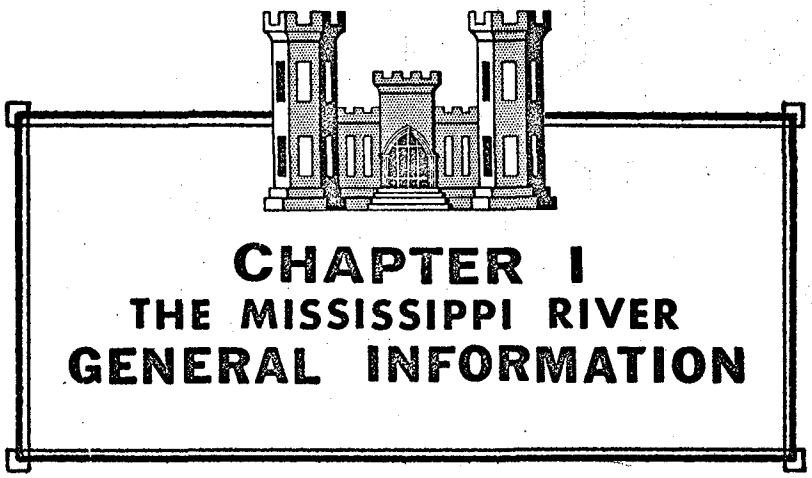
REVISION OF MASTER PLAN FOR RESOURCE MANAGEMENT

POOLS 11-22
9-FOOT CHANNEL NAVIGATION PROJECT



CHAPTER I
THE MISSISSIPPI RIVER
GENERAL INFORMATION

U. S. ARMY ENGINEER DISTRICT, ROCK ISLAND
CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS
JANUARY 1969

NCDPD-ER (10 April 1969) 3d Ind
SUBJECT: Revision of Master Plan for Resources Management, Upper Mississippi River, Pools 11-22, Nine-Foot Channel Navigation Project

DA, North Central Div., CE, Chicago, Illinois 5 Jan 70

TO: District Engineer, Rock Island

Forwarded for appropriate action.

FOR THE DIVISION ENGINEER:

JAMES W. GULLAND
Colonel, Corps of Engineers
Deputy Division Engineer for
Civil Functions

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61201

ADDRESS REPLY TO
DISTRICT ENGINEER

REFER TO FILE NO.
NCRED-PB

10 April 1969

SUBJECT: Revision of Master Plan for Resource Management, Upper Mississippi River, Pools 11-22, Nine-Foot Channel Navigation Project

Division Engineer, North Central

1. Chapter I, General, of the subject master plan is submitted in accordance with Engineer Manual 1130-2-302.

2. This chapter of the master plan contains general information concerning the plan for the entire Rock Island District 9-foot channel project. It does not include specific proposals for developments which would require allotment of construction funds.

3. It is recommended that chapter I of the master plan for resource management of the Mississippi River 9-foot channel navigation pools be approved.

1 Incl (6 cys)
Miss. R.,Master Plan,
Chapter I, General

WALTER C. GELINI
Colonel, Corps of Engineers
District Engineer

ENGCW-PV (10 April 1969) 2nd Ind
SUBJECT: Revision of Master Plan for Resources Management, Upper Mississippi River, Pools 11-22, Nine-Foot Channel Navigation Project

DA, Office, Chief of Engineers, Washington, D. C. 20314, 24 December 1969

TO: Division Engineer, North Central

Chapter I, General of the Master Plan is approved subject to the comments of the Division Engineer in the preceding 1st Indorsement and to consideration of the following.

Section VIII, Project Resource Management, paragraph 3d, pages 4-9 identifies the principal project resources and establishes land uses and management objectives for these resources. Any management objectives for forest management for production of commercial forest products, as shown on page 7, should assure that harvesting operations, where authorized, will be primarily beneficial to recreation, wildlife and aesthetic considerations. To achieve these objectives effectively requires the coordinated planning efforts of forestry, landscape architecture, arboriculture and wildlife management disciplines.

FOR THE CHIEF OF ENGINEERS:

1 Incl
w/d

LOUIS G. FEIL
Chief, Planning Division
Civil Works

NCDPD-ER (10 April 1969) 1st Ind
SUBJECT: Revision of Master Plan for Resource Management, Upper Mississippi River, Pools 11-22, Nine-Foot Channel Navigation Project

DA, North Central Div., CE, Chicago, Illinois 19 September 1969

TO: Chief of Engineers, ATTN: ENGCW-PV

1. Subject master plan is forwarded, recommending approval, subject to notations thereon in red pencil and the following comment.

2. Reference plate IX-2.1. The organization chart shown is out of date and should be replaced with the current approved organization chart.

FOR THE DIVISION ENGINEER:

1 Incl (3 cys wd)

RICHARD H. BROWNLEY
Colonel, Corps of Engineers
Deputy Division Engineer for
Military Functions

CF:
Rock Island District (w/cy incl)

REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

UPPER MISSISSIPPI RIVER
POOLS 11-22

NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER I
THE MISSISSIPPI RIVER, POOLS 11-22, GENERAL

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RESOURCE MANAGEMENT

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POOLS 11-22

NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER I
THE MISSISSIPPI RIVER, POOLS 11-22, GENERAL

SECTION I

INTRODUCTION

1. Authority.

Federal law asserts that land and water areas of reservoir projects shall be administered and managed for their primary purposes of obtaining maximum sustained public benefits from the natural and accrued resources to an extent compatible with the operation of the project. In support of this directive, EM 1130-2-302 provides that continuous studies shall be made to develop a Master Plan, as a sound instrument of guidance for the administration and operation of reservoir projects; to assure conservation of scenic, biological, and recreational resources; and to coordinate activities with interested Federal, State, and local agencies. The Upper Mississippi River navigation pools are considered as reservoirs within the meaning of the law and the preparation of a Master Plan has been directed by the Chief of Engineers. Administrative, operational, and managerial programs set forth in this report are in accordance with directives of EM 1130-2-302, ER 1130-2-312, ER 405-1-830, and ER 405-2-835.

2. Purpose.

The Master Plan is intended as a guide for orderly and coordinated development and management of all land and water areas of the project and indicates specific recommendations for the protection, development, and management of such resources for public use, public access, scenic values, wildlife habitat, and operational use.

3. Scope.

Contents of the Master Plan reflect full consideration of all practical uses of project land and water areas, including needs for project purposes, public park and recreational use, fish and wildlife management, agricultural activities, soil and forest conservation, pollution control, health and safety of the visiting public, and similar activities related to administration in the public interest. The assistance and cooperation of other Federal, State, and local governmental agencies have been obtained in many phases of planning. The basic concept of planning has been a quantitative and qualitative analysis of the resources, followed by a determination of practical use.

4. Master plan organization.

The Master Plan comprises fourteen chapters: chapter I contains general information applicable to all twelve navigation pools within the Rock Island District, chapters II through XIII are self-contained Master Plans for individual pools, and chapter XIV contains a summary of the complete Plan. Area maps with transparent overlays are included with the narrative text for each pool.

Pages of each chapter have two numbers, the first indicating the section within the chapter, and the second the page number within the particular section. As an example, a page numbered III-4 denotes the fourth page of section III of a given chapter and provides a ready method of revising portions of the Plan if required. Should the volume of revised information require additional pages, such will be numbered III-4A, III-4B, etc. No indication of the chapter number is made on the individual pages; however, once bound, the chapters will remain intact. Plates and charts used throughout the Plan are indicated in a somewhat similar manner except that a decimal designation is assigned. For example, plate IV-2.1 follows the page numbered IV-2.

