnebago/Dynamite Island)
- b. 491.1 L (Kay Island)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1055
Pool Number 15
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a. 489.8 L (Winnebago/Dynamite Island)
- b. 491.1 L (Kay Island)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
- 3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-b.

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river current, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative.

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1055

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 15

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1055 Continued

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL 15

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 16

A. POOL DESCRIPTION

Pool 16 is formed by Lock and Dam 16 which is located at river mile 457.2. The dam was placed in operation on July 10, 1937. The pool extends in an east-by-northeast direction for a distance of 25.7 river miles, from just north of Muscatine, Iowa, to the Quad Cities. Based on flat pool elevations (545.0 feet at Dam 16), the maximum lift from Pool 17 to Pool 16 is nine feet, and the maximum lift from Pool 16 to Pool 15 is 16 feet. Depth of the navigation channel ranges from 9 feet at the upper end to 23 feet at the lower end. Pool 16 covers a surface area of approximately 13,000 acres.

Scott and Muscatine Counties in Iowa and Rock Island County in Illinois form the shoreline boundaries for Pool 16. Mean annual precipitation in the drainage area is 32.2 inches, which results in an average runoff rate of 7.26 inches annually. The soils in the Pool 16 drainage area have an infiltration rate of approximately 0.10 inches per hour.

Principal features of Pool 16 are summarized below:

| | |
|--------------------------------------|-----------------------------------|
| 1. Length of Pool | 25.6 river miles |
| 2. River miles | 482.8 to 457.2 |
| 3. Pool elevation (flat pool) | 545.0' |
| 4. Water area of pool (flat pool) | 12,047 acres (Total) |
| channel | 1,261 acres |
| off channel | 10,786 acres |
| 5. Shoreline miles | 231 miles (Total) |
| COE | 200 miles |
| USFWS | -- |
| Other (state, private, local) | 31 miles |
| 6. Land Acreage (federal lands only) | 4,843 acres (Total) |
| | Owns Manages |
| COE | 4,759 acres |
| USFWS | 60 acres |
| Army Weapons Command | 24 acres |
| | 2,673 acres |

B. RECREATION OPPORTUNITIES

Recreational attendance was in excess of 925,800 persons during 1968. The attendance ranged from a low of 30,490 in February to a high of 133,172 in July. In 1973 the total attendance in Pool 16 was 2,644,100.

Considerable recreational potential exists on federal lands within the pool limits. There are already three Corps of Engineer Public Use Areas and various nonfederal facilities. The major potential exists along the Illinois shore, where federal lands are more extensive than on the Iowa side. The nonfederal property at higher levels on the Iowa shore, especially in the upper regions, is becoming industrialized. Scenic and recreational values, however, need to be protected to meet increasing public demands and needs. The river banks of Pool 16 contain eight public recreational and park areas; there are many more inland. Davenport has two river front parks, LeClaire and Credit Island. LeClaire Park, which is near the central business district, provides a swimming pool, band shell, municipal stadium, and picnic area. Credit Island Park occupies 420 acres opposite the mouth of the Rock River. It contains an 18-hole golf course, general playgrounds, baseball diamonds, and picnic areas.

Rock Island has much riverfront industrial development and a lack of open space: riverfront recreation is limited to Sunset Park at the confluence of the Mississippi River and the Rock River. The park has a marina, playgrounds, and camping and picnic areas.

PARKS AND RECREATION AREAS

| <u>Riv. Mile</u> | <u>Name</u> |
|------------------|--|
| 482.9 | Ebenezer Cook House |
| 482.7 | St. Anthony's Church |
| 482.7 | Davenport City Hall |
| 482.7 | John F. Dillon City Fountain |
| 482.5 | Jefferson Park |
| 482.4 | LeClaire Park |
| 482.3 | Lafayette Park |
| 481.9 | Riverview Terrace |
| 481.9 | Philemon Mitchell's House |
| 482 | Long View Park |
| 481.6 | Monroe Park |
| 481.4 | Douglas Park |
| 481.3 | Fejevary Park |
| 482.1 | Black Hawk State Park |
| 480.8 | Van Buren Park |
| | Battle of Credit Island |
| 480.6 | Historic Site |
| 480.5 | Credit Island Park |
| 480.3 | Sunset Park |
| | Upper Mississippi River Fish and Wildlife Refuge |
| 478 | |
| 473 | Clark's Ferry |
| 471 | Andalusia Slough Public Use Area |
| 468.3 | Montpelier Public Use Area |
| 468.6 | Loud Thunder Forest Preserve |
| 464.5 | Shady Creek Public Use Area |

Other riverfront recreational areas include the Upper Mississippi River Fish and Wildlife Refuge and the Loud Thunder Forest Preserve.

Recreational boating is provided with three marinas, three boat clubs, and 17 launching ramps. In addition, two privately operated excursion businesses operate scenic tours on the river in Pools 15 and 16. Buffalo beach (mile 472.3) is accessible by land to the non-boating public. The quality of Buffalo beach and Andalusia beach (mile 473.0) is deteriorating with a resultant decline in usage.

The Sunset Marina is located near Sunset Park at the western-most portion of Rock Island, Illinois, at mile 479.9. It is accessible by land via a secondary road off 18th Avenue. The marina was constructed by the Corps of Engineers in 1956 using local and federal funds. The basic harbor was constructed by opening a cut into Potter's Lake. After construction the marina was turned over to the City of Rock Island. The Corps maintains access only to the marina at a minimum depth of

five feet. The marina was designed to accommodate 260 small-boat slips and to provide fuel and sales and services. Approximately 750 thousand people used this facility in 1973.

The Andalusia Boat Harbor is located in River Front Park at the foot of Magnolia Street in the central portion of Andalusia, Illinois. The harbor was constructed by the Corps of Engineers in 1965 using local and federal funds. The basic harbor was constructed by building dikes of rockfill and earth and sandfill. After construction the harbor was leased to the City of Andalusia.

The Corps maintains the harbor at a minimum depth of five feet and maintains the dikes. The harbor was designed to accommodate 110 small-boat slips. Seventy-five thousand people used this facility in 1973.

C. WATER-ORIENTED RECREATION FACILITIES

The following table lists the name, location, and facilities provided at sales and service sites in Pool 16.

PLEASURE-BOAT SALES AND SERVICES

| River Mile | Name | Facilities | | |
|---------------|------------------------------|-------------------|---------|-------------------|
| | | Launching Area | Dockage | Other Services |
| 481.0 | Davenport Boat Club | X | X | X |
| 480.5 | Credit Island Park | | | X |
| 480.0 | Rock Island Boat Club | X | X | X |
| 479.9 | Rock Island | X | | |
| 479.8 | Sunset Park Harbor | X | X | X |
| 479.6 | Sawvell Boat Club | | X | X |
| 479.4 | Davenport | X | | |
| 479.2 | Harbor Ranch | X | X | X |
| 478.0 | Happy's Boat Club | | X | X |
| 477.5 | Voss Harbor | X | X | X |
| 473.0 | Andalusia Municipal | X | X | |
| 472.9 | Andalusia Boat Harbor | X | X | X |
| 471.8 | Andalusia Slough | X | | |
| 471.5 | Bev and Ollies | X | X | X |
| 471.0 | Public Use Area | X | | X |
| 470.1 | Public Use Area | X | | X |
| 470.0 | Boatel Sequoia | X | X | X |
| 469.1 | Loud Thunder Public Use Area | X | X | X |
| 468.3 | Montpelier Public Use Area | X | | |
| 464.8 | Shady Creek Public Use Area | X | | |
| 463.2 | Fairport Landing | X | X | X |
| 462.6 | Izaak Walton League | X | | |

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS:

In Pool 16, picnicking is a relatively popular activity in comparison to the other pools. The adequacy analysis points out a relatively well supplied situation, but state facility breakdowns indicate a need in Illinois. Camping use in the GREAT II area is the greatest in Pool 16. There is a moderately high need for additional developed facilities. State facility data indicate a more pressing need in Illinois. The analysis indicates a high need for potential beach campsite development.

Fishing ranks relatively high in popularity which increases over the study period. The analysis indicates a moderate need for additional ramp facilities. Hunting is moderately popular and increases to fairly high popularity by 2025. There is a moderate need for additional ramps to accommodate this use.

Boating is a moderately popular activity among the 12 pools. The adequacy analysis indicates a moderate need for additional ramps, parking spaces, and marina slippage. State figure breakdowns indicate a more pressing need for parking spaces in Illinois and for more slippage in Iowa. Waterskiing is a popular activity in the pool. The analysis indicates a moderate need for additional hard-surfaced ramps. Swimming is a moderately popular activity with a high need for additional beaches. The provision of beaches with car/pedestrian access would be very beneficial.

RECOMMENDATION: 1043

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1043
Pool Number 16
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.

b. No action

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

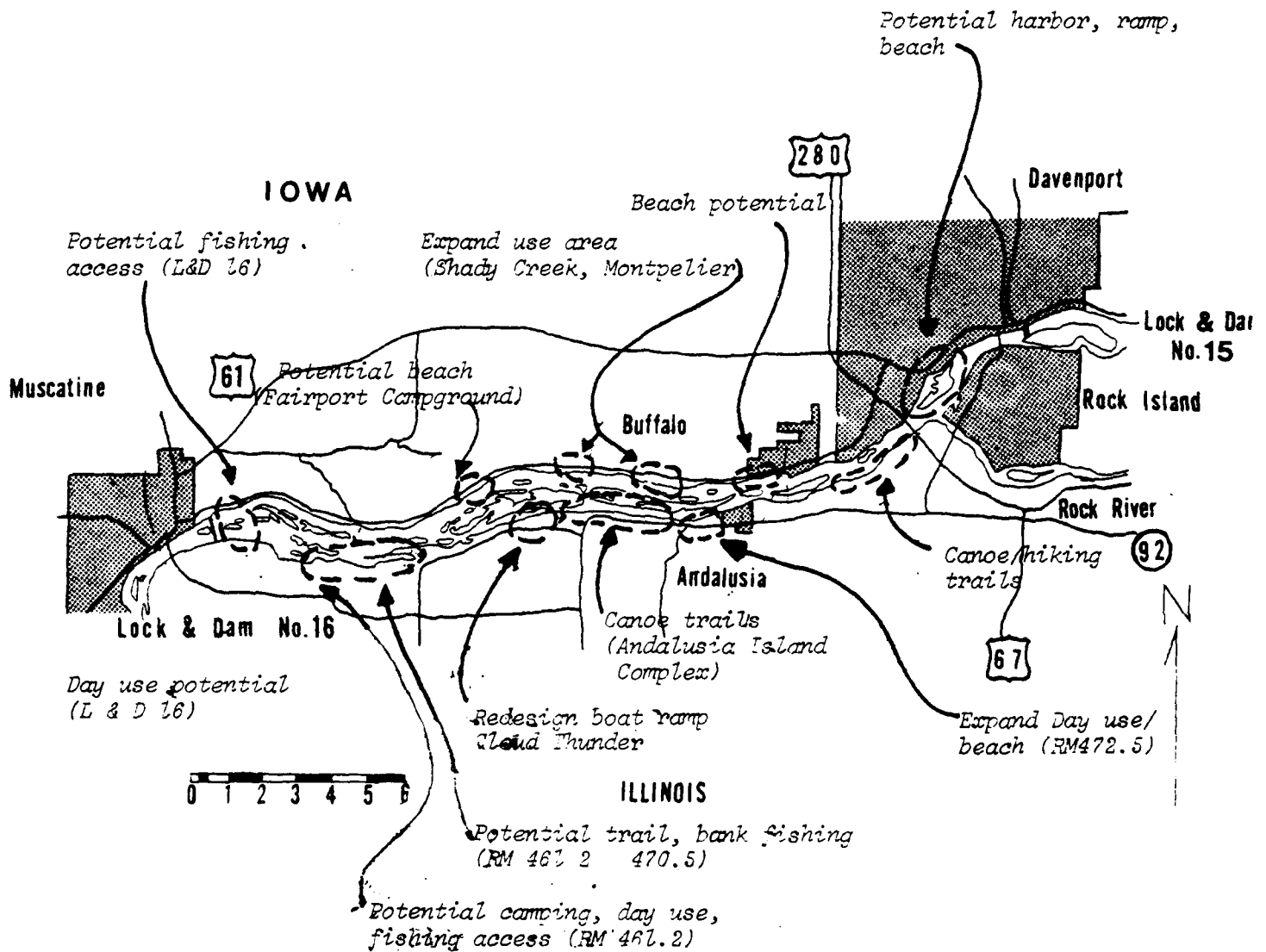
- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate
Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 16



RECOMMENDATION

IMPACT

ASSESSMENT FORM

RECOMMENDATION # 1043

LOCATION (RIVER MILE) See map

POOL 16

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMEN- DATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the resource and existing facilities and ser- vices | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and dis- tribution of the use and user |
| Knowledge of area | + | Limited or no knowledge | Same as #3 | Better understanding of the natural re- source and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1056

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 461.3 - 461.6 R (no name)
- b. 469.5 - 469.0 L (Andalusia Island Complex)
- c. 472.7 R (main shore near county access)
- d. 473.0 - 473.3 L (no name)
- e. 474.2 - 474.4 L (no name)
- f. 464.2 - 464.4 L (Andalusia Island Complex)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1056
Pool Number 16
River Mile As Noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a) 461.3 - 461.6 R (no name)
- b) 469.5 - 469.9 L (Andalusia Island Complex)
- c) 472.7 R (main shore near county access)
- d) 473.0 - 473.3 L (no name)
- e) 474.2 - 474.4 L (no name)
- f) 464.2 - 464.4 L (Andalusia Island Complex)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

*Notes Continued

3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-f .

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river currents, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative:

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1056

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 16

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1056 Continued

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 16

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 17

A. POOL DESCRIPTION

Pool 17 is formed by Lock and Dam 17 which is located at river mile 437.1. The dam was placed in operation on May 14, 1939. The pool extends in a northeast direction for a distance of 20.1 river miles, from just north of New Boston, Illinois to Muscatine, Iowa. Based on flat pool elevations (536.0 feet at Dam 17), the maximum lift from Pool 18 into Pool 16 is 8 feet, and the maximum lift from Pool 17 into Pool 16 is 9 feet. Depth of the pool ranges from nine feet at the upper end to 30 feet at Lock and Dam 17. Average width of the pool is 0.59 miles and it covers a surface area of approximately 7,580 acres with water.

This pool makes its home on the shores of Muscatine and Louisa Counties in Iowa and Rock Island and Mercer Counties in Illinois. The pool drainage area receives an annual precipitation of 32.1 inches which allows an average of 7.26 inches of water to run off the land annually. The soils in this area have infiltration rates of approximately 0.10 inches/hour.

Principal features of Pool 17 are summarized below:

| | |
|--------------------------------------|---------------------|
| 1. Length of pool | 20.1 river miles |
| 2. River miles | 457.2 to 437.1 |
| 3. Pool elevation (flat pool) | 536' |
| 4. Water area of pool (flat pool) | 8,312 acres (Total) |
| channel | 960 acres |
| off channel | 7,352 acres |
| 5. Shoreline miles | 202.5 miles |
| COE | 178.2 miles |
| USFWS | -- |
| Other (state, local, private) | 24.3 miles |
| 6. Land Acreage (federal lands only) | 7,179 acres (Total) |

| | <u>Owns</u> | <u>Manages</u> |
|-------|-------------|----------------|
| COE | 7,117 acres | 126 acres |
| USFWS | 62 acres | 7,053 acres |
| Other | --- | --- |

B. RECREATION OPPORTUNITIES

Pool 17, one of the shorter pools in the district, has excellent fish habitat, with numerous islands and sloughs and the protected and controlled water levels of Lake Odessa. Sport and commercial fishing are especially popular in this region.

Summerged features, such as wing dams and stump fields, may present navigation hazards to small craft in the narrow reaches of the pool. Federal ownership of the shore-line is fairly extensive; access roads could easily be provided at several places. The scenery, although attractive, does not have the spectacular hills and bluffs of upstream pools. The floodplain is broad throughout the pool region, and the rugged hills rise far back from the river shores. Hunting, fishing, and camping opportunities exist throughout the pool region, but most of such activity, as well as swimming, picnicking, and nature study is concentrated at the Lake Odessa area (miles 438-441), which is the largest lake in the area. Pressure for further development at Lake Odessa is increasing.