SECTION II

DESCRIPTION OF THE PROJECT

1. History and improvement.

Discovery of the Mississippi River is credited to Hernando De Soto who landed on the gulf coast of present-day Florida in 1539 at the lower entrance of what is now known as Tampa Bay. The overland route of De Soto and his explorers has been traced through the wilderness which was to become the states of Florida, Georgia, South Carolina, North Carolina, Tennessee, Alabama, Mississippi, Arkansas, and Louisiana. The Mississippi River was crossed on 18 June 1541 upstream of the mouth of the Arkansas River and the group continued on through the present states of Arkansas and Louisiana. Returning to the Mississippi River upstream of the present site of Natchez, Mississippi, De Soto died on 21 May 1542 and found his final resting place in the river he is credited with discovering. Another of De Soto's party, Moscoso, led the explorers west into Texas but the vastness of the land turned them back to the Mississippi River which they descended to the mouth in 1543.

Historians also believe the river may have been at least sighted by: Americus Vespucius in 1497, by Columbus on his fourth journey to the New World in 1502, by Alonzo Alvarez De Pineda in 1515, and by Nunez Cabeza de Vaca in 1528.

The first known white man to travel the upper reaches of the river was a Frenchman named Radisson who, in 1665, entered from the Wisconsin River and proceeded upstream to Prairie Island in Lake Pepin. However, it is Louis Joliet and Jacques Marquette who are credited with opening the upper river to the use of the White Man. Having explored the north shore of Lake Michigan, Joliet and Marquette entered the Fox River at its meeting with Green Bay, portaged to the Wisconsin River, and arrived at the Mississippi River on 17 June 1673. From this point the two continued downstream to the present site of Vicksburg, Mississippi, then back upstream to the Illinois River and on to the present site of Chicago, and the eastern shores of Lake Michigan.

Until 1760, however, only the passage of an occasional pirogue or bateau of a French fur trader disturbed the wilderness of the upper river, but soon thereafter the keelboat, carrying early settlers and military parties, came into use and was followed by flatboats, raftboats, and scows in increasing numbers.

The river at this time consisted of a series of relatively deep pools separated by shoal bars and rapids - deep-flowing and treacherous in periods of high water, and placid and shallow to the point of being non-navigable in times of drought.

The Federal Government, aware of the importance of navigation in the settlement of the Mississippi Valley, began improvements as early as 1820 by authorizing surveys leading to the removal of snags and boulders as navigation hazards. In 1837, a young West Point graduate, Lt. Robert E. Lee, prepared surveys of the rapids at the present sites of Keokuk, Iowa, and Rock Island, Illinois. In 1878 the first comprehensive plan for improvement of the middle and upper Mississippi River authorized the 4½-foot channel which was followed by the 6-foot channel authorization of 1907, and finally the 9-foot channel project of 1930.

2. Authority for the 9-foot channel project.

The 9-foot channel project was adopted by the River and Harbor Act of 3 July 1930, 71st Congress.

3. Purpose of the 9-foot channel project.

Under the above authority, the project provides for a continuous navigable channel of a minimum 9-foot depth and 400-foot width from the mouth of the Missouri River to Minneapolis, Minnesota, accomplished by means of a series of locks and dams creating a chain of pools, or lakes, in the upper Mississippi River.

4. Location of the 9-foot channel project.

The source of the Mississippi River is in the vicinity of Lake Itasca in northern Minnesota, and flow is in a generally southerly direction for some 2,350 miles to the Gulf of Mexico. From its source to lock No. 27, the lower limits of the 9-foot channel project, the river falls 420 feet in a distance of 669 miles. For administrative and management purposes, the river is divided into three reaches: The Upper Mississippi River, extending from Lake Itasca to the mouth of the Missouri River, a distance of 1,171 miles; the Middle Mississippi River, extending from the mouth of the Missouri River to the mouth of the Ohio River, a distance of 195 miles; and, the Lower Mississippi River, extending from the mouth of the Ohio River to the Gulf of Mexico, a distance of 984 miles.

5. Scope.

The portion of the Upper Mississippi River extending from approximately one mile below lock and dam No. 22, river mile 300.0, to approximately one mile below lock and dam No. 10, river mile 614.0, lies within the boundaries of the Rock Island District, with mileages having been established upstream of the mouth of the Ohio River. The limits of this reach of river is shown on plate II-3.1. It is the land and water areas within these limits which are considered in this Master Plan.

6. Project engineering features.

a. General. The minimum 9-foot channel navigation project was planned as an extension of the inland waterways system of the Mississippi River Basin with its engineering features based on standards used on connecting waterways, such as the Ohio and Illinois Rivers. Most of the project features were constructed under the supervision of the Corps of Engineers during the decade of 1930-1940. The authorizing act provided for a channel of minimum 9-foot depth and 400-foot width. As constructed, the 400-foot width is exceeded on bends and curves to the extent necessary for navigational purposes. The principal engineering feature of the project is a system of locks and dams spaced at irregular intervals dependent on the slope of the river, the location of major population centers, and the navigation approach to the locks. Twelve locks and dams are located, operated, and maintained within the Rock Island District and are considered in the Master Plan.

b. Dams.

The dams on the Mississippi River between Alton, Illinois, and the Twin Cities, Minnesota, are navigation dams. Except for Dam No. 1 at Minneapolis and Dam No. 19 at Keokuk, which were built by private power companies, they are single-purpose dams built to provide 9-foot depths for river traffic at low water.

The Mississippi River navigation dams have movable gates with the concrete gate sill on the bed of the river. During low flows the movable gates are in the water and have only two or three foot openings between the bottom of the gates and the gate sill on the bed of the river.

CORPS OF ENGINEERS U.S. ARMY

MISSISSIPPI RIVER
9-FT. CHANNEL PROJECT
ROCK ISLAND DISTRICT

IN 1 SHEET SHEET NO. 1

10 5 0 10 20
SCALE IN MILES

CORPS OF ENGINEERS, U.S. ARMY
ROCK ISLAND, ILLINOIS

ROCK ISLAND DISTRICT
JANUARY 1959

PLATE II - 3.1

During medium and high flows, the navigation dams are not needed to provide 9-foot depths for river traffic because those depths are available naturally. Therefore, during medium and high flows, the movable gates are taken entirely out of the water and the bottoms of the gates are then 30 to 35 feet above the sill at riverbed level. When the movable gates are raised above the water surface during medium and high flow periods, the depth of water flowing over the entire length of the dam sill is equal to or greater than the average depth in the main channel of the river. The navigation dams then are similar to railroad or highway bridges. The only parts of the movable gate section in the water are the piers and the concrete gate sill on the bed of the river. The navigation dams, like a railroad or highway bridge, have no effect on crest flows such as experienced in the 1965 flood.

The navigation dams, in general, are operated to maintain a constant pool elevation, or stage, at the dam during low and medium low flows. As discharge in the river increases, the openings of the movable gates in the dam are increased, upper pool being kept at desired levels and lower pool rising until finally as low to medium flows are exceeded, lower pool level becomes the same as upper pool level. The gates then are withdrawn completely and raised and kept several feet higher than the surface of the river. This withdrawing of the gates from the water occurs at a time when the river levels at the dams are still one to nine feet below flood stage. The private power dam at Keokuk is an exception. Here the water level above the dam is and remains some 19 feet higher than previous high water levels.

c. Locks. Within the Rock Island District the main locks have a clear chamber width of 110 feet and are 600 feet in length, except for lock No. 19, located at Keokuk, Iowa, which has a clear width of 110 feet and a length of 1,200 feet. Also, an auxiliary lock with a clear chamber width of 110 feet and a length of 360 feet is located parallel and adjacent to the main lock at lock No. 15. Original and smaller locks existing at No. 14 and No. 19 have not been in use since completion of the new, modern structures. Lock sills, at the various locations, vary from 11 to 13 feet below the normal lower pool elevation. The locks are filled and emptied by longitudinal culverts in the base of the walls, requiring four valves for each structure. Specific engineering features for each lock and dam will be given in succeeding chapters.