Management of Lake Odessa is split between the State of Iowa for the south half and the U.S. F & WS, Mark Twain National Wildlife Refuge for the northern half.

The following table displays the park and public recreation areas within Pool 17:

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|--|
| 451 | Weed Park |
| 456 | Laura Musser House Art Gallery & Museum |
| 455.4 | Geneva Golf & Country Club |
| 454.2 | Husser Park |
| | Kent Stein Park |
| 451 | Sand Pits |
| 449.3 | Monsanto-Spring Lake |
| 449 | Wild Wings |
| 446.8 | Kilpeck Landing Public Use Area |
| 443-446.7 | Mark Twain National Wildlife Refuge - Big Timber Div. |
| 443.7 | Big Timber Access Area |
| 441.3 | Flaming Prairie |
| 441 | Lake Odessa Public Use Area - Port Louisa River Access |
| 439.5 | Lake Odessa Schaeffer's Landing |
| 438.0-441.6 | Mark Twain National Wildlife Refuge - Louisa Div. |

Weed Park in Muscatine is one of the largest mainland facilities for active recreation. It includes 57 acres of park, a swimming pool, fishing facilities, and a zoo.

In 1958, 67,000 acres between Muscatine and St. Louis were designated as the Mark Twain National Wildlife Refuge. Since then, the federal government has set aside an additional 17,000 acres for waterfowl management purposes. The Refuge is divided into seven units, two of which are located within the limits of Pool 17. The Big Timber Division of the Refuge in Louisa County has an area of 1,757 acres and was established to benefit migratory waterfowl including wood ducks. The Louisa Division of the Refuge, with an area of 2,609 acres, is located on the northern portion of Lake Odessa. The area is protected by levees bordering the Iowa shoreline. Port Louisa River Access, located on the Refuge, will be up graded in 1980 and should improve river access situations in that portion of Pool 17.

The Muscatine Boat Harbor is at mile 455.7 and lies at the foot of Muscatine Municipal Park in the central core of Muscatine, Iowa. The harbor was constructed near Muscatine Municipal Park in 1965 using local and federal funds. The basic harbor was constructed by building dikes or rockfill and earth or sandfill. The Corps of Engineers maintains both the marina, at a minimum depth of five feet, and the dikes. The marina was designed to accommodate 250 small boat slips, along with fuel and sales and services.

C. WATER-ORIENTED FACILITIES

Pool 17 provides harbors and docks for recreational use. The Municipal Small Boat Harbor is the important recreational harbor in the area. Commercial sales and service facilities in the Pool 17 area cater primarily to the recreational boater.

PLEASURE-BOAT SALES AND SERVICES

| River Mile | Name | Facilities | | |
|---------------|------------------------------------|-------------------|---------|-------------------|
| | | Launching Area | Dockage | Other Services |
| 455.6 | Municipal Boat Harbor | | X | X |
| 455.5 | Small-boat Harbor | X | | |
| 455.4 | Muscatine Power Boat Club | | X | X |
| 455.4 | Coyners Marina | | X | X |
| 455.3 | Municipal Boat Launching Ramp | X | | |
| 499.8 | Blanchard Island Chute Public | | | X |
| 446.8 | Kilpeck Public Use Area | X | | |
| 446.8 | Crosses Corner Public Use Area | X | | |
| 441.3 | Camp Odessa | X | | |
| 441.1 | Port Louisa River Access | X | | |
| 439.3 | Lake Odessa-Schaeffer's Landing | X | | |

D. RECREATION ACTIVITIES AND THEIR RELATIVE NEEDS:

Most of the considerable recreational potential within the pool limits has not been realized.

Boating is not a relatively popular activity in Pool 17 but there is a increasing demand for additional ramps and marine slippage with a moderate need for parking space. Facility breakdowns indicate a more pressing need in Illinois for additional ramps and marina slips, while Iowa needs additional parking spaces. Swimming is not a relatively popular activity. The analysis indicates a moderate need for additional beach frontage. This would best be served through car/pedestrian access facilities. Waterskiing is a relatively low use activity with a relatively moderate need for hard-surfaced ramps. State figures show that Illinois has the most pressing need.

Picnicking ranks low in popularity in comparison to the other pools. This may be due to the lack of opportunity with only 44 tables inventoried. The adequacy analysis points out a high need for additional facilities.

Camping is moderately low in popularity with a moderate need for additional developed camping facilities. Pool 17 shows a moderately high need for potential beach camping sites.

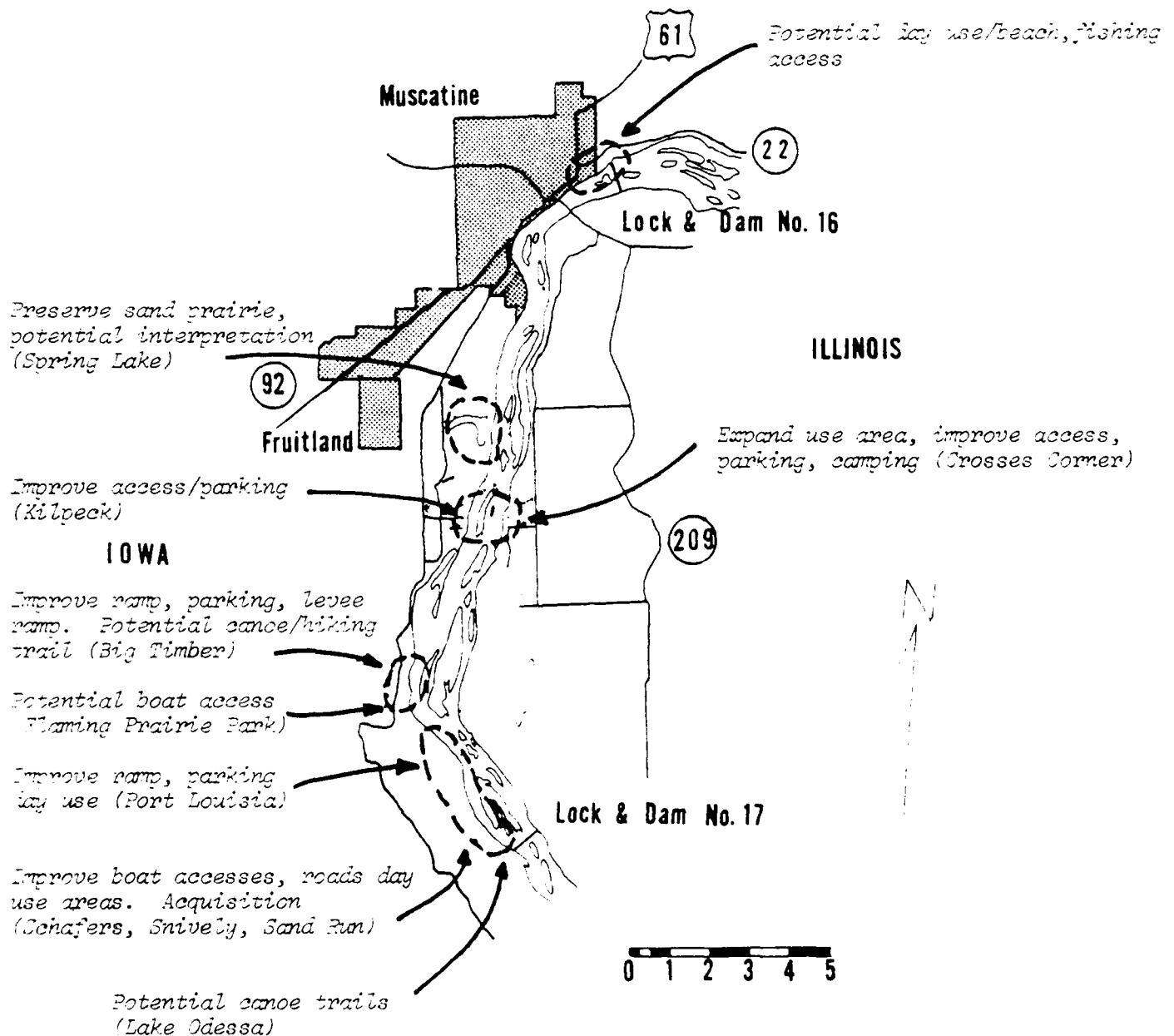
Hunting and fishing is a moderately popular activity. The adequacy analysis indicates a severe need for additional ramps and state figures indicate that Illinois has the most pressing need.

RECOMMENDATION: 1044

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 17



RECOMMENDATION

RECOMMENDATION # 1044

IMPACT

LOCATION (RIVER MILE) See map

ASSESSMENT FORM

POOL 17

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDA- TIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1057

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 447.8 - 448.2 L (Bass Island)
- b. 453.2 L (no name)
- c. 446.2 R (Kilpeck Island)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1057
Pool Number 17
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a) 447.8 - 448.2 L (Bass Island)
- b) 453.2 L (no name)
- c) 446.2 R (Kilpeck Island)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
- 3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-c .

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river currents, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative:

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1057

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 17

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1057 Continued

LOCATION (RIVER MILE) _____

POOL 17

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 18

A. POOL DESCRIPTION

Pool 18 is formed by Lock and Dam 18 which is located at river mile 410.5. The dam was placed in operation on September 8, 1937. The pool extends in a north to northwest direction from approximately six and one-half miles above Burlington, Iowa, to about four miles above New Boston, Illinois, a distance of 26.6 river miles. Based on flat pool elevations (528.0 feet at Dam 18), the maximum lift from Pool 19 into Pool 18 is 9.8 feet, and the maximum lift from Pool 18 into Pool 17 is 8 feet. Depths of the pool range from 9 feet at the upper end to a maximum of 27 feet at Lock and Dam 18. Average width of the pool is 0.78 miles and it covers approximately 13,300 acres with water.

Louisa and Des Moines Counties in Iowa and Mercer and Henderson Counties in Illinois form the shoreline boundaries of Pool 18. The drainage area of Pool 18 receives an annual precipitation of 32.2 inches and discharges an average of 1.06 inches of surfact runoff annually. Soils in the Pool 18 drainage area have an infiltration rate of approximately 0.10 inches per hour.

Principal feature of Pool 18 are summarized below:

| | |
|-------------------------------------|------------------------------------|
| 1. Length of Pool | 26.6 river miles |
| 2. River Miles | 437.1 to 410.5 |
| 3. Pool elevation (flat pool) | 528' |
| 4. Water area of pool (flat pool) | 13,600 acres (Total) |
| channel | 1,277 acres |
| off channel | 12,323 acres |
| 5. Shoreline Miles | 279 miles (Total) |
| COE | 249 miles |
| USFWS | -- |
| Other (state, local, private) | 30 miles |
| 6. Land Acreage (federal land only) | 9,953 acres (Total) |
| | <u>Owns</u> <u>Manages</u> |
| COE | 9,953 acres 4,573 acres |
| USFWS | -- 5,380 acres |

B. RECREATION OPPORTUNITIES

During 1968 more than 292,300 people, ranging from a January low of 6,357 persons to a July high of 51,143, visited the Pool. An estimated peak day attendance is 2,300. In 1973, the total attendance in Pool 18 was 867,000.

Sport fishing is very popular in Pool 18. Catches vary with the season, prevailing climatic conditions, and water elevations. A creel census conducted in 1967 among 6,430 sportsmen showed catches at the rate of 0.94 fish per man-hour of effort, a higher-than-average rate. In 1968 the sports catch was 71,000 pounds of fish. Submerged wing dams, stump fields, and other navigational hazards indicated on navigation charts do not ordinarily present dangers to small boats operating in the lower regions of the pool but might in the upper areas.

Major recreational facilities in Mercer County consist of a marina called Sturgeon Bay Park Landing and a municipal launching area; both are in New Boston. A marina at Keithsburg has full service facilities. A unit of the Mark Twain National Wildlife Refuge, the Keithsburg Division, is located on the Illinois shore between the Edwards River and the Chicago and Northwest Railroad bridge. The Refuge unit is protected from Mississippi River flooding by a levee along its three mile length and is managed as a resting and feeding area for migratory waterfowl. Fishing access to the Refuge's interior waters is provided by a small boat launch located 1/2 mile north of Keithsburg. Small game hunting is permitted on the Refuge. A roadside picnic area is located on Illinois Route 17 north of New Boston.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|---|
| 433.2 | Ferry Landing |
| 433.1 | Municipal Boat Ramp |
| 433.1 | Sturgeon Bay Park |
| 433 | Ferry Landing |
| 432.8 | Illinois State Conservation Area |
| 431.1 | Lake Odessa Public Use Area |
| 428-431 | Mark Twain National Wildlife Refuge - Keithsburg Div. |
| 428 | Oakville Park |
| 428 | Only Lift Bridge on Mississippi |
| 427.4 | Municipal Public Use Area |
| 426 | Des Moines County Park |
| 423.8 | Henderson State Forest |
| 422.3 | Oquawka Game Refuge |
| 417.6 | Delabar State Park |
| 416 | Monument Park |
| 415.5 | Roadside Picnic Area |
| 411.6 | Henderson County Conservation Area |

There are three recreational parks in Henderson County near Pool 18. Henderson State Forest, approximately one and one-fourth miles south of the Mercer County boundary, has about two miles of frontage on the river and a recreational boat ramp at the southern end. The Oquawka Game Refuge on County Road 3 is located approximately three-fourths mile from the southern boundary of the Henderson State Forest. Delabar State Park one mile north of Oquawka, is two miles long on the river side and more than one-half mile wide. This park also has a boat ramp. Two recreational areas with boat ramps are located in Louisa County. One is above Brass Island at the confluence of the Iowa and Mississippi Rivers. The other, below Brass Island, is called Ferry Landing; it is about four miles south of Lock and Dam 17. A boat ramp is also located on the Iowa River near Toolesboro.

Recreational facilities in Des Moines County consist of parks, roadside picnic areas, and marinas. There is a county park on the river near the border of Louisa County. Boat ramps exist near Gerner Island, Gun Slough, and Dasher Chute.

The principal recreational activities in the area are boating, fishing, water skiing, and hunting. There are many roadside picnic spots throughout the county; and there is camping at Henderson State Forest, the Henderson County Conservation area near Gladstone, and the Delabar State Park. Three dredged material beaches are located at mile 434.0 just above New Boston, mile 425.0 on Willow Bar Island, and mile 419.0 on Benton Island. They are heavily used by recreational boaters.

C. WATER-ORIENTED RECREATION FACILITIES

Sales and service facilities in Pool 18 cater to the recreational boater. The table below lists the names, facilities, and locations in 20 river-related sales and service sites in Pool 18.

PLEASURE-BOAT SALES AND SERVICES

| River Mile | Name | Facilities | | |
|---------------|---|-------------------|---------|-------------------|
| | | Launching Area | Dockage | Other Services |
| 435.0 | Toolesboro Access Area | X | | |
| 433.2 | Ferry Landing Public Use Area | X | | |
| 433.1 | Sturgeon Bay Park Landing | X | | |
| 433.1 | New Boston Municipal Dock | X | X | X |
| 432.8 | Original Survey and Layout of New Boston | X | | |
| 431.2 | Sand Run Access | X | | |
| 431.1 | Lake Odessa Public Use Area | X | | |
| 427.4 | Keithsburg Municipal Dock | X | | X |
| 425 | Garner Island | X | | |
| 422.8 | Putney Landing | X | | |
| 422.1 | Hawkeye Dolbee | X | | |
| 422.1 | Western Illinois Boat Club | X | | |
| 421 | Campbell Slough Marina and Boat Harbor | X | X | X |
| 417.6 | Delabar State Park | X | | |
| 416.1 | Jackson Township | X | | |
| 415.9 | Municipal Boat Launching Ramp | X | | |
| 415.8 | Municipal Public Use Area | X | | |
| 415.2 | Devore and Parsons Marina | X | X | X |

Source: U.S. Army Corps of Engineers

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS:

In Pool 18, boating is a relatively low use activity in comparison to the total GREAT II area. Additional ramps are needed in Iowa as well as parking spaces and marina slippage. Swimming is a moderately important recreation activity in Pool 18. The analysis indicates the pool has a relatively low need for additional beach frontage although beaches with car/pedestrian access would be beneficial for the non-boater. Waterskiing is not a relatively popular activity. The adequacy analysis shows a low need for additional hard-surfaced ramps although the facility breakdown shows a deficiency in Iowa.