7. Physical features.

a. From river mile 614.0, the upper limit of the Rock Island District, to Muscatine, Iowa, mile 455.4, the course of the Mississippi River is through a comparatively narrow valley bordered by wooded hills and bluffs and affording picturesque scenery. Throughout the lower portion of the District, from Muscatine, Iowa, river mile 455.4, to Saverton, Missouri, river mile 302.7, the valley is generally wide and flat with extensive flood plain lands having been reclaimed for agricultural purposes. A system of levees provide flood protection to a major portion of these flood plain lands. Lands which were acquired in connection with the navigation project consist, for the most part, of a strip of land along each bank along with the islands or portions of islands in the river. In several instances all or portions of certain drainage districts were also acquired. Such lands are, in general, subject to overflow by the operation of the navigation pools and virtually all are subject to direct flooding during natural high water stages of the river. The river follows a meandering course with wide, sweeping bends. Its most important flow characteristics are the relatively regular annual cycles, and the infrequency of sudden rises of any magnitude.

b. Prior to and during construction of the 9-foot channel project, the United States Government acquired fee title to approximately 94,000 acres of river lands as part of the navigation project. Since acquisition of land and establishment of the 9-foot channel, many physiographic changes have occurred along the river. The maps accompanying the Master Plan reflect such changes, and have been developed from the most accurate data available. Acreage figures, given in the following chapters, have been calculated from these maps for recreational and general land use planning only and should not be considered accurate for legal purposes.

SECTION III

NAVIGATION

1. History.

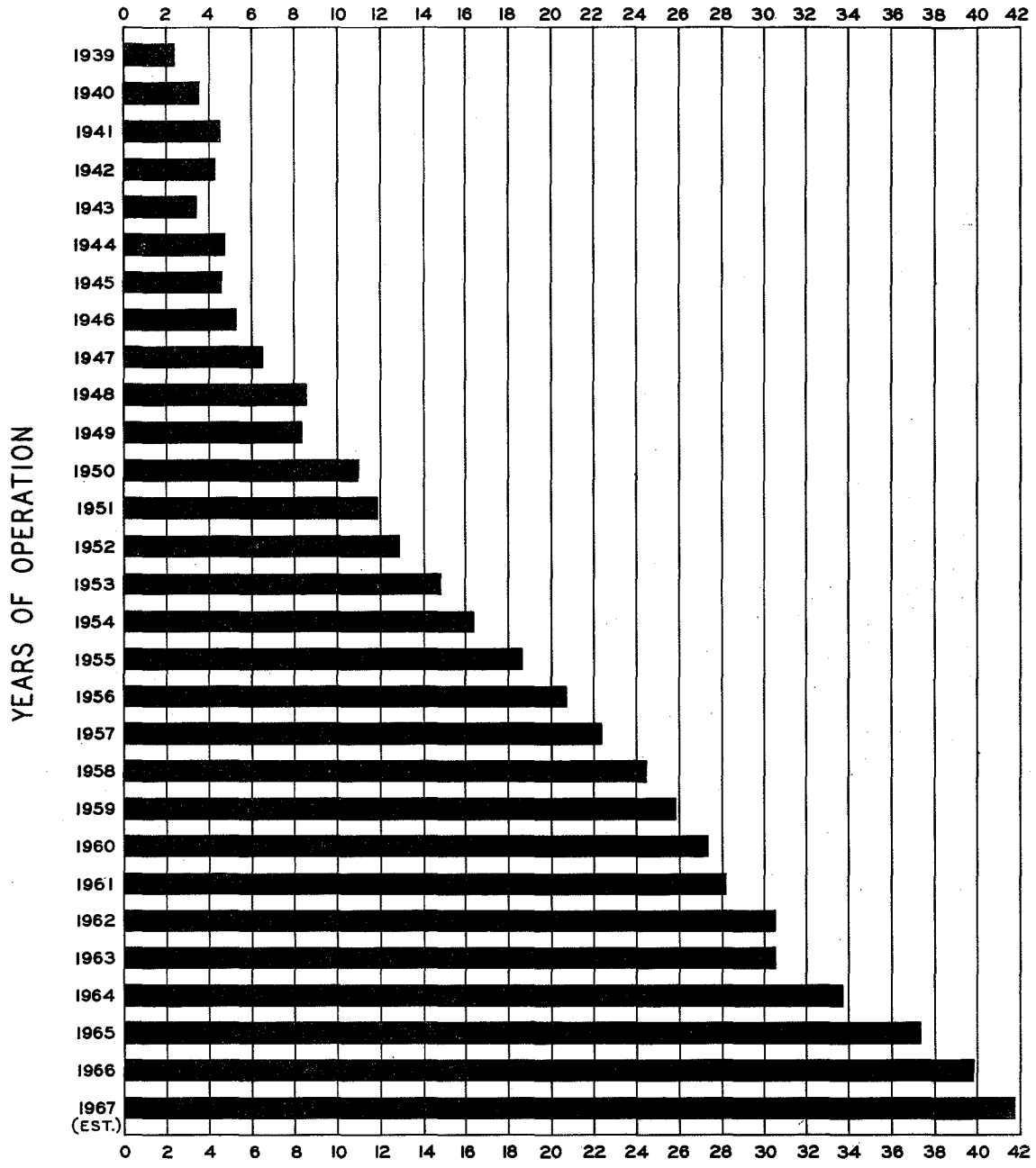
The history of navigation on the Upper Mississippi River dates to the period when canoes, pirogues, rafts, and keelboats were the primary modes of water transportation. With the advent of steam-driven paddle wheelers, commercial navigation was fully initiated. However, the river was undependable - deep flowing and turbulent during high water periods, and placid but shallow to the point of being non-navigable in time of drought. Rapids, snags, submerged rocks, and sandbars were a hazard to the old-time wooden-hulled riverboats. As early as 1824, the Federal Government began improving river navigation by removing snags, sandbars, and other hazards. The Rock Island District began its role in 1866 when the Chief of Engineers, General A. A. Humphreys, order Lt. Colonel J. H. Wilson to Keokuk, Iowa, to superintend the Des Moines rapids and the Rock Island rapids improvements, as well as the Rock and Illinois Rivers surveys. In 1878 Congress authorized a minimum $4\frac{1}{2}$-foot channel, and in 1907, a minimum 6-foot channel. Dredging and constricting "wing dams" were used to provide such means during periods of low water flows, but when droughts occurred, depths on the upper river could not be controlled. In addition, a minimum 6-foot depth did not permit economical barge loading. Not until the minimum 9-foot channel project was assured did towboats and barges operating on the upper river increase in numbers and size.

2. Traffic.

Following construction of a safe navigation channel and the advent of modern-day diesel-powered towboats, commercial traffic has increased considerably. Water-borne commerce, carried on the Upper Mississippi River, consists of bulk petroleum products, coal, sand and gravel, grain, and other commodities. A tabulation showing the growth in commodity tonnage transported on the Upper Mississippi River during the period 1939-1967 is shown on plate III-1.1.