Picnicking in Pool 18 ranks moderately in relative use compared to the rest of the GREAT II area. This use declines in relative importance over the project period, however, the adequacy analysis indicates a moderate need for additional picnic facilities. The breakdown of facility by states shows that Iowa has a more pressing need for facilities than Illinois. Camping is a relatively moderate use activity with a relatively low need for developed camping facilities. The pool is also fairly well situated for potential beach camping sites.

Fishing and hunting are a moderately popular activity, but is projected to decrease in relative importance over the study period. There is a moderate need for additional ramps, particularly in Iowa.

RECOMMENDATION: 1045

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1045
Pool Number 18
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development

b. No action

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

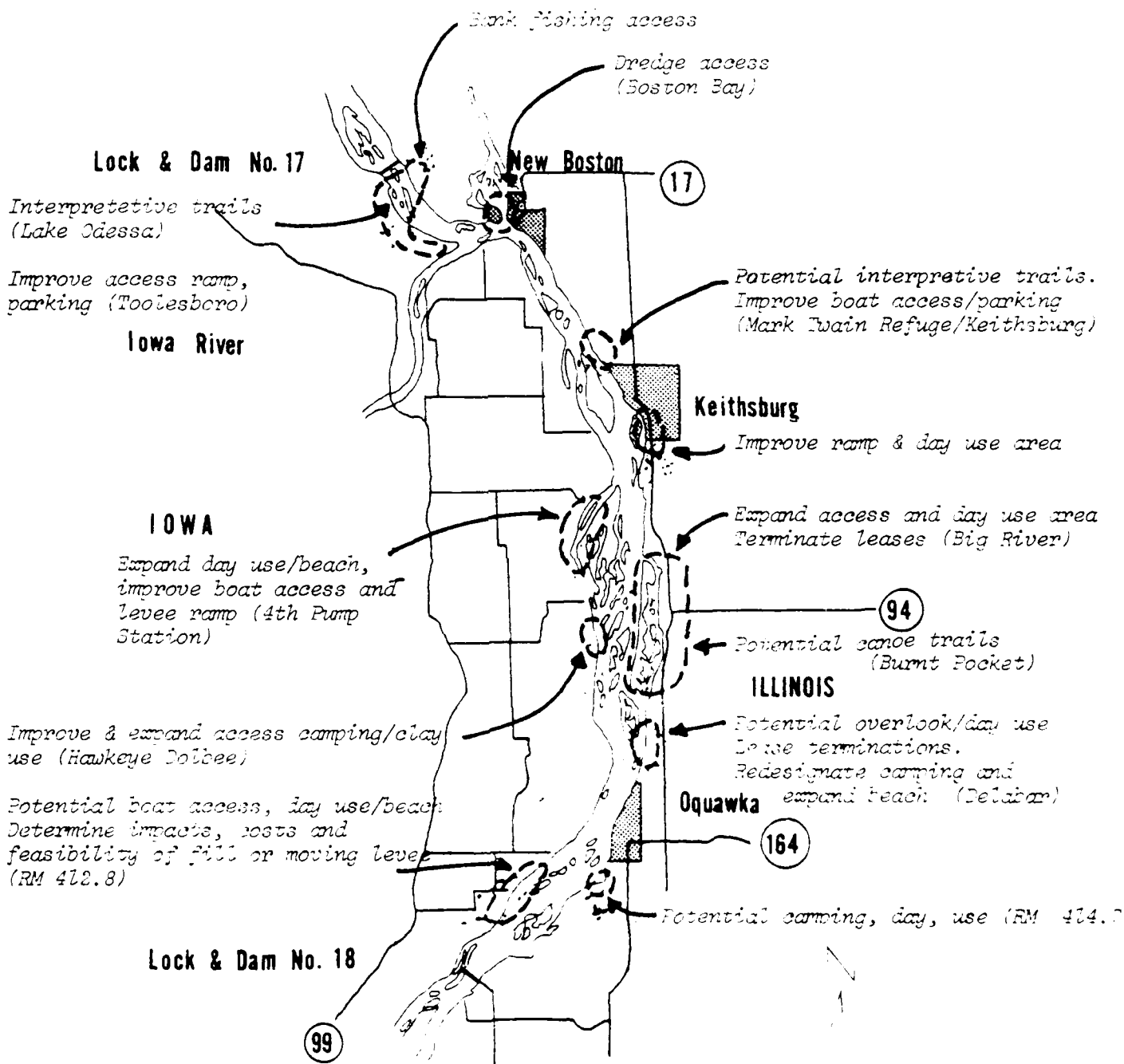
- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate
Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 18



AD-A098 263

GREAT RIVER ENVIRONMENTAL ACTION TEAM

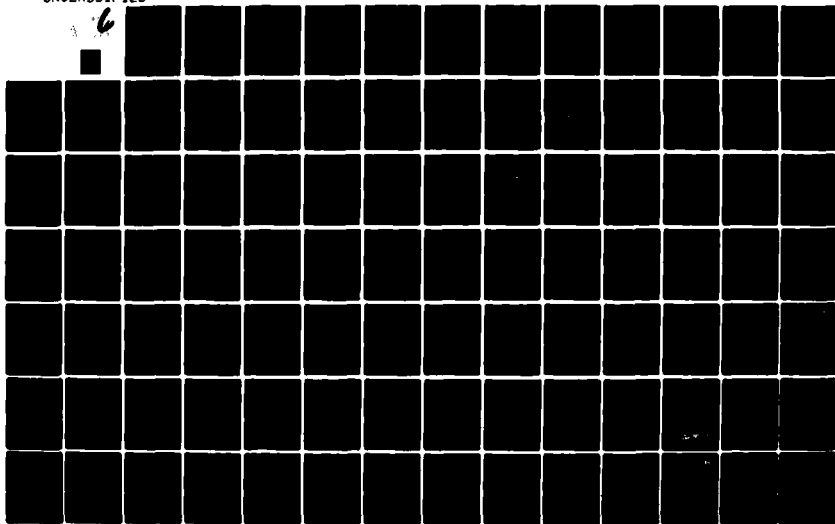
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GREAT RIVER ENVIRONMENTAL ACTION TEAM II. (GREAT II). UPPER MIS--ETC(U)

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RECOMMENDATION

RECOMMENDATION # 1045

IMPACT

LOCATION (RIVER MILE) See map

ASSESSMENT FORM

POOL 18

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDA- TIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1058

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 433.3 R (Ferry Landing)
- b. 433.8 - 434.0 L (no name)
- c. 419.5 L (Benton Island)
- d. 425.8 L (Willow Bar Island)
- e. 424.5 L (no name)
- f. 427.3 R, 427.9 R (Blackhawk Island)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1058
Pool Number 18
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a) 433.3 R (Ferry Landing)
- b) 433.8 - 434.0 L (no name)
- c) 419.5 L (Benton Island)
- d) 425.8 L (Willow Bar Island)
- e) 424.5 L (no name)
- f) 427.3 R, 427.9 R (Blackhawk Island)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

*Notes Continued

3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.
6. Selected alternative a-f .
7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river currents, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
8. References used to select alternative:
 - 1) Disposal Site Selection
 - 2) Recreation Needs Analysis
 - 3) Work Group Discussions
9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.
10. Preliminary impact assessment of selected alternative:
 - 1) increased leisure opportunities
 - 2) fish and wildlife habitat
 - 3) dredge material utilization
 - 4) dredging equipment and methodology
 - 5) recreation facilities
 - 6) water quality
11. Implementing Agency: Corps
12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1058

LOCATION (RIVER MILE)

POOL 18

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1058 Continued

RECOMMENDATION

LOCATION (RIVER MILE) _____

IMPACT

POOL 18 _____

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 19

A. POOL DESCRIPTION

Pool 19 is formed by Lock and Dam 19 which is located at river mile 364.2. Pool 19 is the oldest pool in this reach of the river. The dam was placed in operation on July 12, 1913. Pool 19 is the longest pool in the Rock Island District on the Mississippi River. The pool extends in a north to northeast direction from Keokuk, Iowa, to just north of Burlington, Iowa, a distance of 46.3 river miles. Based on flat pool elevations (518.2' at Dam 19), the maximum lift from Pool 20 into Pool 19 is 38.2 feet, and the maximum lift from Pool 19 into Pool 18 is 9.8 feet. The depth of the navigation channel ranges from 9 feet at the upper end to 36 feet at Dam 20. Average width of the pool varies between one-half mile and one mile and the total surface area covered by water is 30,854 acres.

Des Moines and Lee Counties, Iowa and Henderson and Hancock Counties, Illinois comprise the shoreline boundaries for Pool 19. The Pool 19 drainage area receives 32.2 inches of annual precipitation and discharges an average of 6.98 inches of surface runoff annually to nearby waters. Soils in this drainage area have an infiltration rate of approximately 0.10 inches per hour.

Principal features of Pool 19 are summarized below:

| | |
|--------------------------------------|----------------------|
| 1. Length of pool | 46.3 river miles |
| 2. River miles | 410.5 to 364.2 |
| 3. Pool elevation (flat pool) | 518.2' |
| 4. Water area of pool (flat pool) | 30,854 acres (Total) |
| channel | 2,224 acres |
| off channel | 28,630 acres |
| 5. Shoreline miles | 246.3 miles (Total) |
| COE | .3 mile |
| USFWS | -- |
| Other (private) mainland | 150.0 miles |
| island | 96.0 miles |
| 6. Land Acreage (federal lands only) | 2.88 acres (Total) |

| | <u>Owens</u> | <u>Manages</u> |
|--|--------------|----------------|
| COE | 2.88 acres | -- |
| USFWS | -- | -- |
| *(Other) - Union Electric - private | | |
| * Most of land is owned and managed by Union Electric. | | |

B. RECREATION OPPORTUNITIES

At present, recreational facilities within Hancock County are limited. The most significant recreational area is Nauvoo State Park, which has camping and water-related activities. The Montebello Conservation Area, a 33-acre state facility immediately north of Lock and Dam 19, offers camping, picnicking, and nature areas. There are three roadside picnic areas near the river off Illinois Route 96 below Nauvoo. The confluence of the Mississippi River and Larry Creek north of Lock and Dam 19 offers recreational facilities and a boat ramp. There is also a recreational area with a boat ramp at Dallas City.

Recreation in Des Moines County is primarily hunting, fishing, and boating. The facilities consist of parks, roadside picnic areas, camping sites, and marinas. A county conservation area is located on the river just above Otter Island (Otter Island itself has been studied by the "Otter Island Advisory Committee", which recommends that the island be kept in a natural wild state). Riverfront development in Burlington consists of five boat ramps -- three commercial and two municipal.

The recreational activities in Lee County include boating, fishing, swimming, riding, hunting, and camping. Many recreational spots in the study are maintained by the Lee County Conservation Board: Linger Longer Park in Montrose; three Skunk River access points between Route 61 and the Mississippi River; Werners Woods, a 40-acre nature park west of Fort Madison and one at Keokuk. Keokuk has two large developed parks: Rand Park, consisting of 45 acres, and North Park, consisting of 27 acres.

Lee County plans to double the acreage available for recreation in order to meet minimum standards. Additional improvements sought along the Mississippi include a large recreational area south of Fort Madison and a smaller one north of Montrose.

Two dredged material beaches on Burlington Island and one on Baby Rush Island are heavily used by recreational boaters. State and county parks along the river offer boating, fishing, swimming, camping, hunting and picnicking. The following table shows the major recreational facilities of Pool 19 by location and type of activity.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> | <u>Activities</u> |
|-------------------|------------------------------------|-------------------|
| 410.5 | Henderson County Conservation Area | N |
| 406.5-409 | Otter Island | N |
| 402 | Dankwardt Park | |
| 401.5 | Crapo Park | |
| 390.6 | Site of Abraham Lincoln Speech | H-A |
| 383.7 | Site of Old Fort Madison | H-A |
| 383.6 | Riverview Park | B, P |
| 383.6 | Old Settlers Park | Ga, P, Pl |
| 383.4 | Central Park | GA, P, Pl |
| 381 | Ivanhoe Park | C, Ga, P, Pl |
| 376.5 | Nauvoo State Park | B, C, F, N, Sw |
| 375 | Linger Longer Park | P |
| 374.3 | Site of Early Mormon Settlement | H-A |
| 373 | Roadside Picnic Area | P |
| 368.6 | Roadside Picnic Area | P |
| 366.5 | North Park | C, Go, Ws |
| 365.4 | Montebello Conservation Area | C, N, P |
| 365 | Tummelly Park | |
| 364.6 | Riser Park | |
| 364.5 | Rand Park | Ga, P, Pl |
| 359.7 | Roadside Picnic Area | P |

Key: B, Boating; C, Camping; F, Fishing; Ga, Field Games; Go, Golfing; H-A, Historical-archaeological; N, Nature Study; P, Picnicking; Pl, Playground; Sw, Swimming; Ws, Winter Sports.

The Fort Madison Boat Harbor is located at mile 383.6 and access is provided by Avenue H. The harbor was constructed near Riverview Park in 1961 by the Corps of Engineers using federal and local funds. The basic channel was constructed by building dikes of sand and rock fill. After construction was completed, the harbor was turned over to the City of Fort Madison for operation. Fort Madison Boat Harbor has slips for 310 small boats, a launching ramp, fuel and other sales and service facilities.

C. WATER-ORIENTED RECREATION FACILITIES

Most river-related sales and services in the Pool 19 area cater to the recreational boater. The table below lists the names and location of these facilities.

PLEASURE-BOAT SALES AND SERVICES

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-----------------------|---------------------------------|---------------------------|----------------|---------------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 410.1 | Henderson Creek Recreation Area | X | | |
| 404.7 | Carl Meyer Marina | | X | X |
| 404.6 | Hawkeye Boat Harbor | | | X |
| 404.5 | Paul's Marina | X | X | X |
| 404.3 | Hale's Boat Harbor | X | X | X |
| 404.2 | Burlington Boat Storage Co. | | X | X |
| 404.1 | Burlington Municipal Pier | X | X | |
| 390.6 | Dallas City Municipal Pier | X | | |
| 383.3 | Fort Madison Boat Harbor | X | X | X |
| 382.0 | Don's River Boat Marina | X | X | X |
| 374.8 | Montrose Boat Harbor | X | X | |
| 374.3 | Nauvoo State Park | X | | |
| 369.3 | Pilots Club Landing | | X | X |
| 366.1 | Keokuk Yacht Club | X | X | X |
| 365.0 | Kugler Boat Sales | X | X | X |

Source: U.S. Army Corps of Engineers, North Central Division, Chicago.

D. RECREATION ACTIVITIES AND THEIR NEEDS:

This pool has the longest length and largest acreage of any of the pools in the GREAT II Area, however, there are only 2.88 acres of public land in the pool due to prior acquisition by Union Electric for the hydro-electric plant at Keokuk. Fishing and hunting use in the pool rank first among the 12 pools.

Picnicking is a relatively low use activity. This may be attributed to the low number of facilities in the pool. The adequacy analysis indicates a large need for additional facilities. Camping is not popular in Pool 19. This can easily be attributed to the lack of any developed facilities in the pool. There is a severe need for additional developed facilities in this pool. The pool overall is relatively well supplied with potential beach campsites, but this analysis does not hold true for the lower portion of the pool below Fort Madison, Iowa, where no island beaches exist.

Boating figures show the highest use in the GREAT II area occurs in Pool 19. The analysis indicates a moderate to high need for additional ramps, parking spaces, and marina slippage. Swimming is a popular activity, but the analysis indicates a severe need for additional beach frontage. This is particularly true for the lower section of the pool and for car/pedestrian access beaches in the entire pool. Waterskiing is a popular activity in comparison to the other pools. The adequacy analysis shows the highest relative need for additional hard-surfaced ramps in the GREAT II area. Pool 19, particularly the lower portion is one of the most popular in the GREAT II area for sailboating. This is due to large span of open, unprotected water that provides the relatively steady air movement necessary for that activity.