3. Navigation maps.

The maps included as an appendix to each chapter were designed and developed for a two-fold purpose: To replace the smaller and obsolete series of 1963 as sold to the



TONNAGE TRANSPORTED ON THE UPPER MISSISSIPPI RIVER

PLATE III-1.1

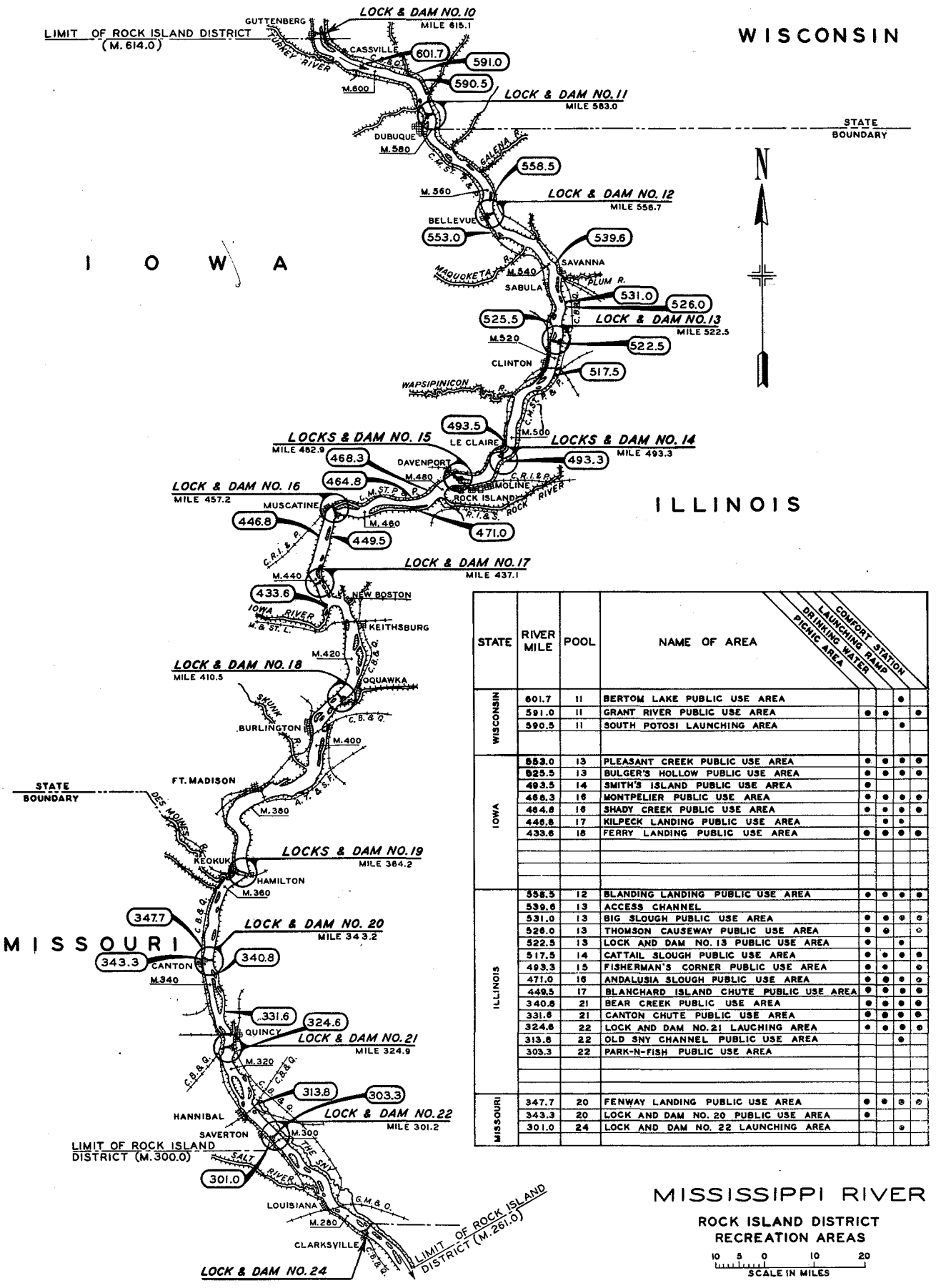
public, and to furnish a base for the master planning purposes of the District Office. With the addition of transparent overlays, the maps further serve as information and planning guides for Federal, State, County, and local bodies where government ownership of lands is a factor.

SECTION IV

COLLATERAL RESOURCES

1. Recreation.

The Mississippi River Valley has long served as a source of recreational opportunity with its scenic environment, fish, wildlife, water resources, and temperate climate. Endowed with the basic requirements for outdoor activites, the 9-foot channel project has further enhanced the recreational potential of the area. No longer do periods of drought reduce river stages to the point where navigation becomes hazardous or impossible, and the relatively stable pools created by the project provide large water areas for water skiing, fishing, and other water-related activities. Numerous marinas and boat-launching facilities, situated along the shores of the pools, make recreational boating safer and more pleasurable. Excellent habitat conditions for wildlife have developed in many of the backwater sloughs, and the Rock Island District is a part of the "Mississippi River Flyway" for migratory birds. A series of wildlife refuges is managed by the Bureau of Sport Fisheries and Wildlife under a General Plan and Cooperative Agreement among the Bureau, Corps of Engineers, and the several States. Fishing has been enhanced by the project inasmuch as the lake-like conditions have created vast areas of additional water which are also favorable for aquatic habitat. The generally stable pool elevations have greatly improved the off-shore environment for camping, picnicking and other land-related outdoor activities. Steadily increasing use is being made of the public use areas developed along the river by Federal, State, County, and local agencies, and the navigation structures themselves also attract numerous visitors. However, access sites and recreational facilities are extremely limited in certain pools. A purpose of this Plan is to determine and recommend the amount of access and facility development necessary to meet the current and projected needs of the public. However, facility developments other than those at existing sites, will be subject to the provisions contained in the Federal Water Project Recreational Act of 9 July 1965 (PL 89-72) implemented by Category A, paragraph 3 of OCE multiple letter ENGCW-Y of 5 August 1965. Areas presently existing and operative are shown on plate IV-1.1.



STATE	RIVER MILE	POOL	NAME OF AREA	PICNIC AREA	DRINKING WATER	LAUNCHING RAMP	COMFORT STATION
WISCONSIN	601.7	11	BERTOM LAKE PUBLIC USE AREA			●	
	591.0	11	GRANT RIVER PUBLIC USE AREA	●	●		●
	590.5	11	SOUTH POTOSI LAUNCHING AREA			●	
IOWA	553.0	13	PLEASANT CREEK PUBLIC USE AREA	●	●	●	●
	525.5	13	BULGER'S HOLLOW PUBLIC USE AREA	●	●	●	●
	493.5	14	SMITH'S ISLAND PUBLIC USE AREA	●			
	468.3	16	MONTPELIER PUBLIC USE AREA	●	●	●	●
	464.8	16	SHADY CREEK PUBLIC USE AREA	●	●	●	●
	446.8	17	KILPECK LANDING PUBLIC USE AREA		●	●	
	433.6	18	FERRY LANDING PUBLIC USE AREA	●	●	●	●
ILLINOIS	558.5	12	BLANDING LANDING PUBLIC USE AREA	●	●	●	●
	539.6	13	ACCESS CHANNEL				
	531.0	13	BIG SLOUGH PUBLIC USE AREA	●	●	●	○
	526.0	13	THOMSON CAUSEWAY PUBLIC USE AREA	●	●		○
	522.5	13	LOCK AND DAM NO. 13 PUBLIC USE AREA	●		●	
	517.5	14	CATTAIL SLOUGH PUBLIC USE AREA	●	●	●	●
	493.3	15	FISHERMAN'S CORNER PUBLIC USE AREA	●	●		○
	471.0	16	ANDALUSIA SLOUGH PUBLIC USE AREA	●	●	●	○
	449.5	17	BLANCHARD ISLAND CHUTE PUBLIC USE AREA	●	●	●	●
	340.8	21	BEAR CREEK PUBLIC USE AREA	●	●	●	●
	331.6	21	CANTON CHUTE PUBLIC USE AREA	●	●	●	●
	324.6	22	LOCK AND DAM NO. 21 LAUCHING AREA	●	●	●	○
	313.8	22	OLD SNY CHANNEL PUBLIC USE AREA			●	
	303.3	22	PARK-N-FISH PUBLIC USE AREA				
MISSOURI	347.7	20	FENWAY LANDING PUBLIC USE AREA	●	●	◎	◎
	343.3	20	LOCK AND DAM NO. 20 PUBLIC USE AREA	●			
	301.0	24	LOCK AND DAM NO. 22 LAUNCHING AREA			◎	

MISSISSIPPI RIVER

ROCK ISLAND DISTRICT RECREATION AREAS

10 5 0 10 20
SCALE IN MILES

CORPS OF ENGINEERS, U.S. ARMY
ROCK ISLAND, ILLINOIS

ROCK ISLAND DISTRICT
FEBRUARY 1968

PLATE IV-1.1

2. Historical resource.

The Indians and early white settlers have left many sites of historic significance along the river. Burial and ceremonial mounds are abundant on the bluff areas, reminders of Indian wars and the Civil War are many, and relics of the romantic riverboat days are designated landmarks. That portion of our Nation's history, written on and along the Mississippi River, has been preserved through the efforts of Federal, State, County, Local, and other historical societies. These agencies have placed markers and publicized many historic sites which are noted in the following chapters concerning the individual pools.

3. Agricultural.

The Upper Mississippi River Valley is a region of rich farm lands and large market centers, making agriculture an important part of the economic structure. The narrow flood plain of the upper pools is subject to inundation during high water and agricultural production is therefore somewhat limited. In the lower pools, wide, fertile flood plains are protected by levees and dikes to provide the basic land resource for a wide variety of agricultural enterprises. Some of the project lands are leased for agricultural purposes and will be discussed in the individual pool chapters. The navigation project offers no flood protection to croplands, nor is irrigation a necessity in this area of sufficient precipitation. Benefits to agriculture have developed from the project through the establishment of fertilizer plants, and grain storage facilities, and through the provision for low cost shipment of bulk farm products.

4. Industrial.

The industrial resource, constantly developing as a result of construction of the navigation project, is of prime importance to the region. Low-cost water transportation for the raw materials used by industry and a source of water supply necessary for certain manufacturing processes have been major factors in attracting industry to the area. Existing industrial developments included in this classification, and directly related to the project, consist of steam-electric generating plants, oil terminals, grain storage and loading facilities, and several large chemical-fertilizer plants. One major hydro-electric power plant is located at dam No. 19, and power from atomic energy will soon be realized throughout the valley. The industrial resource potential of the project has yet to be reached, as

evidenced by the continual examination and study of new industrial sites by private organizations. Sites suitable for future developments are given consideration in the land-management portion of this plan.

SECTION V

GENERAL PLAN AND COOPERATIVE AGREEMENT

Section 7 of an agreement between the Bureau of Sport Fisheries and Wildlife and the U. S. Army Corps of Engineers, approved by the Acting Secretary of the Interior on 6 August and by the Secretary of the Army on 20 August 1954, provides that a General Plan for Fish and Wildlife Management, as specified in Section 3 of the Coordination Act, (Public Law 732, 79th Congress, approved 14 August 1946, 60 Stat. 1080) shall be developed jointly by the Corps of Engineers, the Bureau of Sport Fisheries and Wildlife, and the appropriate State agency, for all project lands and waters where management for fish and wildlife purposes is proposed. Procedures have been followed, as specified in EM 1130-2-302, Appendix E, for developing a General Plan for Fish and Wildlife Management on lands acquired for the navigation project on the Mississippi River. The administrative details for implementing the General Plan are a part of the Cooperative Agreement between the Department of the Army and the Department of the Interior, made and entered on 14 February 1963. Under this agreement the Department of the Army has made available to the Bureau of Sport Fisheries and Wildlife some 82,734 acres of land and water areas for the conservation, maintenance and management of wildlife resources. The General Plan for such use has been approved by the Secretary of the Army, the Secretary of the Interior, and the heads of the State agencies exercising administration over wildlife resources within the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Further details, as to the General Plan and Cooperative Agreement, will be given for each pool in subsequent chapters.

SECTION VI

LAND AND WATER USE PLAN

1. Land.

a. General. This section outlines a plan for obtaining orderly development of resources, achieving maximum utilization of project lands, and preventing despoilment. The basic concept of a Master Plan permits flexibility, but the degree in regard to use must be decreased as land use demand increases. The ultimate objective of a development and management program is to provide the best use, or combination of uses, of land and water resources required by current and future demands. Project lands have been zoned according to uses considered most compatible with current and anticipated needs, physiographic features, aesthetic values, and adjacent land use. Upstream of lock and dam No. 14, land is under fee ownership of both the Corps of Engineers and the Bureau of Sport Fisheries and Wildlife and zoning classifications have been developed jointly by the two agencies. The land use overlay transparencies for each pool reflect the coordinated zoning for each acre of Government land, regardless of agency ownership, to provide for progressive administration and achieve proper land use.

No Federally-owned lands exist in pools 15 and 19, except for small tracts immediately associated with the locks and dams - and Kay and Arsenal Islands, both located in pool 15. Similarly in pool 20, except for the lock and dam, only a narrow strip of fee land extends upstream of the lock along the Missouri shore.

b. Priorities.

Existing regulations provide for four priorities of land use for recreational purposes. Lands zoned for priorities 2, 3, and 4 are subject to reclassification at a higher priority. The following subclassifications for specific use are considered essential for orderly development.

(1) Priority 1. Lands to be developed for public park and recreational areas and administered by the Corps of Engineers, or other Federal, State, or local governmental agencies; and lands to be used for commercial concessions.

Subclassification

(a) Recreational (Undeveloped). (Areas primarily of value for wildlife.) Available to the general public for hunting, fishing, primitive camping or other related recreational activities, no development or improvement for purposes of recreation will be permitted. The vegetative cover and land forms will remain in a natural condition, except in areas where resource management is practiced by the administrative agency.

(b) Recreational (Developed). (Areas considered to be of primary value for outdoor recreational development.) Development of recreational facilities or designated areas may be accomplished by Federal, State, County, or local governmental agencies. The degree of facility development will range from a minimum of brush clean-up to fully improved sites providing roads, parking, boat ramps, potable water, toilets, shelters, tables and fireplaces. The extent of facility development permitted will be contingent upon land ownership and the compatibility of recreational development with the natural resources.

(c) Recreational (Commercial). (Areas where the existance of a commercial recreation concession will provide service to the recreating public.) Services provided by a concessionaire may include, but need not be limited to; boat and motor rental, mooring, launching, gasoline, bait, lodging, and packaged foods. Commercial activities in such areas will be administered under leases issued by the Corps of Engineers or the Bureau of Sport Fisheries and Wildlife on lands under their respective jurisdictions. This classification includes all areas currently under lease, under consideration, or judged desirable as potential sites to better serve public needs.

(2) Priorities 2 and 3

QUASI-PRIVATE USE - Use by nonprofit organizations or agencies. (Areas to be used for purposes of rendering a public recreational-educational service of a chartiable or character building nature or which function in the public interest to some extent by providing public recreational opportunities) Groups designated as priority 2 and 3 users are described in ER 405-2-835. Administration will be through an outgrant from either the Corps of Engineers or the Bureau of Sport Fisheries and Wildlife. Development of recreational conveniences will not be limited, provided such facilities are compatible with surrounding environment.

(3) Priority 4 — Private use also

Yacht Clubs (Areas not needed for operational or higher priority use but requiring investment for yacht club development for the protection and care of private boats on a noncommercial basis or other club use.) All outgrants will contain a provision prohibiting the construction of buildings for human habitation as defined in ER 405-2-835.