RECOMMENDATION: 1027

There are no island recreation opportunities in the lower portion of pool 19, plus there is a need for an area of refuge during high winds and to serve as rest areas. The Rock Island District, Corps of Engineers, in conjunction with the Fish and Wildlife Service and States should investigate the feasibility of creating a multiple purpose island in the lower portion of the pool. The creation of an island would reduce the number of conflicts between the recreationist and natural resources at other areas in the pool. The location and size of the proposed island must be coordinated with all interests to provide the desired benefits and minimize resource damage.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1027
Pool Number 19
River Mile _____
Date Approved by Work Group 8/15/79

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities. (#8)

2. Sub-problem addressed:

None

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities

4. Tasks accomplished to address problem:

Disposal Site selection

5. Listing of alternatives to problem:

- a. Rock Island District in conjunction with the Fish and Wildlife Service and States should investigate the feasibility of creating multiple purpose island in the lower portion of Pool 19.
- b. Create beaches along the river banks.
- d. Do nothing.

6. Selected alternative a.

7. Rationale for selection of alternative:

There are no island recreation opportunities in the lower portion of this Pool plus there is a need for an area of refuge during high winds and rest areas. The creation of the island would reduce the number of conflicts between the recreation and natural resources on other areas. The location and size of this proposed island must be coordinated with the fish and wildlife interest to provide a beneficial island for all interest affected. Consideration must be to the diving duck population and its habitants.

8. References used to select alternative:

Work group discussions and recreation needs analysis

9. Rationale for elimination of other alternatives:

The other alternatives would not meet the work group objective of enhancing recreation use of the river corridor and the lack of land available for such public use.

10. Preliminary impact assessment of selected alternative:

1) Cost of Study

11. Implementing Agency: Corps of Engineers, Fish and Wildlife

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1027

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 19

ASSESSMENT FORM

| 1. LISTS OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|---|-------------------------------------|---|---|---|--|
| Cost of Study | Dollars | 0 | 0 | \$200,000 to \$250,000 for the study & EIS | \$200,000 to \$250,000 for the study and EIS |
| Recreation Opportunities (Secondary Impact) | + | | | If study proved the project to be feasible, the creation of the island would enhance user satisfaction, protection for both the user and the natural resources. | Same as #5 |
| Dredge material utilization (secondary impact) | | | | If study proved the project to be feasible, dredge material could be utilized to create the island. | Same as #5 |

RECOMMENDATION: 1035

Pool 19 lacks adequate facilities to meet the existing need and use of that pool. A major portion of the land in this Pool is under private ownership. In addition, the pool has sensitive wildlife habitat that requires protection. Prior to development of additional recreational facilities in this pool, a recreational plan to include acquisition and development requirements must be prepared. This plan should be coordinated with Iowa, Illinois, Corps of Engineers, U.S. Fish and Wildlife Service, Union Electric and others as appropriate.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1035
Pool Number 19
River Mile _____
Date Approved by Work Group 8/15/79

1. General problem addressed:

Future and existing recreation areas may be enhanced with dredge material. (#8)

2. Sub-problem addressed:

Pool 19 lacks adequate facilities

3. Sub-objective addressed:

Enhance recreation use of the river corridor.

4. Tasks accomplished to address problem:

Work group discussions

5. Listing of alternatives to problem:

- a. States of Illinois and Iowa in conjunction with RID/COE, Union Electric Company and USFWS prepare recreation plan for public access and use for Pool 19 including acquisition and development of facilities with all concerned parties.
- b. Develop a project by project approach of providing public recreation facilities.
- c. Do nothing.

6. Selected alternative a.

7. Rationale for selection of alternative:

A major portion of the land in Pool 19 is under private ownership and there is a need to provide a coordinated recreation use plan for the pool. A use plan would assist all interest in developing and managing the use of the highly sensitive area.

8. References used to select alternative:

Work group discussions and recreation needs analysis

9. Rationale for elimination of other alternatives:

The other alternatives would not prove a comprehensive approach to the problem concerning recreation.

10. Preliminary impact assessment of selected alternative:

- 1) improve leisure opportunities
- 2) cost of plan development
- 3) land use

11. Implementing Agency: Coordination through Illinois and Iowa with actual work being a joint effort among Iowa, Illinois, the Corps, Fish and Wildlife Service, Union Electric, the public, and others as appropriate.

RECOMMENDATION

RECOMMENDATION # 1035

IMPACT

LOCATION (RIVER MILE) _____

ASSESSMENT FORM

POOL 19

| 1. LIST OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|---------------------------|----------------------------|---|---|--|--|
| Cost of plan | \$ | No Study - no cost. | No cost | \$55,000 to complete Study. | \$55,000 to complete Study. |
| Fish and Wildlife Habitat | habitat quality | public access limited to existing developed sites. | limited use | increase public use may reduce habitat | recreation encroachments and resulting degradation of habitat qualities. |

RECOMMENDATION: 1046

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1046
Pool Number 19
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

- a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.
- b. No action.

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

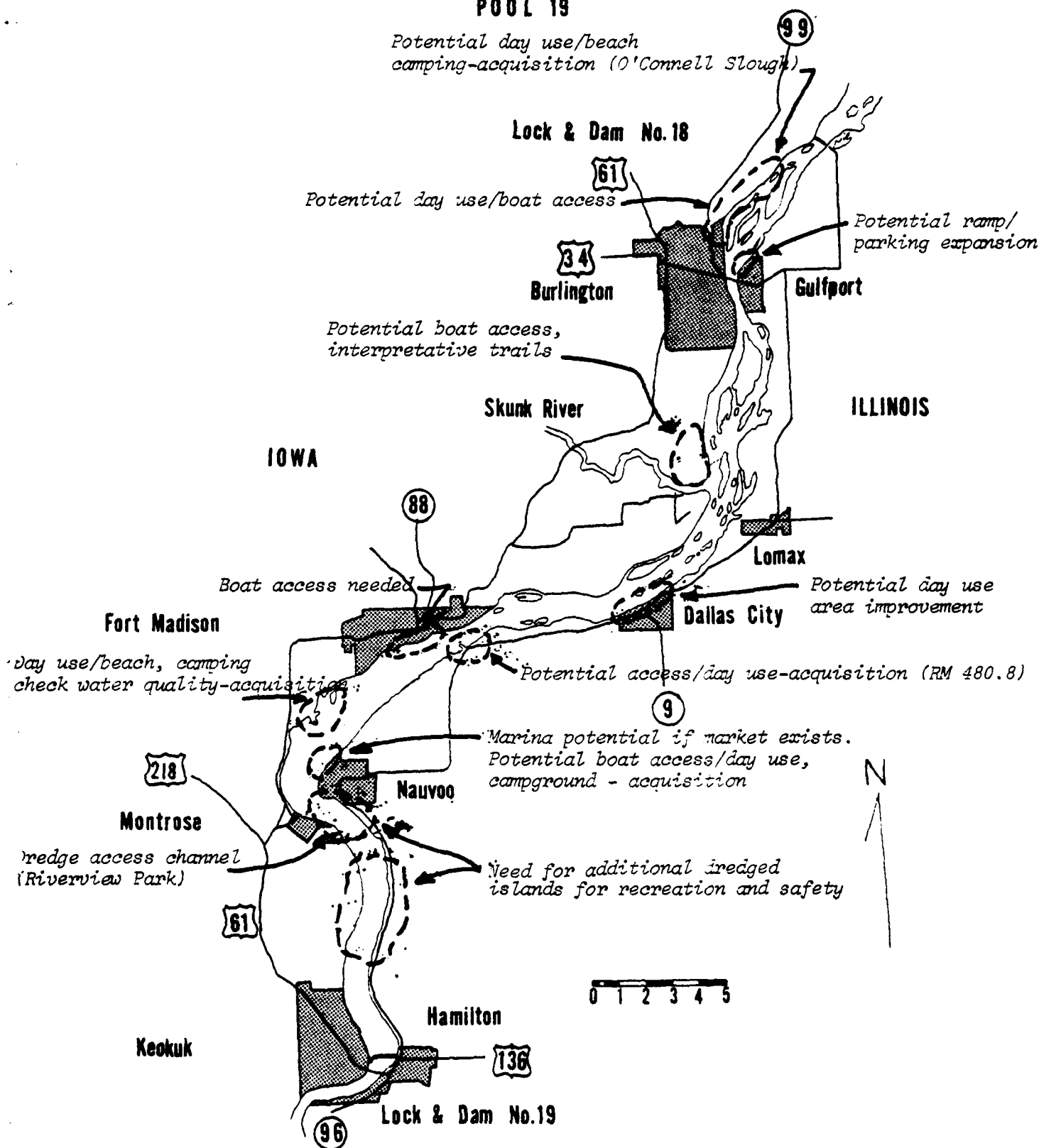
11. Implementing Agency: River Coordinating Committee with appropriate Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 19

Potential day use/beach
camping-acquisition (O'Connell Slough)



RECOMMENDATION

IMPACT

ASSESSMENT FORM

RECOMMENDATION # 1046

LOCATION (RIVER MILE) See map

POOL 19

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDA- TIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION 1059

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 405.5 - 406.1 R (Baby Rush)
- b. 405.7 - 406.0 L (Willow Bar)
- c. 394.0 R (no name)
- d. 400.0 L (on Craigel)/careful
- e. 399.0 - 399.3 L (on Craigel)/careful placement necessary
- f. 409.7 - 410.0 R (Mercer)
- g. 405.3 R (no name)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1059
Pool Number 19
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a) 405.5 - 406.1 R (Baby Rush)
- b) 405.7 - 406.0 L (Willow Bar)
- c) 394.0 R (no name)
- d) 400.0 L (on Craigel)/careful placement necessary
- e) 399.0 - 399.3 L (on Craigel)/careful placement necessary
- f) 409.7 - 410.0 R (Mercer)
- g) 405.3 R (no name)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.

2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.
6. Selected alternative a-g .
7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river currents, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredge beaches may change and must be reevaluated accordingly.
8. References used to select alternative:
 - 1) Disposal Site Selection
 - 2) Recreation Needs Analysis
 - 3) Work Group Discussions
9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.
10. Preliminary impact assessment of selected alternative.
 - 1) increased leisure opportunities
 - 2) fish and wildlife habitat
 - 3) dredge material utilization
 - 4) dredging equipment and methodology
 - 5) recreation facilities
 - 6) water quality
11. Implementing Agency: Corps
12. Reason for work group rejection of recommendation: None

RECOMMENDATION # 1059

LOCATION (RIVER MILE) _____

POOL 19 _____

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1059 Continued

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 19

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 20

A. POOL DESCRIPTION

Pool 20 is formed by Lock and Dam 20 which is located at river mile 343.2. The dam was placed in operation on June 9, 1936. The pool extends 21.0 river miles from just north of Canton, Missouri, in a northeast direction to Keokuk, Iowa. Based on flat pool elevations (480.0 feet at Dam 20), the maximum lift from Pool 21 into Pool 20 is 10.5 feet and from Pool 20 into Pool 19 is 38.2 feet. The depth of water in the main channel varies from the nine foot minimum at the upper end to a maximum of 26 feet at Dam 20. Average width of the pool is around one-half mile and it covers approximately 7,950 acres with water.

Three states border Pool 20. Lee County in Iowa, Hancock and Adams Counties in Illinois and Clark and Lewis Counties in Missouri all have shorelines on Pool 20. The drainage area for Pool 20 receives an average of 32.1 inches of precipitation annually and discharges a mean annual surface runoff of 6.88 inches to surrounding waters. Soils in the drainage area have an approximate infiltration rate of 0.10 in./hr.

Principal features of Pool 20 are summarized below:

| | |
|--------------------------------------|---------------------|
| 1. Length of pool | 21.2 river miles |
| 2. River miles | 364.5 to 343.3 |
| 3. Pool elevation (flat pool) | 480.0' |
| 4. Water area of pool (flat pool) | 7,542 acres (Total) |
| channel | 1,056 acres |
| off channel | 6,486 acres |
| 5. Shoreline miles | 93 miles (Total) |
| COE | 5½ miles |
| USFWS | -- |
| Other | 87 3/4 miles |
| 6. Land acreage (federal lands only) | |

| | <u>Owns</u> | <u>Manages</u> |
|-----|-------------|----------------|
| COE | 178 | -- |

B. RECREATION OPPORTUNITIES

Recreational potential is limited throughout most of the pool both by the levee system, which generally closely follows the pool shores, and by the lack of access roads leading to areas near the river. Although federally owned lands are not extensive, suitable areas for development exist; however, they are isolated insofar as road access is concerned.

Most of the recreational facilities along Pool 20 are in the Keokuk area. Victory Park is a five-acre tract housing the Sternwheel Steamboat Museum. Bluff Park is a seven-acre park with playground equipment and picnic area. The Fenway Landing Public Use Area provides boating, fishing, and camping. Recreational boaters frequent beaches built from dredged material on Fox Island and Buzzard Island.

The following chart shows parks and recreation areas and their location for the Pool 20 area.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|--------------------------------------|
| 364.0 | Montebello State Park |
| 363.8 | Victory Park |
| 363.7 | Sternwheel Steam Museum |
| 362.4 | Bluff Park |
| 362.1 | Rees Park |
| 361.5 | Des Moines River Explored by Fremont |
| 360.1 | Site of Fort Edwards |
| 347.7 | Fenway Landing Public Use Area |
| 343 | Lock and Dam 20 Public Use Area |

C. WATER-ORIENTED RECREATION FACILITIES

The following table lists the name, location and facilities provided at sales and service sites in Pool 20 for recreational craft users.

PLEASURE-BOAT SALES AND SERVICES

| <u>River Mile</u> | <u>Name</u> | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
|-------------------|---|-----------------------|----------------|-----------------------|
| 364.0 | Montebello State Park | X | X | X |
| 363.5 | Howards Boat Dock (formerly Keokuk Boat Dock) | X | X | X |
| 363.5 | Keokuk Municipal Ramp | X | | |
| 363.0 | South Side Boat Club | | X | |
| 359.7 | Warsaw Boat Landing | X | | |
| 359.2 | Alexandria Public Fishing Area | X | | |
| 359.1 | Warsaw Municipal Boat Harbor | X | | |
| 358.9 | The Purple Cow | | X | X |
| 358.6 | Colwell | | | X |
| 347.7 | Fenway Landing Public Use Area | X | | |

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS:

The recreation use figures indicate that Pool 20 experiences the smallest amount of total activity days in the GREAT II area.

Picnicking in the pool experiences the least relative use of the 12 pools. The adequacy analysis points out a high need for additional picnicking facilities.

Camping is not a popular activity with a moderate need for additional facilities. This may derive from the fact that there are only 29 developed campsites in the pool and these are all in Missouri. The adequacy analysis shows a moderate need for additional developed campsites and the facility breakdown indicates a severe need in Illinois. The analysis also indicates a low need for additional potential beach sites.

Swimming in Pool 20 ranks the lowest of the 12 pools. The analysis shows little need for additional beach frontage, but additional car/pedestrian access beaches would provide opportunities to those individuals without boats.

Water skiing, boating, hunting, and fishing are not relatively popular. The adequacy analysis shows low relative needs for additional ramps, parking spaces at ramps, and marina slippage. The state facility breakdown indicates that additional slippage could be utilized in both Missouri and Illinois if there is a sufficient market.

RECOMMENDATION: 1047

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1047
Pool Number 20
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.

b. No action.