(4) Other allocations

(a) Cottage and residential sites - Private Use (Areas where cottages or cabins presently exist.) During and following construction of the 9-foot channel project, certain tracts of fee lands were designated for private use and leases ranging from five to twenty-five years were granted to individuals for the purpose of constructing recreational dwellings and accessory buildings. Leases have been renewable at the option of the lessee and the Corps of Engineers, and 728 were current as of 1 July 1968. The practice of granting such leases, in addition to those then existing, was halted in 1956. In 1967 the Chief of Engineers announced a policy to gradually phase out the cottage and residential site leasing program. In the final analysis it was determined that as current leases expire, all cottage site and residential leases on which structures have already been built will be extended to 30 November 1988 except where the land is needed for higher priority public use. Leases will not be extended to 30 November 1988 and existing leases may be revoked where lessees have failed to properly maintain the lease premises in a satisfactory manner or have otherwise failed to comply with the terms and conditions of the lease. No lease will extend beyond 30 November 1988. This program is being implemented in support of such general policies of: (1) not encouraging human habitation on lands subject to flooding; and (2) managing Government-owned lands for the use of the general public.

Should pool levels be raised as a result of the 12-foot channel project, presently under study, or should pending Congressional action declare the shores of the Upper Mississippi River a National Recreation Area, the possibility remains that some or all leases will require termination prior to 30 November 1988. At present, all cottage and residential sites have been zoned in terms of resource potential, current management programs, planned development, and compatibility with adjacent land use and do not conflict with other types of planning. Such zoning is generally restricted to shoreline areas and administration will continue under the terms of the agreement with the individual lessee.

(b) Special use. (Areas to be utilized for non-exclusive and strictly non-commercial recreational use by adjoining land owners.) Administration will be under a short term special use license if located on land owned by the Corps of Engineers, and by a permit if located on land owned by the Bureau of Sport Fisheries and Wildlife. An administrative fee will be charged for both licenses and permits. In general, usage will consist of landscaping and mowing, or construction and use of steps, docks, motor sheds, marine rails, etc., but any structures shall be reasonably sound and of portable nature. Items covered by licenses or permits may vary to assure compatibility of land use. Complete public usage of shorelines will be assured through such areas.

(c) Houseboat mooring sites. (Areas reserved for use as mooring sites for houseboats.) These sites will generally be along the mainland shore where water depths are suitable for this purpose. In such areas the user will be permitted to landscape and/or clear brush and weeds, constuct gang planks, walkways, and steps. Administration will be by license or permit, as in special use areas, and for five-year periods on a first-come, first-served basis.

(d) Industrial. (Areas of existing industry or considered suitable for industrial development.) Potential sites, selected where such activity would be compatible with natural resources and other river use, are coordinated with local, county, or city planning officials.

2. Water.

a. General. The Master Plan does not provide for detailed water area zoning; however, the base maps, included in the separate appendix for each chapter and pool, are considered as providing a management guide from which water zoning may be evolved. Essentially, the base maps provide the first step in water use zoning by graphically displaying physical features which should control or regulate water related activities.

b. At the present time no clear-cut water use zoning responsibility is assigned to any single Federal or State agency administering watercraft activities on the Mississippi River. With increasing water use and resulting conflict of interest among users, it becomes apparent that such responsibility must be delegated if orderly utilization of the water resource is to be realized.

c. The Water Quality Act of 1965 created the Federal Water Pollution Control Administration, originally under the Department of Health, Education, and Welfare, and later transferred to the Department of the Interior. Congress, in 1966, amended the Water Quality Act of 1965 with passage of the Clean Streams Restoration Act with enforcement procedures more clearly defined and with increased funds for construction of sewers, sewage treatment plants, and research.

The 23rd annual meeting publication of the Upper Mississippi River Conservation Committee, 10 January 1967, refers to reports of the several states and lists the sewerage treatment facilities concerned with pollution abatement located within the limits of the Rock Island District:

Illinois

East Dubuque	-	Primary treatment
Apple River Chemical Co.	-	Domestic septic system, industrial lagoons, equalization ponds
Galena (Galena River)	-	Primary treatment plant
Savanna	-	Primary treatment
Thompson	-	Secondary treatment
Fulton	-	Primary treatment
Albany	-	Secondary treatment
Nitrin, Inc.	-	Domestic waste plant
Cordova	-	No sewers
Port Byron	-	Waste stabilization ponds
Rapid City	-	No sewers
Hampton	-	No sewers
C.R.I. & P. R.R.(unknown)	-	Waste ponds (oil)
Silvis	-	Primary treatment
East Moline	-	Primary treatment
Moline	-	Primary treatment
Rock Island	-	Primary treatment
Industries	-	Process control underway
Oquawka	-	No sewers
Dallas City	-	No treatment; secondary treatment under design
Nauvoo	-	No treatment; primary treatment under design
Hamilton	-	Primary treatment
Warsaw	-	No treatment; primary treatment under contract
Warsaw Brewing Corp.	-	No industrial discharge
Quincy	-	Primary treatment
Industries	-	Engineering studies

Iowa

Dubuque	-	Primary treatment
Bellevue	-	Primary treatment
Clinton	-	Primary treatment
Camanche	-	Primary treatment
Princeton	-	Secondary treatment
Le Claire	-	Primary treatment
Alcoa Aluminum	-	Waste treatment provided
Davenport	-	Primary treatment
Muscatine	-	Primary treatment
Burlington	-	Primary treatment
Fort Madison	-	Primary treatment
Sinclair Chemical Co.	-	Proposed treatment
Keokuk	-	Primary treatment

Wisconsin

No report submitted. Cassvile and Potosi are the only centers of minor population within the Rock Island District.

Missouri

A proposal, only, for water quality criteria listing regulations and establishing maximums of pollution resulting from waste discharges.

From the foregoing it would appear that, at present, no instances of excessive water pollution exist from sources of industrial or human waste discharges within the Rock Island District. A potential future threat of pollution, however, must be considered as a possible result of increasing industrialization, population, and use of agricultural fertilizers and insecticides. Pollution control and abatement policies, as concern Federal lands and waters, are contained in ER 1165-2-116.

d. Boating regulations have been enacted by all State conservation agencies bordering the section of the river covered by this Master Plan, along with a framework of enforcement in varying degrees. Water use zoning, therefore, could be incorporated as a feature of State boating regulations. In respect to this Plan, full coordination has been affected with the respective State conservation agencies in the development of existing resources.