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

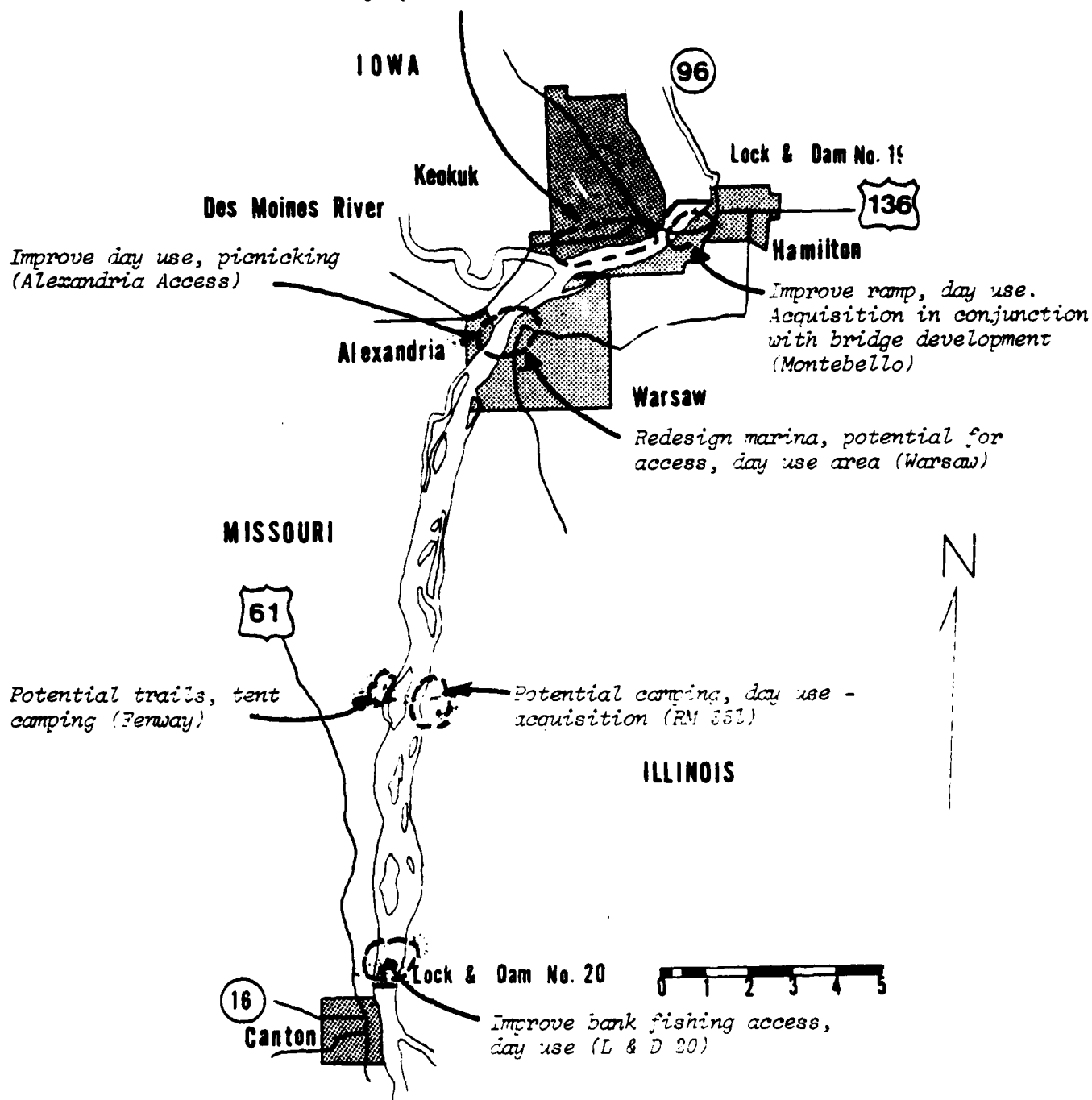
11. Implementing Agency: River Coordinating Committee with appropriate
Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 20

Potential boat access in conjunction with bridge project



RECOMMENDATION # 1047

LOCATION (RIVER MILE) See map

POOL 20

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1060

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 355.1 - 355.3 R (Fox Island)
- b. 361.6 R (above Des Moines River confluence)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1060
Pool Number 20
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a) 355.1 - 355.3 R (Fox Island)
- b) 361.6 R (above Des Moines River confluence)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
- 3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-b .

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as need" basis. If river currents, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredge beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative:

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1060

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 20

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1060 Continued

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 20

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 21

A. POOL DESCRIPTION

Pool 21 is formed by Lock and Dam 21 which is at river mile 324.9. the dam was placed in operation on July 23, 1938. The pool extends in a northwest direction for 18.3 river miles from just south of Quincy to Canton, Missouri. Based on flat pool elevations (470.0 feet at Dam 21), the maximum lift from Pool 22 into Pool 21 is 10.5 feet and from Pool 21 into Pool 20 is also 10.5 feet. The depth of water in the main channel ranges from the nine foot minimum at the upper end to a 20 foot maximum at Dam 21. Average width of the pool is a little less than a mile and it covers a surface area of 9,380 acres with water. Lewis and Marion Counties in Missouri and Adams County in Illinois comprise the shoreline boundaries for Pool 21. The drainage area for Pool 21 receives an average of 32.1 inches of precipitation annually and discharges a mean annual surface runoff of 6.88 inches to receiving waters. Soils in the drainage area have an approximate infiltration rate of 0.10 in./hr.

Principal features of Pool 21 are summarized below:

| | |
|--------------------------------------|-----------------------------|
| 1. Length of pool | 18.4 river miles |
| 2. River miles | 343.3 to 324.9 |
| 3. Pool elevation (flat pool) | 470' |
| 4. Water area of pool (flat pool) | 6,350 acres (Total) |
| channel | 917 acres |
| off channel | 5,433 acres |
| 5. Shoreline Miles | 146 miles (Total) |
| COE | 121.0 miles |
| USFWS | -- |
| Other | 25.0 miles |
| 6. Land Acreage (federal lands only) | 8,536 acres (Total) |
| | <u>Owens</u> <u>Manages</u> |
| COE | 8,536 -- |
| USFWS | -- 6,028 acres |

B. RECREATION OPPORTUNITIES

Although the waters of Pool 21 offer good habitat for fish, the sport fishing catch is far below figures recorded in northern pools of the Rock Island District.

Numerous recreational sites are located along the pool. Wakonda State Park (257 acres) is three miles south of LaGrange, Missouri, on U.S. Route 61 in Lewis County. Sid Simpson Park is in a river back-water area at Quincy, Illinois. The Quinsippi Recreation Development (130 acres) is on Bay Island near downtown Quincy.

The Gardner Division of the Mark Twain National Wildlife Refuge, an island group, extends 7 1/2 miles near the center of the pool north of Sid Simpson Park. Recreational boating is very popular in Pool 21. Marinas, boat launching ramps, and other river-oriented facilities in Quincy Bay draw large numbers of recreational boaters. There are three frequently used dredged material beaches in the pool, one at the northern tip of Dillon Island (mile 341.9, natural beach), one at LaGrange (mile 336)

and another on Hogback Island (mile 332.0). The beach site at LaGrange is also used by the non-boating public. The area at Hogback Island is one of the most popular beaches in the Rock Island District. On some weekends and holidays, the pleasure craft usage from mile 331 to 337 is sufficient to warrant a constant water safety patrol.

The following table lists the name, location and facilities provided at sales and service sites in Pool 21 for pleasure crafts.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|--|
| 342.9 | Canton Municipal Ramp |
| 340.8 | Bear Creek Public Use Area |
| 340-332 | Mark Twain National Wildlife Refuge - Gardner Div. |
| 335.9 | Pete's Boat House |
| 334 | Wakonda State Park |
| 331.5 | Canton Chute Public Use Area |
| 328.7-329 | Sid Simpson Park |
| 329.0 | Kampgrounds of America, Inc. |
| 327.3-328 | Quinsippi Island |
| 327 | Washington Park |
| 326 | Indian Mounds Park |

The Squaw Chute Boat Harbor is located on Bay Island in Quincy. Land access is provided by Lumber Avenue and a bridge over Quincy Bay. The harbor was constructed by the Corps of Engineers in 1966 using local and federal funds. The harbor has slips to accommodate 200 small craft. Various sales and service facilities are located along the Bay and within a few blocks of Quincy River ports.

The Quincy Bay Access Channel is located at mile 329.2 and lies just east of the river navigation channel. It allows access to four small-boat harbors: Sid Simpson Park, Quincy Municipal, Quincy Harbor, and Quinsippi Park. These harbors, have ramps and provide fuel and other sales and service facilities to recreational users.

C. WATER-ORIENTED RECREATION FACILITIES

Pleasure boaters/small craft operators have 12 facilities available to them. Eight of the twelve facilities are in the Quincy area.

PLEASURE-BOAT SALES AND SERVICES

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-------------------|---------------------------------------|-----------------------|----------------|-----------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 342.9 | Canton Municipal Ramp | X | | |
| 340.8 | Bear Creek Public Use Area | X | | |
| 335.9 | Pete's Boat Dock House | X | X | X |
| 331.5 | Canton Chute Landing Public Use Area | X | | |
| 328.7 | Sid Simpson Park | X | | |
| 327.0 | Quincy Municipal Ramp (in Quincy Bay) | X | | |

PLEASURE-BOAT SALES AND SERVICES (CONTINUED)

| <u>River Mile</u> | <u>Name</u> | <u>Facilities</u> | | |
|-----------------------|-----------------------|---------------------------|----------------|---------------------------|
| | | <u>Launching Area</u> | <u>Dockage</u> | <u>Other Services</u> |
| 327.7 | Quincy Boat Supply | X | X | X |
| 327.0 | Bayside Marina | X | X | X |
| 327.4 | Squaw Chute Harbor | | X | |
| 327.4 | Quincy Boat Club | X | X | X |
| 327.1 | Quincy Municipal Ramp | X | | |
| 326.9 | South Side Boat Club | | X | |

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS:

In Pool 21, picnicking is a popular activity. The adequacy analysis indicates a moderate relative need for individual facilities. This need is the most severe on the Missouri shore. Camping is a moderately popular activity but very few developed campsites are located here. The analysis shows a high need for additional facilities. The state facility breakdown shows this need to be more severe in Missouri. The analysis also indicates a moderate need for potential beach campsites.

Swimming ranks as a popular activity in the GREAT II area. The adequacy analysis indicates a moderately high need for additional beach frontage. Boating, waterskiing, fishing and hunting are relatively high use activities in comparison of the 12 pools. There is a relatively high need for additional ramps. There is also a moderately high need for additional parking spaces and marina slippage. The largest deficiency of facilities is located along the Missouri shore.

RECOMMENDATION: 1048

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1048
Pool Number 21
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

- a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.
- b. No action.

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

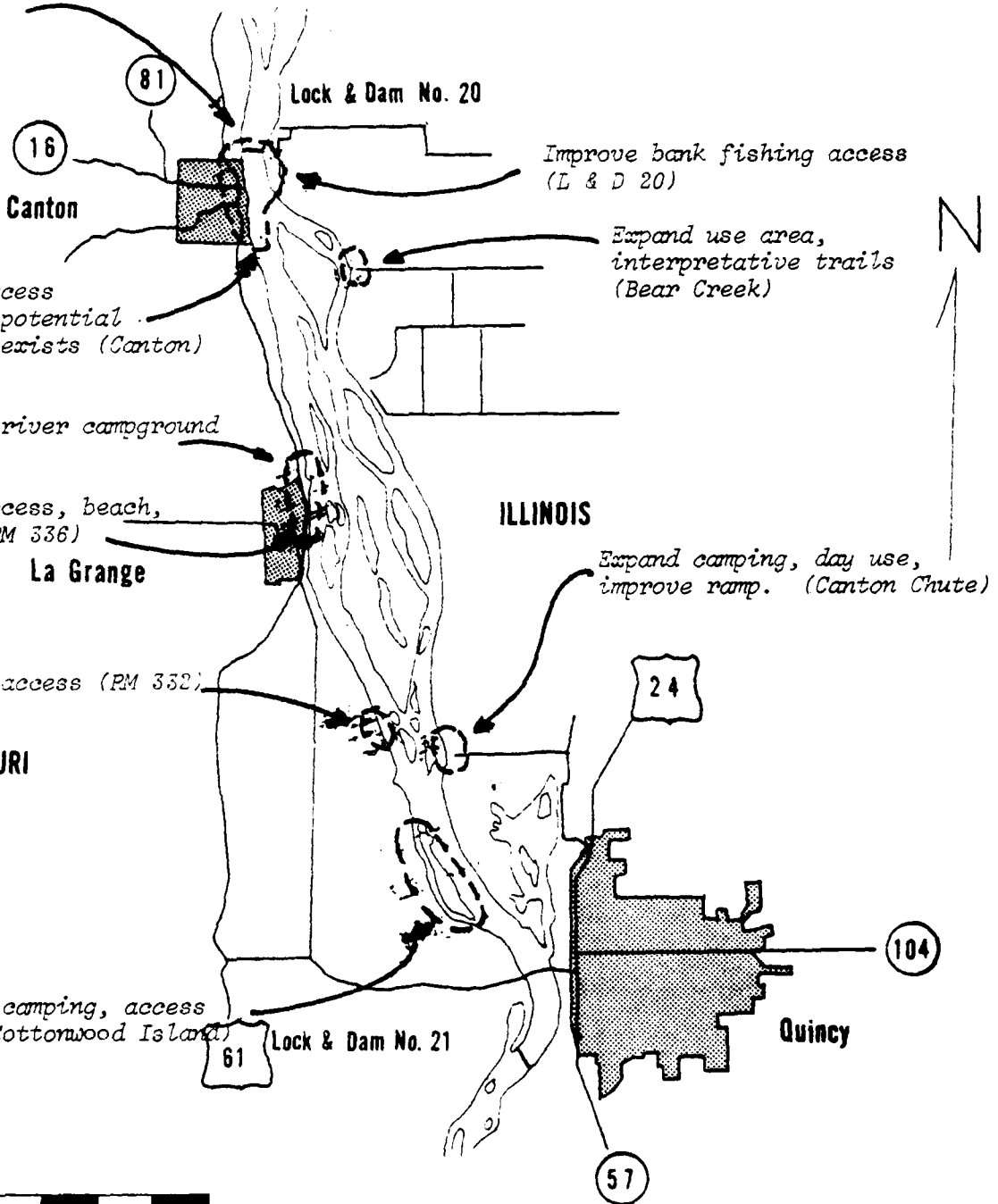
11. Implementing Agency: River Coordinating Committee with appropriate Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 21

Improve access
(L & D 20)



RECOMMENDATION # 1048

RECOMMENDATION

LOCATION (RIVER MILE) See map

IMPACT

POOL 21

ASSESSMENT FORM

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDA- TIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1061

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 331.5 - 332.6 L (Hogback)
- b. 327.8 L (Quinsippi)
- c. 336.0 R (LaGrange Park)
- d. 337.0 - 337.2 R (Proposed LaGrange Campground)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1061
Pool Number 21
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches.

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a) 331.5 - 332.6 L (Hogback)
- b) 327.8 L (Quinsippi)
- c) 336.0 R (LaGrange Park)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
- 3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-c .

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river currents, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredge beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative:

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection or recommendation:

RECOMMENDATION # 1061 RECOMMENDATION
LOCATION (RIVER MILE) IMPACT

POOL 21 ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1061 Continued

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 21

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

POOL 22

A. POOL DESCRIPTION

Pool 22 is formed by Lock and Dam 22 which is located at river mile 301.2. The pool extends from just below Saverton, Missouri in a northwest direction to Quincy, Illinois, a distance of 23.7 river miles. Based on flat pool elevations (459.6' at Dam 22) the maximum lift from Pool 24 to Pool 22 is 10.2 feet, and the maximum lift from Pool 22 to Pool 21 is 10.5 feet. The depth of the navigation channel ranges from 9 feet at Dam 21 to a maximum of 20 feet at Dam 22. The average width of Pool 22 is approximately 0.63 miles, and the water surface is 8,843 acres.

Marion and Ralls Counties, Missouri and Adams and Pike Counties, Illinois form the shoreline boundaries of Pool 22. The drainage area for this pool receives 32.1 inches of precipitation annually and discharges an average of 6.91 inches of surface runoff annually to receiving waters. Soils in this drainage area have an infiltration rate of approximately 0.10 inches per hour.