SECTION VII

RECREATIONAL DEMAND AND POTENTIAL

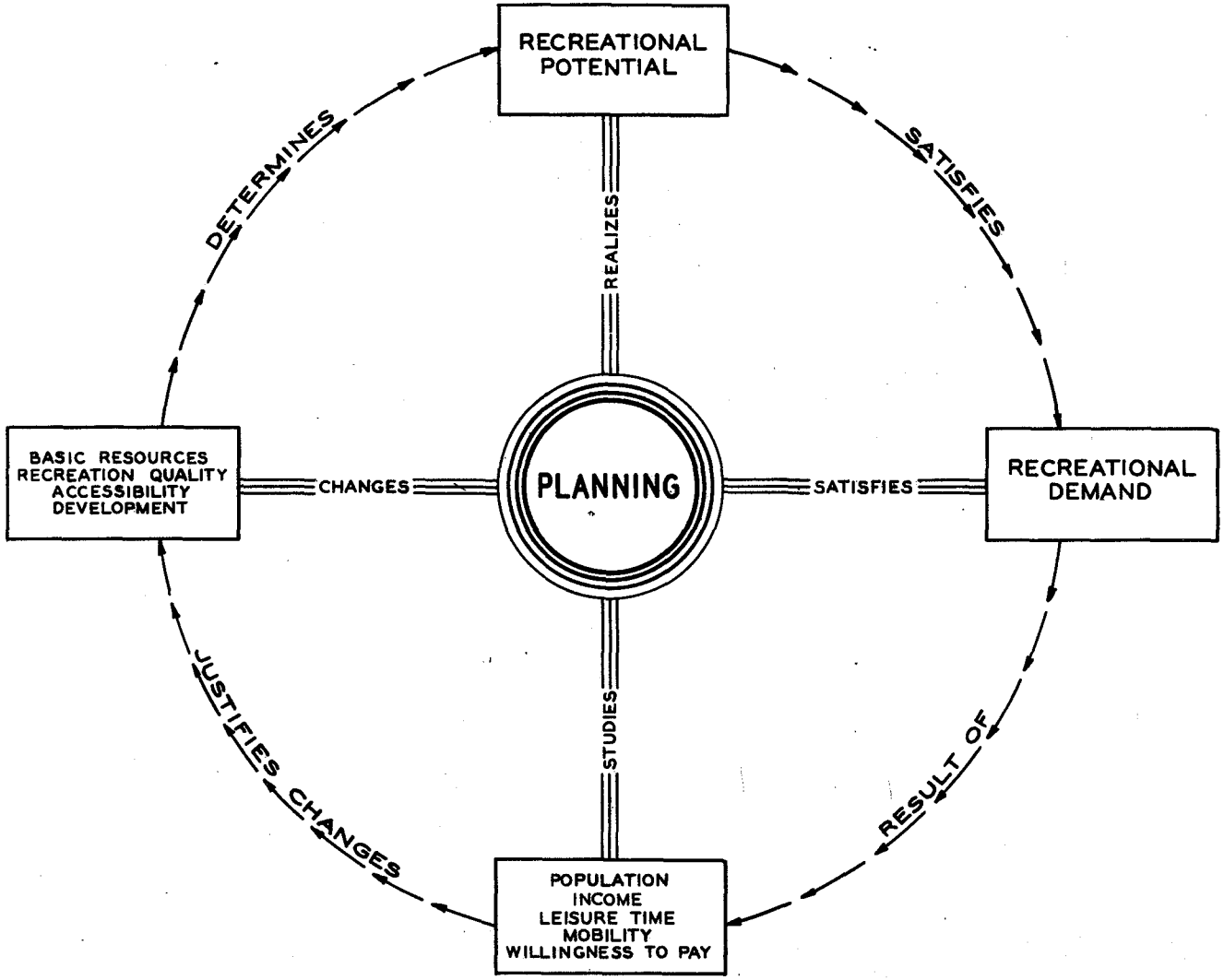
1. General.

The present Master Plan for pools 11 through 22, 9-foot channel navigation project, was approved by the Office of the Chief of Engineers in 1947. Since such time, increases in population, income, leisure time and modes of transportation, have made the 1947 proposals inadequate to meet present recreational requirements. In accordance with EM 1130-2-302, paragraph 10c(1), existing recreational developments, as related to public needs at the project, are herein re-evaluated. Further, the recreational potential has been reconsidered through careful study of natural resources, quality of resources compared to quality of recreation, and accessibility and degree of development needed to best meet current and future needs. A basic planning problem has been the determination of recreational potential and recreational demand. Both have been considered in defining the number and the type of facilities which need to be provided at a given site. Basically, the recreational potential is a product of the project while demand created is a product of the needs or desires of the public. Recreational demand creates a guideline for determining the amount of potential that should be realized, but none of the factors determining demand can be directly affected by the Corps of Engineers. In planning, studies are made to determine the changes in potential which should be made to best meet such demands. The factors of recreational potential and demand, as related to planning and the project, are graphically portrayed on plate VII-1.1 and more fully examined in the following paragraphs.

2. Factors influencing recreational potential.

a. General. The recreational potential, in and adjacent to the navigation pools, is a product of the project and is determined by the following factors: Basic resources, accessibility, type and extent of development, and quality.

b. Basic resources. Endowed with extensive water areas and abundant fish and wildlife, the navigation pools afford scenic beauty and sites of historic interest which are attractive to outdoor recreationists.



FACTORS AFFECTING RECREATIONAL POTENTIAL AND DEMAND

CORPS OF ENGINEERS U.S. ARMY

PLATE III - 1.1

c. Accessibility. The primary factor affecting the recreational potential is the limited amount of suitable access to Government lands. The availability of access was a primary consideration in the selection of lands zoned "recreational developed." In some instances additional land acquisition will be recommended to provide access to locations having a high latent recreational potential.

d. Type and extent of development. Of major importance in developing potential for specific activities is the type and extent of the facilities provided. Basic studies indicate that public demand for fishing, camping, picnicking and other related activities can be satisfied by the project; therefore, developments by the Corps of Engineers include day-use and camping areas.

e. Quality. Quality, as defined herein, refers to aesthetic values received from the recreational activity. A shoreline, marred by a succession of boat docks and/or commercial concessions, does not offer the quality which most outdoor recreationists desire. Over-development decreases quality. The uniqueness of the 9-foot channel project is such that a high degree of quality must be maintained. Through land-use zoning and long-range planning, the project will be further developed with high quality recreation as the ultimate goal.

3. Factors influencing recreational demand.

Recreational demand results from the needs and desires of the public. The factors determining such demands are: Population, income, leisure, mobility, and willingness to pay user fees. These items, relating to the project, are discussed in the following paragraphs.

a. Population. A zone of influence must be established to determine the number of persons who reside within a reasonable distance and who will make use of developed areas. Studies indicate the majority of outdoor recreationists travel relatively short distances (within 30 miles) to participate in outdoor recreational activities. However, a standard used in most studies of Midwest projects, has been a 50-mile radius or approximately one hour of travel time. The Mississippi River navigation pools are not reservoirs in the ordinary sense, but have national significance, are extensive (over 300 miles in combined length in the Rock Island District), and are of historic importance. Vacationing tourists from all sections of the Nation and many

areas of Canada have visited and registered at Corps of Engineers recreational developments. Additional recreational demands have resulted since the completion of the Interstate 80 highway bridge crossing the Mississippi River at the approximate center of the Rock Island District project. This vital link in the Interstate System has made the area more readily accessable to regional and national travelers as well as to Canadian visitors. The proposed Great River Road, stretches of which presently exist, is rapidly gaining National interest and will eventually create a North-South scenic route which will attract increasing numbers of tourists to the river valley.

Within the limits of the Rock Island District the project is located in a fairly densely populated area with various locations of high industrial concentration. Considering the width of two counties inland on each side of the river, or approximately 50 miles, a total population in excess of 1,312,000 is realized, of which 694,000 is classified as urban and 618,000 rural, based on the 1960 census. Subsequent chapters on the individual pools contain the latest available visitation figures along with projected future public use of recreational facilities based on accepted criteria and methods of forecasting.

b. Income, leisure, and mobility. No detailed studies have been made concerning the factors which influence the recreational demands of the approximately 1.3 million persons living within the zone outlines. A Type I Comprehensive Basin Plan study for the Upper Mississippi River has been initiated and should give definite insight into such factors. The Outdoor Recreation Resources Review Commission has conducted studies on a regional basis and published conclusions of its findings. These verify that the leisure time, income, and mobility of the Nation's people are increasing. The 9-foot channel project is located in a prosperous, urbanized region of the Midwest; therefore, it is assumed that National growth will be indicative of the area increase.

c. Willingness to pay user fees. Fees assessed users of recreation areas would likely have an adverse affect on demand. No matter how extensively a project may be developed, prohibitive fees would result in decreasing demand to the point of attracting but a limited number of persons. While the Land and Water Conservation Fund Act of 1965 provides for the charging of user fees under certain conditions, no Corps of Engineers recreation sites, presently under the

outline of this Master Plan, are on or planned for a fee basis in the immediate future. However, entrance and user fees may be imposed, subject to the prior approval of the District Engineer on Government-owned lands outgranted to non-Federal governmental agencies for park and recreational purposes.