Principal features of Pool 22 are summarized below:

| | |
|--------------------------------------|-----------------------------------|
| 1. Length of pool | 23.6 river miles |
| 2. River miles | 324.9 to 301.3 |
| 3. Pool elevation (flat pool) | 459.5' |
| 4. Water area of pool (flat pool) | 8,540 acres (Total) |
| channel | 1,185 acres |
| off channel | 7,355 acres |
| 5. Shoreline miles | 126.0 miles (Total) |
| COE | 113.0 miles |
| USFWS | -- |
| Other (private or state) | 13.0 miles |
| 6. Land acreage (federal lands only) | 6,592 acres |
| | <u>Owns</u> <u>Manages</u> |
| COE | 6,592 acres -- |
| USFWS | -- 4,558 acres |

B. RECREATION OPPORTUNITIES

Most of the land recreational facilities in the Pool 22 area are historical. A major land recreational area is Riverview Park, operated by Hannibal. It is situated on a bluff overlooking the Mississippi River. It provides a scenic vista of the river and the surrounding landscape. Several public use areas established by the Corps of Engineers provide water recreation along the pool.

PARKS AND PUBLIC RECREATION AREAS

| <u>River Mile</u> | <u>Name</u> |
|-------------------|---------------------------------|
| 324.5 | Lock and Dam 21 Public Use Area |
| 320 | Site of Marion City |
| 309.5 | Riverview Park |
| 309.2 | The Lighthouse |
| 309.2 | Mt. Olivet Cemetery |
| 309.1 | Tom & Huck Statues |
| 309.1 | Muff Potter's Jail |
| 309.1 | John Hay Public Use Area |

PARKS AND PUBLIC RECREATION AREAS (CONTINUED)

| RIVER MILE | NAME |
|------------|-----------------------------------|
| 309 | Mark Twain's Boyhood Home |
| 309 | Memorial Garden |
| 309 | Becky Thatcher House |
| 309 | John Marshall Clements Law Office |
| 309 | The House of Pilasters |
| 309 | Old Stone House |
| 308.8 | Jackson's Island |
| 308.8 | Nipper Park |
| 308.4 | Lover's Leap |
| 301.3 | Park-N-Fish Public Use Area |

Source: U.S. Army Corps of Engineers

Recreational boating is popular in the pool, with the majority of usage coming from boats operating out of the Hannibal Municipal Small Boat Harbor and Launching Ramp and the many facilities located in the Quincy, Illinois area. There are several dredged material beaches used for recreation in this pool.

C. WATER-ORIENTED RECREATION FACILITIES

PLEASURE-BOAT SALES AND SERVICES

| RIVER MILE | NAME | Facilities | | |
|---------------|---------------------------------|-------------------|---------|-------------------|
| | | LAUNCHING AREA | DOCKAGE | OTHER SERVICES |
| 324.8 | Lock & Dam 21 Public Use Area | X | | |
| 320.9 | Marion City | X | | |
| 313.8 | Old Sny Channel Public Use Area | X | | |
| 310.8 | Bud's Boat Dock | X | X | X |
| 310.8 | Hannibal | X | X | X |
| 309.1 | John Hay Public Use Area | X | | |
| 304.8 | Cottonwood Point | X | | |
| 301.8 | Park-N-Fish Public Use Area | X | | |

D. RECREATION ACTIVITIES AND THEIR RELATED NEEDS:

Picnicking and camping in Pool 22 is a relatively low use activity in the GREAT II area. This is probably due to the lack of facilities. However, due to the present imbalance between supply and demand, the analysis indicates a high need for additional facilities in this pool.

Boating is moderately popular in the pool. The analysis points out a relatively high need for increased ramps, parking spaces, and marina slippage.

Swimming in the pool ranks highest among the 12 pools. The analysis indicates a high need for additional public beach facilities. Facilities with car/pedestrian access would allow nonboaters increased access to the river.

Waterskiing is a moderately popular activity which decreases in relative importance over the study period. The adequacy analysis indicates a relatively high need for additional hard-surfaced ramps with the pressure on the Missouri side being most severe.

Fishing is moderately popular and hunting is quite popular compared to the other pools. Analysis of both activities indicate the most pressing need in this pool is for additional ramps.

RECOMMENDATION: 1049

Recreational use of the river resource will increase as the population grows, regardless of energy costs. In order to properly protect the natural resources and meet recreation needs, potential recreational areas should be identified and evaluated for future use. The Recreation Work Group has identified some potential areas for possible expansion or development of recreational services and activities. Due to the sensitive nature of these resources, complete coordination among all appropriate Federal, State and local agencies and private interests will have to be obtained in evaluation of the potential recreation areas.

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1049
Pool Number 22
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.

b. No action

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

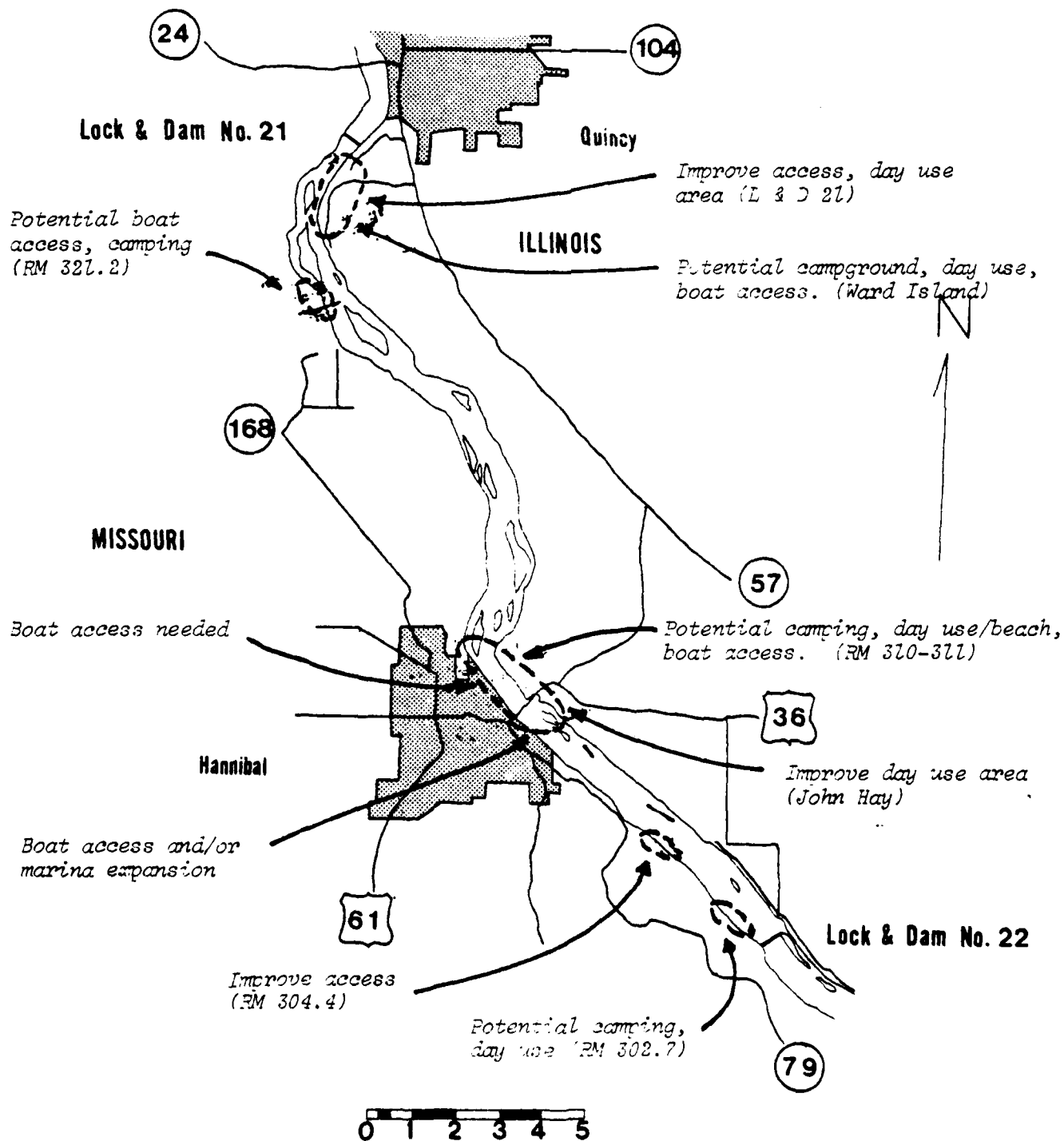
- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate
Federal and State agencies

12. Reason for work group rejection of recommendation:

GENERAL RECREATIONAL NEEDS AND POTENTIALS

POOL 22



RECOMMENDATION

RECOMMENDATION # 1049

IMPACT

LOCATION (RIVER MILE) See map

ASSESSMENT FORM

POOL 22

| 1. LIST OF IMPACTS (SEE ATT. #5) | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDA- TIONS | 6. MEASURE OF IMPACTS (COL. 5-COL. 4) |
|-------------------------------------|-------------------------------------|---|---|---|--|
| Cost of study | dollars | No study No cost | No cost | \$35,000 for study | \$35,000 for study |
| Utilization of resource | + | Continue over or under use of the re- source and existing facilities and services | Will continue | Knowledge of the areas will enable the planners to develop, restrict and distribute the use of areas | Better utiliza- tion and distribu- tion of the use and user |
| Knowledge of area | + | Limited or no know- ledge | Same as #3 | Better understand- ing of the natural resource and the compatibility of the potential areas | Same as #5 |

RECOMMENDATION: 1062

The Recreation Work Group prepared a prioritized pool-by-pool listing of dredged material beaches that are used for recreation purposes. The beaches were selected on the basis of past recreation use, site configuration, safety, relationship to the river and population, etc. In some cases a range in distances were used to identify the dredge beaches to insure that proper location of any future beach enhancement on the beaches was based on the established guidelines and the hydrology of that area. These areas will need further on-site evaluation to properly determine their exact location. The RWG recommendations were forwarded to the Plan Formulation Work Group and the Disposal Site Selection Task Force. These recommendations along with others were reviewed by the Disposal Site Selection Task Force for inclusion within the Channel Maintenance Plan. Additional material placement for beach enhancement at any recommended location should only be on an "as needed" basis. If river currents, flows, channel configurations, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.

Recommended Beaches:

- a. 316.1 - 316.3 L (on main shore)
- b. 319.0 - 319.3 L (Goose Island)
- c. 309.1 L (Corps Use Area)
- d. 316.8 L (off Beebe Island)

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1062
Pool Number 22
River Mile As noted
Date Approved by Work Group July 9, 1979

1. General problem addressed:

Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

2. Sub-problem addressed:

Needs for more island/beaches

3. Sub-objective addressed:

Enhance recreation benefits of the river corridor from channel maintenance activities.

4. Tasks accomplished to address problem:

Disposal Site Selection
Recreation Needs Analysis
Work Group Discussions

5. Listing of alternatives to problem:

- a) 316.1 - 316.3 L (on main shore)
- b) 319.0 - 319.3 L (Goose Island)
- c) 309.1 L (Corps Use Area)
- d) 316.8 L (off Beebe Island)

*Notes:

- 1. Additional material placement for beach enhanced is only on an "as needed" basis.
- 2. If river current, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredged beaches may change and must be reevaluated accordingly.
- 3. Before any recreation beaches are enhanced the use of the established guidelines is required and these activities must be coordinated with all responsible management agencies.

6. Selected alternative a-d.

7. Rationale for selection of alternative:

The sites were selected on the basis of past recreation use, site configuration, relationship to the river and population, etc. Additional material placement for beach enhanced is only on an "as needed" basis. If river currents, flows, channel configuration, etc., change and create excessive erosive forces on beaches, locations and priorities of dredge beaches may change and must be reevaluated accordingly.

8. References used to select alternative:

- 1) Disposal Site Selection
- 2) Recreation Needs Analysis
- 3) Work Group Discussions

9. Rationale for elimination of other alternatives:

The selected sites were more acceptable to the work group to meet recreation needs.

10. Preliminary impact assessment of selected alternative:

- 1) increased leisure opportunities
- 2) fish and wildlife habitat
- 3) dredge material utilization
- 4) dredging equipment and methodology
- 5) recreation facilities
- 6) water quality

11. Implementing Agency: Corps

12. Reason for work group rejection of recommendation:

RECOMMENDATION # 1062

LOCATION (RIVER MILE)

POOL 22

RECOMMENDATION

IMPACT

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|--------------------------------|----------------------------|---|---|--|---|
| Increase leisure opportunities | Quality activities days | Some dredge material beaches are not being maintained. The recreation users must concentrate on a few sites. | Same as present. | Recreation users will have more quality recreation sites. More opportunities for different types of experiences. | Low density recreation, more quality and opportunity. |
| Fish and wildlife habitat | + | Because some beaches are not being maintained, users are using other locations disturbing wildlife and their habitat. | Same as present. | Recreation use will be concentrated at specific locations. | Less habitat will be disturbed. |
| Dredge, material utilization | Dollars + | The use of dredge material for recreational beaches would be a beneficial use. | Same as #3 | Same as #3 | Same as #3 |

RECOMMENDATION # 1062 Continued

RECOMMENDATION

LOCATION (RIVER MILE)

IMPACT

POOL 22

ASSESSMENT FORM

| 1. LISTS OF IMPACTS | 2. UNITS TO BE MEASURED IN | 3. PRESENT CONDITION AS OF JAN. 1, 1979 FOR EACH IMPACT | 4. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITHOUT RECOMMENDATIONS | 5. DESCRIPTION OF MOST PROBABLE FUTURE (2025) WITH RECOMMENDATIONS | 6. MEASURE OF IMPACTS (CO. 5 - COL. 4) |
|-----------------------------------|----------------------------|---|---|---|--|
| Dredging material and methodology | Dollars + | Disposal costs are minimized under existing practice. Dredging equipment has not always been used to enhance the recreation aspects of the resource | Will continue as present. | Existing equipment can be utilized to meet these needs, 4 hours dredging (\$2,300/site), but the cost may be offset by the placement charged for another disposal site. | \$0-2,300/site cost or may result in a reduction in cost in some location. |
| Recreation facilities | + | Dredge material beach areas are providing recreation opportunities, however, the beaches are not being maintained. | Same as #3 | Dredge material beach areas will be providing quality recreation opportunities. Beaches will be maintained with guidelines. | Quality recreation beaches |
| Water quality | + | Water quality is effected as the dredge material is disposed of in the flood plain. Not all material placed can be used for recreation purposes. | Continue as present | Maintenance of existing beaches with proper guidelines. | Reduction of the amount of suspended material. |

5

SUMMARY

SUMMARY

PROBLEM 1: Legal and institutional authority:

Who is responsible for what?
Study team members and the public are generally not familiar with legal and institutional authorities.

Task

Conduct a legal and institutional framework study to identify problems, overlaps and conflicts involved with multi agency jurisdiction.

Results and Conclusion

Not available until study is completed.

Recommendations

#1017 - The States should assess and clarify land ownership and management of the river corridor.

- The States should standardize land ownership boundaries in the river corridor
- The States should coordinate laws and/or regulations regarding public recreation use of the river corridor.

Implementation

States will need to standardize or agree to recognize each others laws as it relates to river recreation activities.

PROBLEM 2: Little is known about the river recreationists, use patterns, resource perceptions, etc.

Tasks

- a. Write a report on Recreation Needs Analysis
- b. Conduct a Recreation Use Survey
- c. Conduct a Recreation Monitoring Study
- d. Write a report on maintenance and enhancement of recreation island beach areas.

Results and Conclusion

- a. The Needs Analysis report outlined the relative needs for selected recreation activities on a pool by pool bases. For detailed information refer to Chapter 3, Section III D.
- b. a recreation use survey was conducted on dredged material beach uses within the GREAT II study area. Over 65% of the

users surveyed felt that the beach that they were on should be left essentially as it was. Almost 55% thought there should be more developed facilities on the beach for recreation use. The most requested facilities were litter disposal; toilets and tables. For detailed information refer to Chapter 3, Section III E.

- c. The study developed a methodology, based on aerial photography and computer assisted data encoding, to evaluate recreation use on the Mississippi River. The aerial photography has the ability to perform reliability studies to understand watercraft distribution within river mile segments.
- d. The study developed guidelines to direct future placement of dredged material for beach enhancement. With the use of the recommended guidelines, the recreation opportunities can be enhanced on disposal sites without radically changing current dredged material disposal technique. The useful recreational life of a dredge material site can be extended and maintained with minimal maintenance after site establishment through the use of normal maintenance methods.

Recommendation

#1021 - develop and conduct a statistically reliable recreation survey of the total river corridor and the total use incurred;

- implement a recreation use monitoring system including a facility inventory and use data;
- all recreation management agencies through RCC should coordinate recreation aspects to work toward a set of common goals.

Implementation

This recommendation can best be implemented by the River Coordination Committee. However, at present most if not all of this recommendation is being considered by the Upper Mississippi River Basin Commission Master Plan Study.

PROBLEM 3: Significant areas of water surface use must be identified to reduce or avoid conflicts.

This problem is being addressed by problems 2 and 9.

PROBLEM 4: Many people do not know what facilities are available. Types and quantities: locations

Task

- a. Conduct an inventory of all existing recreational facilities in the GREAT II area.

- b. Work Group discussion and evaluation.

Results and Conclusions

The results of the study were tabulated in Facility Inventory report. In Chapter 3, Section III B of this appendix a summary of the information is shown. No conclusions were derived directly from this inventory. The information contained within the report was analyzed with existing and future use information to develop conclusions for the "Recreation Needs Analysis".

Recommendations

#1020 - provide more and improved signage, common logo; create pamphlets and facility guides including updates, canned programs and slide shows available for public use.

Implementation

The River Coordinating Committee in conjunction with Federal and State agency develop and implement a UMR wide information system.

PROBLEM 5: The future "demand" for developed and undeveloped recreation areas is unknown.

Tasks

- a. identify deficiencies and present recreation use on a pool by pool basis (Use Projections and Needs Report)
- b. Conduct an recreation facility inventory.

Results and Conclusions.

Recreation use in the GREAT II area was projected to increase 16% from the base year (1977-78 average) to year 2000 and 21% to year 2025. This increased use points out that present recreation facilities would experience increased use pressure and may prove to be inadequate for the provision of a "Quality" recreation experience.

PROBLEM 6: Recreation use/areas may have adverse impacts on the environment.

Recreation recommendations were evaluated for environmental impacts during the review by the Work Group and through the assessment review process of the Plan Formulation Work Group.

Subproblem: Some water craft are excessively noisy.

Tasks

- Work group discussions

Results and Conclusions

Noise abatement would enhance recreation use of the river corridor without reducing recreation opportunities. It would also reduce conflicts between different types of recreation users.

Recommendation

#1012 - encourage manufacturers to reduce noise levels on new engines

- establishment of decibel limits and enforcement of these limits.

Implementation

This recommendation will require appropriate action by Federal and State EPA's to establish such requirements.

Future Needs

Recreation use/areas could have adverse effects on the environment. Proper planning, design and management will be required to limit such impacts. This problem is also being addressed indirectly by other recommendations.

PROBLEM 7: Future and existing recreation areas may be adversely affected by development, channel maintenance, and accelerated sedimentation.

Task

- identify disposal sites which enhance recreation use and/or facilities.

Results and Conclusions

The Work Group prepared a pool by pool listing of dredge material beaches that should be enhanced for recreation purposes. These recommendations were forwarded to the Plan Formulation Work Group and to the Disposal Site Selection Task Force for review and possible inclusion within the Channel Maintenance Plan.

Recommendations

#1051 to 1062 - Dredged Beach Recommendations

Implementation

These recommendations were reviewed by the Plan Formulation Work Group and the Disposal Site Selection Task Force.

Future Needs

These recommendations as well as the Channel Maintenance Plan will require to be reviewed as uses change on the UMR.

PROBLEM 8: Future and existing recreation areas may be enhanced with the use of dredged material and channel maintenance activities.

Tasks

- write a report on Recreation Needs Analysis
- write a report on maintenance and enhancement of recreation island beach areas.
- Work Group discussion and evaluation

Results and Conclusions

same as for problem 2.

Recommendations

#1002 - Guidelines are recommended to minimize erosion of the sites and for reestablishment of beaches as valuable recreation areas.

#1003 - Dredge site characteristics of potential dredge placement sites should be assessed and if appropriate developed for recreation benefits with recommendation guidelines.

#1009 - Guidelines are recommended to stabilize dredged disposal sites that are badly affected by current and wave action

#1026 - Rock Island District/COE, in conjunction with the Fish and Wildlife Service and States should investigate the feasibility of creating a multiple purpose island in the lower portion of Pool 19.

Implementation

Recommendations 1002, 1003 & 1009 must be implemented by the RID/COE with the assistance of the "On site Inspection Team", (OSIT).

Recommendation 1026 and 1027 requires the RID/COE to study the possibility of creating islands in pools 13 & 19. This study will require the assistance of the Fish and Wildlife Service and States.

Future Needs

The recommended guidelines may require updating as the use and the resource change.

If feasible, islands should be created in the lower portions of pools 13 and 19.

PROBLEM 9: Boating safety is a problem. Frequency of boating accidents is relatively high. (courtesy and regulations)

Tasks

- prepare a boating safety report
- Work Group discussion and evaluation.

Results and Conclusions

From 1973 through 1978 there were 181 total reported accidents in the twelve pools.

There were 85 reported injuries and 46 deaths. As recreation use on the Mississippi River increase, the potential for boating and boating related accidents is expected to rise accordingly unless educational and enforcement activities are expanded.

Recommendations

#1030 - RID/COE in coordination with the USCG and State resource agencies to promote boater safety. This recommendation includes legislative, hazard identification and enforcement measures.

Implementation

This recommendation will require coordination and implementation by both Federal and State agencies.

Future Needs

Safety related programs will continuously need to be revised and updated to reflect the changing use and demands.

PROBLEM 10: Recreation use sometimes conflicts with commercial uses.

Tasks

- a. Conduct a Recreation Monitoring Study
- b. prepare a boating safety report

Results & Conclusion

- a. Recreation Monitoring Study - see problem 2
- b. Boating Safety Report - see problem 9

Recommendations

#1005 - Develop auxiliary locks for recreation craft use

- develop time schedule, provide information signs
- establish holding areas (refer to problem 54)

#1014 - maintain auxiliary lock at Pool 14 for recreation craft

#1015 - maintain auxiliary lock at Pool 15 for recreation craft

#1018 - encourage development of commercial terminal complexes

#1019 - coordinate recreation access development within the framework of a total river management plan (refer to Recommendation 1008).

Implementation

Recommendation 1005 would be a function of the RID/COE.

Recommendations 1014 and 1015 support the RID/COE current policy.

Recommendation 1018 will require a cooperative effort by all Federal, State, local and private interests to encourage and support the development of terminal complexes. Recommendation 1019 will be implemented through proper planning and coordination by the River Coordinating Committee in the development of the management objectives for each pool.

Future Needs

In order to accomplish recommendations 1018 and 1019, a continuous effort by all parties involved will be required.

PROBLEM 11: Historic and archaeologic site destruction may occur within or outside of urban areas, within the riverine area or beyond the bluffs.

The problem is being addressed by the Cultural Resources Work Group. (See Cultural Resources Appendix)

PROBLEM 12: Golf courses, playgrounds, athletic fields, swimming pools, and other uses within urban areas may be adversely affected by dredged material (Urban Parks)

This problem was not addressed specifically because of time and funds constraints. Refer to Problems 7, 8, 84 and 85.

PROBLEM 13: Areas funded by Land and Water Conservation funds may be adversely affected or the original project purposes may be amended by the deposition of dredged material.

Task

- Identify recreation areas funded by LAWCON that may be affected by placement of dredged material.

Result & Conclusion

The study identified eleven areas that could be effected by dredging operation.

Recommendations

#1031 - RID/COE should utilize the listing of LAWCON funded sites developed by GREAT and that the RID continue to update the list and coordinate with HCRS.

Implementation

It is the responsibility of RID/COE to coordinate with HCRS and States regarding the possibility of affecting LAWCON funded recreation areas.

Future Needs

Continuous coordination between agencies.

PROBLEM 14: There is a threat of degradation of the viewshed

Task

Conduct a Recreation Use Survey

Results and Conclusions

Same as for problem 2

Recommendations

#1022 - Complete a natural history survey of important natural/scenic and cultural areas

#1023 - Prepare land use base plan for the river corridor and develop a system to protect from loss those areas identified in the above survey (#1022).

Implementation

These recommendations can best be accomplished by the individual States in connection with their natural heritage programs.

PROBLEM 15: User fees may affect recreation uses.

Task

- Work Group discussion

Results and Conclusions

If recreational user charges were imposed, recreational use of this type on the river would decline. Implementation of recreational user charges would not result in a reduced waiting time for recreational craft lockages. Therefore, the Work Group makes the following recommendation:

Recommendation

#1029 - No lockage fees for recreation craft lockages.

Implementation

Continuation of the present policy by the RID/COE.

PROBLEM 16: Water quality limits some recreation.

Task

- Work Group discussion

Results and Conclusions

Develop recommendations that are cost effective to provide facilities and/or protection of water quality high density recreation use areas.

Recommendation

#1016 - recommended that sanitary pump outs be provided at marinas, at major public recreation facilities and at urban areas along the river; existing public health laws need to be changed to require marinas to provide such services.

#1024 - The State selection processes for funding priority of public wastewater treatment systems should include a weighting factor for recreation benefits of the proposed project.

#1025 - The States should develop a coordinated program to monitor water quality for fecalcoliform and industrial chemicals at major recreation areas for whole body water contact recreation activities.

Implementation

Recommendation 1016 will require implementation by government agencies at all levels, and private businesses to meet the needs of the recreation users. States must insure that proper equipment be used to meet the need.

Recommendation 1024 will require coordination between USEPA, State and local Water Quality Agencies. Recommendation 1025 would best be accommodated by state water quality (pollution control) agencies in coordination with each other.

Future Needs

Water quality will continue to require monitoring to protect the recreation users. If water quality deteriorates, managers may be required to restrict some types of uses and corrective action will be required to eliminate the source of pollution.

PROBLEM 17: The "Supply" of existing developed and undeveloped recreation areas is unknown.

Tasks

- a. identify deficiencies and present recreation use on a pool by pool basis.
- b. write a report on recreation needs
- c. conduct a facility inventory

Results and Conclusions of Tasks

- a. same as for problem 5
- b. same as for problem 2
- c. same as for problem 4

Recommendations

#1032 - a complete inventory of undeveloped areas used or have potential for use by the public should be undertaken.
#1038 to 1049 - study and evaluate each pools general recreation needs and potentials (see pool maps) for further recreational use and development.

Implementation

The above recommendations would best be accommodated by the River Coordinating Committee in conjunction with State resource agencies and the U.S. Fish and Wildlife Service.

Future Needs

The information obtained from the inventories and related studies can be used to develop management objectives and improve recreation facility supply.

PROBLEM 18: The future "need" for developed and undeveloped recreation areas is unknown.

Tasks

same as for problem 17

Results and Conclusions

same as for problem 17

Recommendations

#1008 - establish management objectives for each pool segment of the river to determine proper recreation use levels, activities and facilities.

#1010 - recreational sites accessible by automobile should be developed and managed whenever possible to provide recreation opportunities to users without boats.

- where potential or existing land-based recreation sites occur, efforts should be made to obtain public access.

#1011 - maintain any abandoned railroad rights-of-way along the river in public ownership for recreation use, wildlife habitat and natural area preservation.

- acquire and develop new trails and coordinate with the Great River Road activities and State trail programs.

#1038 to 1049 - study and evaluate each pool's general recreation needs and potentials (see pool maps) for further recreational use and development.

#1063 - the extension of a protective wall to reduce the wave action danger at the boat access point adjacent to Lock & Dam 11.

#1064 - widen and deepen access channel from O'Leary Lake to Pool 12 and improve boat ramp.

Implementation

Recommendation #1008 would best be accommodated by the River Coordinating Committee in conjunction with local and State resource and planning agencies.

Recommendation #1010 should be coordinated during the development of recommendation 1008 by RID/COE and responsibility of State and local agencies.

Recommendation #1011 would best be accommodated by individual States through their (trail and natural heritage) programs.

Recommendations #1038 to 1049 would best be accommodated by the River Coordinating Committee in conjunction with State resource agencies and the U.S. Fish and Wildlife Service.

Recommendations #1063 and 1064 would best be accomplished by a cooperative arrangement among the township of Jamestown, Wisconsin, Wisconsin Department of Natural Resources, HCRS and Rock Island District.

Future Needs

The information obtained from the inventories and related studies can be used to develop management objectives and improve recreation facility supply.

PROBLEM 19: Litter exists on the archery and target fields on the UMR.

Tasks

- prepare a plan for the cleanup.
- work group discussion and coordination.

Results and Conclusion:

Same as for problem 9.

Recommendation

#1028 - coordinate the cleanup of litter along the UMR use periods.

- provide trash receptacles at all parking and access points.
- promote local litter clean-up activities through local clubs and public interest groups.
- promote a "take it home" campaign.

Implementation

Recommendation #1028 will require coordination by both resource management agencies. Federal and State resource management agencies should promote additional public education programs to deal with litter problems on the UMR. These agencies should provide increased protection of recreation areas from litter degradation through the above recommendation activities.



PROBLEM 20: Railroad bridges won't open for recreational boats.

Problem was not addressed by GREAT. There is a regulation regarding this matter under U.S. Code 499.

PROBLEM 21: Recreation is not a project purpose of the nine-foot navigation project.

Task

- Work group discussion and evaluation

Result and Conclusion

RID/COE is restricted from developing and maintaining additional recreational areas on Corps lands.

Recommendation

#1037 - amend Public Law 89-72 to allow Corps to develop and maintain recreation areas on Corp managed land without local cost sharing, create and maintain dredge material beaches and expand the ranger staff.

- include recreation as a project purpose of the 9-foot channel.
- expand RID/COE role to provide additional recreation/resource management.

Implementation

The recommendation will require Congressional action and implementation by the Corps of Engineers.

PROBLEM 22: Levees limit recreational access

This problem is being addressed by problem 79.

PROBLEM 23: Future recreational development may be limited due to environmental concerns.

This problem is being addressed by problem 6.

PROBLEM 24: Public Law 89-72 limits Corps authority for recreation development.

The problem is being addressed by problem 21.

PROBLEM 25: Law enforcement is limited on the river.

This problem is being addressed by problem 9.

PROBLEM 26: There is limited manpower and funds available by agencies to maintain existing and future recreation areas.

Tasks

- a. Write a report on maintenance and enhancement of recreation island beach areas.
- b. identify disposal sites which enhance recreation use and/or facilities.
- c. Work group discussion and evaluation.

Results and Conclusions

See problems 2 & 7

Recommendations

#1034 - The following programs could be modified to provide the required funds for meeting future recreation needs:

- continue to upgrade and expand recreation facilities under the Bicentennial Land Heritage Program and continue funding under that program.
- increased funding and restructuring of the cost share ratios are needed for the Land and Water Conservation Fund Program.
- increase state funding for state facilities through general funds, Marine Fuel Tax funds, registration fees and special use taxes.
- continue funding of the Great River Road Program.
- increase Corps of Engineers Recreation Resource funding.
- increase local monies for operations and maintenance.
- provide government assisted loans, Small Business Administration loans and technical assistance to help private businesses provide recreation opportunities that are available to general public use.

Implementation

This recommendation will require the assistance of Federal, State and local governments to correct this deficiency in funds available to the providing recreation agencies.

Future Needs

Careful coordination among the levels of government will be required to insure proper distribution of funds. Each administrative funding agency will require careful review of their programs to insure adequate distribution of their funds for recreation services.

PROBLEM 27: Sanitary pumpouts for recreational craft are limited.

This problem is being addressed by problem 16.

PROBLEM 28: State Comprehensive Outdoor Recreation Plans do not place enough emphasis on the Mississippi River.

Tasks

- Work Group discussion and evaluation

Result and Conclusion

The problem was discussed with SCORP planners. Existing SCORP's did lack emphasis on the Mississippi River.

Recommendation

#1033 - Coordinate the activities of the State's SCORP's and include the Mississippi River as a SCORP subject.

Implementation

This recommendation would best be implemented by the SCORP planners from each state.

PROBLEM 29: Many recreationists are unfamiliar with river hazards.

This problem is being addressed in general terms, refer to problem 9.

PROBLEM 30: Need education on locking priorities.

This problem is being addressed in general terms in problem 9.

PROBLEM 31: Need access below Ft. Madison

This problem is being addressed in general terms in problem 15.

PROBLEM 32: Need more access below dam in Pool 11.

This problem is being addressed in general terms, refer to problem 18.

PROBLEM 33: Need more islands/beaches around lower part of state.

This problem is being addressed in general terms refer to problem 8, 18 & 45.

PROBLEM 34: Need something more for tourists. Ferry between Gutenberg, IA and Cassville, Wisconsin.

The problem is beyond the scope of the GREAT Study.

PROBLEM 35: Areas along channel (recreational developments, docks, etc.) are seriously affected by wakes from recreational craft.

Tasks

Work Group discussion and evaluation.

Results and Conclusions

Solution to the problem must be selected on a site by site basis. The lack of time and funds prohibited recommendations on a site by site basis.

Recommendations

#1036 - provide no wake zones within a designated distances from recreation facilities;

- relocation of recreation facilities

- protective structure (i.e., jetties and/or floating wavebreaks) around recreation facilities.
(depends on site specific situation)

Implementation

This recommendation will require all managing/controlling agencies to implement the proper solution.

Future needs

The above recommendations are not the answer to every problem. Resource agencies must continue to evaluate the situation to determine the correct solution.

PROBLEM 36: Bellevue needs public harbor for tourist traffic with facilities.

The problem is being addressed in general terms, refer to problem 21.

PROBLEM 37: Recreational use in part of Savanna Proving Grounds - does government need all that area

The problem is being addressed in general terms, refer to problem 18. This problem regarding Savanna Depot and recreation is beyond the scope of the GREAT Study.

PROBLEM 38: Need for a no wake area below Lock and Dam 12 (pleasure craft)

The problem is being addressed in general terms, refer to problem 9.

PROBLEM 39: Need some organization to contract with local person to police recreation areas.

The problem is being addressed in general term, refer to problem 9.

PROBLEM 40: Need more beaches on Iowa side above Lock and Dam 12

This problem is being addressed in general terms, refer to problem 18.

PROBLEM 41: Need more pumping stations for recreational craft. All the harbors or marinas.

This problem is being addressed in problem 27.

PROBLEM 42: There are no public beach facilities accessible by road in Pool 19 - we need some.

This problem is being addressed in general terms, refer to problem 18 and 45.

PROBLEM 43: No fee for recreational lockages.

This problem is being addressed in problem 15.

PROBLEM 44: Boat docks are needed.

This problem is being addressed in problem 18.

PROBLEM 45: In Pool 19, there are hardly any sandbars. Most boats, especially larger ones, cannot get to recreational sites.

Recommendations

This problem is being addressed in problem 18. However, specific recommendations are:

#1027 - Rock Island District in conjunction with the U.S. Fish and Wildlife Service and states should investigate the feasibility of creating a multiple purpose island in the lower portion of Pool 19.

#1035 - States of Illinois and Iowa in conjunction with RID/COE, Union Electric Company and USFWS prepare recreation plan for public access and use for Pool 19 including acquisition and development of facilities with all concerned parties.

#1046 - Study and evaluate the pools **general recreation needs** and potential for further recreation use and development (see attached map in Chapter 4)

#1059 - Beach recommendations for future enhancement and maintenance.

Implementation

Recommendations #1027, 1046 and 1059 should be a function of the Rock Island District in conjunction with all other concerned agencies.

Recommendation #1035 should be a function of the State recreation agencies in conjunction with all other concerned agencies.

PROBLEM 46: Need to put dredged material on bars to make sandbars.

This problem is being addressed in problem 18, 83, 84 & 85.

PROBLEM 47: Ft. Madison Railroad Bridge will not open for pleasure craft.

This problem is being addressed in problem 20.

PROBLEM 48: What is Coast Guard planning on doing about pump-out facilities.

This problem is being addressed in problem 27.

PROBLEM 49: Why can't Corps put pumping stations at all their own harbors?

This problem is being addressed in general terms, refer to problem 24 & 27.

PROBLEM 50: Problems with boat harbors/access filling in (every year at Warsaw, Illinois).

Task

- Work Group discussion and evaluation

Results and Conclusion

Some public harbors and access areas in the river corridor are having sedimentation problems. In some cases, these facilities lacked proper design or appropriate location.

Recommendation

#1013 - relocate or redesign problem public harbors and access area, i.e., Warsaw, Jackoak Slough, Bear Creek Access, Quincy Park Marina, Quincy Bay Access and Hamilton Harbor.

Implementation

This recommendation will require the coordination between the COE and the local sponsor for the design and relocation or modification of the facilities.

Future Needs

Without a change in the COE responsibilities or additional funding sources for local sponsor, this recommendation will be incomplete.

PROBLEM 51: Need a dredged material beach on Illinois side close to Warsaw.

This problem is being addressed in Problem 18.

PROBLEM 52: Good potential area for recreational development with road access just above the boat ramp in Warsaw.

This problem is being addressed in Problem 18.

PROBLEM 53: Need policing on spoil islands - trash cans, etc.

This problem is being addressed in Problem 19.

PROBLEM 54: Need locking schedule for recreational craft.

Tasks

Work discussion, review of the MRI Crafts Locks Study and St. Paul District Recreational Craft Locks Study and public comments.

Recommendation

#1005 - Develop auxiliary lock for recreation craft use. Should be done during replacement or reconstruction of existing locks and coordinate with the resource agencies to minimize damage to fish and wildlife resources.

- develop time schedule, provide information signs for locking recreation craft.

- establish holding areas.

Implementation

- Recommendation 1005 should be a function of the Rock Island District of the Corps of Engineers.

PROBLEM 55: Recreational area developed from Fenway Landing North to some extent and from Fenway down to Canton. Need access to it.

This problem is being addressed in problem 18.

PROBLEM 56: Recreation area: ramp, harbor, marina docking need fill for recreation area below Lock and Dam 20 - rock ledge exists that could be built up to form marina.

This problem is being addressed in problem 18.

PROBLEM 57: Have small riverfront park and potential for marina development.

This problem is being addressed in problem 18.

PROBLEM 58: Recreational development for riverfront - have area available adjacent to Pete's Boat House

This problem is being addressed in problem 18.

PROBLEM 59: Can they get some help from the Corps to develop recreational area.

This problem is being addressed in problem 24.

PROBLEM 60: Interested in upgrading or developing Turtles, Shuck, and Glasgow (Jackson) Islands, for recreation. They would like some guidance on this.

This problem is being addressed in problem 8 and 18.

PROBLEM 61: Blanchard Island below Muscatine is submerged slightly and boats are getting hung up on it.

This problem is being addressed in general terms in problem 9.

PROBLEM 62: Needs policing of islands/beaches

This problem is being addressed in problem 19.

PROBLEM 63: Need to educate boaters on river locations of wing dams, why they are there, etc.

This problem is being addressed in problem 9.

PROBLEM 64: Need marina facility in Niota area

This problem is being addressed in problem 18.

PROBLEM 65: Dallas City interested in developing a marina/harbor in Bay area

This problem is being addressed in problem 18.

PROBLEM 66: Need more recreational beaches.

This problem is being addressed in problem 18.

PROBLEM 67: Don't like the rip-rap at the public use area below Andalusia. It is too hard to get to the water.

This problem is the responsibility of the Rock Island District/COE. The enhancement guidelines as addressed in problem 8 can be utilized.

PROBLEM 68: Would like to expand harbor. Right now there is only room for boats from residents. Would like a boat ramp and more slips.

This problem is being addressed in general terms in problem 18.

PROBLEM 69: Would also like land surrounding the harbor (river side of dike) kept up better. Right now they have no management control since it is federal property.

This problem is being addressed by problem 18, 24 and 25.

PROBLEM 70: Concerned with inexperienced boaters on the river.

This problem is being addressed by problem 9.

PROBLEM 71: Heavy use on Albany Island. Problem of policing beach.

This problem is being addressed by problem 19.

PROBLEM 72: Need to develop some way of policing the dredge beaches.

This problem is being addressed by problems 19 and 24.

PROBLEM 73: Generally need more recreational beaches

This problem is being addressed in general by problem 18.

PROBLEM 74: Need more dredge spoil islands in the Dubuque area.

This problem is being addressed in general terms by problem 18.

PROBLEM 75: How will the GREAT Study affect cottages and homes on leased riverfront land? What is status of government leases now? Will it be changed?

This problem is being addressed in general terms by problem 18 and 76.

PROBLEM 76: With all this interest in increasing recreation activities in the GREAT II area, why is the CORPS closing campsites (cabins) and all leases?

The problem is beyond the scope of the GREAT II Study. The problem is being addressed by the Corps of Engineers.

Present and future needs for expansion of some existing and creation of some new public access and use sites are precluded by existence of cottages on federal lease sites prior to November 30, 1988. Where public recreation needs are identified by various public agencies, for a given parcel of public land with a private cottage lease on the land, the private lease should be terminated before 1988 (Recommendation 1006).

PROBLEM 77: Will holding tanks on boats be required (enforced) beginning in 1978 and thereafter?

This problem is being addressed partially by problem 27. Federal and State laws will apply as appropriate.

PROBLEM 78: Burlington has quite a few sandbars, and it is a greatly used recreation area; but there are very few accesses over the levees to these areas so that people can get to them. We need some new accesses to the river?

This problem is being addressed by problems 18 and 79.

PROBLEM 79: Levees along the channel are seriously affected by wake from recreational craft.

Task

Meetings with levee districts to identify methods of providing safe recreational access over levees and recreational facilities that do not promote use on the levee.

Recommendation

#1004 - when necessary, provide land buffer on riverside of levee.*

- improve road access over levees and provide adequate parking on either side of levee.*

- install planting buffers for wildlife and fencing to direct traffic away from levees and retard wave action upon levees.*

- increase funding for recreation access improvements over levees.

(*the above recommendations will depend on site specific conditions.)

Implementation

This recommendation will be a coordinated function between the Corps of Engineers, levee districts and appropriate recreation providing agencies.

Future

Without close cooperation and coordination the best solution to the problem will not materialize.

PROBLEM 80: Need to address the impact of energy situation of the recreation resource.

Problem was not addressed directly in appendix because of lack of funds and time.

PROBLEM 81: A joint effort between states to clean up litter on islands should be made.

This problem is being addressed by problem 19.

PROBLEM 82: Need to have some other type of program for development of new recreational areas.

This problem is being addressed by problem 26.

PROBLEM 83: The need for a coordinated effort to consider all benefits of dredged material placement.

Task

Complete a study for the maintenance and enhancement of Island beach areas.

Results and Conclusions

The study developed guidelines to direct future placement of dredged material for beach enhancement. With the use of the recommended guidelines, the recreation opportunities can be enhanced on disposal sites without radically changing current dredged material disposal technique. The useful recreational life of a dredge material site can be extended and maintained with minimal maintenance after site establishment through the use of normal maintenance methods.

Recommendation

#1001 -- the RID/COE should formally establish on "On Site Inspection Team" (OSIT) as an ongoing organization. Recreation should be considered during the placement of dredged material by using the guidelines.

Implementation

This recommendation would be established by the RID/COE with participation from concerned Federal and State agencies.

Future Needs

The procedures for the OSIT will require further defining as well as the guidelines may require updating as the use and the resource change.

PROBLEM 84: Dredged material has not always been placed with recreation use potential in mind.

Task

Same task as problem 83

Results and Conclusions

Same as for problem 83

Recommendation

#1002 - Guidelines are recommended to minimize erosion of the sites and for reestablishment of beaches as valuable recreation areas.

#1009 - Guidelines are recommended to stabilize dredged disposal sites that are badly affected by current and wave action.

Implementation

This recommendation would be implemented by the RID/COE with assistance of the OSIT.

Future

Same as problem 83

PROBLEM 85: Dredged disposal practices do not consider natural features for recreation enhancement.

Task

Same task as problem 83

Results and Conclusions

Same as for problem 83

Recommendation

#1003 - Dredge site characteristics of potential dredge placement sites should be assessed and if appropriate, developed for recreation benefits with recommended guidelines.

Implementation

Same as for problem 84

Future Needs

Same as for problem 83

PROBLEM 86: Insure that the coordinating activities of the GREAT efforts are continued after the completion of the GREAT studies.

Task

Work Group discussion and evaluation

Results and Conclusion

Provide mechanism for continuation of GREAT and establish implementing agency to coordinate agencies, public concerns and activities relative to river resources, including recreational resources, opportunities and uses.

Recommendation

#1007 - establishment of a River Coordination Committee.

Implementation

This recommendation should be implemented by the RID/COE in conjunction with other responsible Federal and State agencies.

Future Needs

Continuous coordination of all agencies.

PROBLEM 87: Need for planning and design guidelines for public access areas.

Task

Work Group discussion and evaluation

Results and Conclusion

The concern is for public safety, particularly the safety of these boaters who either have had little boating experience at all or have had little experience on the Mississippi River. Many access areas and ramps have been developed along the river with little apparent consideration of the potential hazards created by location of ramps in relation to other site factors.

Recommendations

#1050 - RID/COE should develop a set of generalized planning guidelines to be used in locating and designing public access areas.

Implementation

The RID/COE should prepare and distribute the planning guidelines.

6

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REFERENCES

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GREAT RIVER ENVIRONMENTAL ACTION TEAM

F/G 13/2

GREAT RIVER ENVIRONMENTAL ACTION TEAM II. (GREAT II). UPPER

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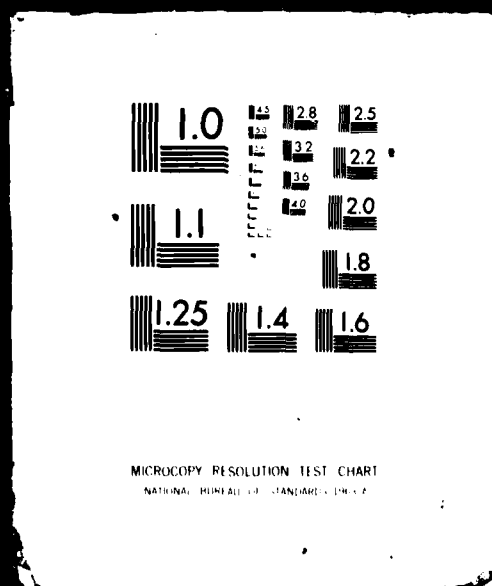
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SUPPLEMENTARY

INFORMATION

DISPLAY OF RECOMMENDATION &
PRELIMINARY IMPACT ASSESSMENT

Recommendation Number 1044
Pool Number 17
River Mile See map following
Date Approved by Work Group February 4, 1980

1. General problem addressed:

Detailed information and location is unknown for potential areas for needed activities, services and facilities

2. Sub-problem addressed: None

3. Sub-objective addressed:

Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreation opportunities and facilities.

4. Tasks accomplished to address problem:

Recreation Needs Analysis

5. Listing of alternatives to problem:

- a. Study and evaluate the pools general recreation needs and potentials (see attached map) for further recreational use and development.
- b. No action

6. Selected alternative a.

7. Rationale for selection of alternative:

Recreational use of the river resource will increase as populations grow and energy cost increases. Therefore, in order to properly protect the natural resources and meet recreation needs, potential recreational areas should be studied and identified for future use.

8. References used to select alternative:

- 1) Recreation Needs and Potentials (Rec. Appendix Draft)
- 2) Work Group Discussions
- 3) Recreation Use Projections and Needs Reports
- 4) On-site inspections
- 5) Master Plans
- 6) State SCORPS

9. Rationale for elimination of other alternatives:

Areas cannot be identified and evaluated if no study. Areas could be developed that would adversely effect the total river system or a specific reach of the river if facility development is not undertaken based on adequate data and coordinated among all appropriate agencies and interest.

10. Preliminary impact assessment of selected alternative:

- 1) cost of study
- 2) better utilization of resources
- 3) increased knowledge of area

11. Implementing Agency: River Coordinating Committee with appropriate
Federal and State agencies

12. Reason for work group rejection of recommendation:

**DA
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