4. Planning.

The factors influencing recreational potential and demand, relating to the project, have been discussed in the preceding paragraphs. Two points are evident: (1) factors of recreational potential are definite, easily determined and can be controlled and changed, and (2) factors of demand are not easily isolated for a specific area and data is only indicative of probable use and needs. Conclusions reached from the planning process and incorporated as part of this Plan are as follows:

a. Demand for project recreation is high and is steadily increasing.

b. Project potential is not as fully developed as necessary for full public benefit, and changes are needed to provide for more recreational use.

Factors influencing recreational potential and demand in each pool are evaluated in the chapters that follow. Detailed plans for development and maintenance of resources and facilities are included.

SECTION VIII

PROJECT RESOURCE MANAGEMENT

1. General.

It is the purpose of this section to explain the features of basic resources which are common to all navigation pools in the Rock Island District. In addition, management practices are set forth to serve as guidelines for the maintenance and improvement of such resources. Detailed discussion, and any special management considerations, are contained in the chapters dealing with the individual pools.

2. Soils.

a. General. Soils of the project lands are, generally, first bottom soils originating from alluvial deposits and almost all are subject to inundation during periods of high water. During these periods, erosion or deposition of material may produce soil changes which are dependent primarily on the elevations of the various areas, the duration of inundation, and sediment load. Detailed soil analyses for inclusion herein are considered impractical. For the purpose of this Plan soils resources have been classified into two broad groups - riverwash and alluvial. Stability of the land and frequency of overflow are the major criteria in distinguishing between these groups.

b. Riverwash. Areas formed from recent deposits of fine and coarse water-borne materials are classified as riverwash, and cannot be regarded as true soil because of the heterogeneous mixture of materials. In some locations sand bars are formed, while in others mudflats develop. Such areas are very unstable and high water may change or completely remove the existing deposits. Although sparse growths of grasses and native woody plants may develop on some of the better sites, no direct management other than planned dredging and dredge-spoil disposal of these materials will be practiced.

c. Alluvial. Although distinct soil types exist, this general classification is considered adequate for the purpose of the Plan. Varying more in their capabilities than the riverwash type, some alluvial soils are low in fertility while others are capable of supporting a wide variety of vegetation. More stable than riverwash soils and less susceptible to overflow, such soils vary in texture and drainage.

However, the susceptibility to overflow overrides the properties limiting their true potentials. Soils of this type support considerable native vegetative growth and are generally suitable for development as public recreational sites.

d. Management. Management of project soils will be effected indirectly through management of forest, wildlife, and recreational resources. Susceptibility to overflow and change resulting thereby, limited access, and relatively small areas, make a management program impractical for the soils resource exclusively. Channel maintenance dredge spoil will be placed, when feasible, to improve or expand existing recreation sites or areas scheduled for future development.

3. Forest resource.

a. Description of the woodland.

Certain lands, within the project limits, were owned in fee by the Bureau of Sport Fisheries and Wildlife prior to the 9-foot channel construction program and presently remain under such jurisdiction. While vegetative cover of these Bureau lands is indicated on the Forest Inventory Maps, no management objectives are listed or considered under the provisions of this Master Plan.

The forest resource existing on Corps of Engineers project lands varies in type, density, and distribution according to moisture conditions resulting from seasonal floodings and manipulation of pool levels. On the wet fringes of marshy areas, willows frequently occur in densities that exclude most other vegetative growth. The semi-dry areas of islands and the flood plain support prolific growths of bottomland hardwoods while the better drained sites support a mixture of both upland and bottomland species. In general, where extensive crown cover exists, understory growth and natural reproduction are retarded. Well drained open areas support prolific understory growth or natural reproduction in various stages of development.

b. History of management.

(1) Treatment prior to acquisition

Acquisition of woodlands along the Upper Mississippi River was completed in 1943 as a necessary part of the 9-foot channel project. Prior to acquisition, forest management on the timbered bottomlands reflected the familiar story

of forest exploitation. The timber was stripped or logged selectively for the products demanded by local markets. This resulted in trees of the poorest form and quality being left as seed trees and growing stock. Fires and grazing were uncontrolled.

(2) Treatment since acquisition

Forest resources within the Rock Island District are chiefly valuable for scenic, wildlife, and recreational purposes. ER 405-2-835, dated 24 March 1964, as amended, provides that management of such resources will be governed by the objective of maintaining or improving timber stands. Routine cutting and thinning is essential since the heavy canopy of large, mature trees have been shown to have a detrimental effect on younger and more immature growth. Too, mature trees show a decline in development, are more susceptible to disease, and rapidly deteriorate after reaching a certain size. The practice of selective removal of marketable timber, therefore, adds to the scenic and recreational potential of the wooded areas as well as improving habitat for wildlife.

Of the 12 pools within the Rock Island District, 9 contain Government-owned lands with significant timber stands - the largest existing in pools 13, 18, and 21. Studies conducted in pools 11 and 12 in 1964 indicated marketable timber to be in excess of 15,000,000 board feet. On this basis the Districts total is estimated to be in the neighborhood of 67,500,000 board feet of harvestable growth.

Since 1943 over 25,000,000 board feet of marketable timber has been removed from Corps of Engineer lands within the District, yet present timber stands are estimated to be 200 percent greater than at that date. Although the sale of marketable timber resulted in a gross income to the Government in excess of $526,800.00 during the period 1941-1965, a monetary gain is not the prime purpose of a timber management program. However, such income exceeds administrative costs by some 600 percent which is in addition to the benefits previously cited and for which no monetary value can be assigned.

Since acquisition, the Corps of Engineers has outgranted a considerable portion of fee lands (82,734 acres) to the Bureau of Sport Fisheries and Wildlife for management purposes only. The Bureau, in turn, has outgranted portions of these

same lands to the several states, also for wildlife management purposes. However, the Corps of Engineers retains basic ownership with forestry management and timber harvesting rights unimpaired.

c. Forest inventory and mapping techniques.

Transparent overlays, each featuring a symbol explanation, are used in conjunction with the Master Plan base maps to indicate conditions in, and management objectives for, the forest resource of Government lands. The first step in the preparation of a forestry overlay original consists of making a broad determination of the crown cover. This is accomplished by careful study of aerial photographs, supplemented with spot checks in the field. Three broad classifications, (1) dense or medium, (2) sparse, and (3) open, are used to denote crown cover and are presented by use of topographic symbols. The second step consists of developing broad associations of tree species which are derived from field observations and the use of standard forestry techniques. The various associations are delineated by a broken line and are identified in the mapping code with Roman numerals. Volumetric inventory is accomplished by the sample plot method while inventory plots are identified by a symbol. Composition of the understory is determined by field observations and is broadly classified without individual species being identified. The density is rated as sparse, medium, or dense, and is presented as a number. Above the symbols for timber associations, and type and density of understory, is a symbol which indicates the primary management objective for a given area. Broad classifications of management have been developed for (1) Timber, (2) Wildlife, and (3) Recreation. These classifications are further developed to give a better definition of management objectives and guidelines as set forth in the following paragraphs.

d. Proposed management.

(1) General. The importance of the forest resource will be realized primarily through contributions to the scenic, wildlife, and recreational values of the project. The current or anticipated type of land use is the primary indicator as to whether the management objective should be timber production, wildlife habitat manipulation, or maintenance of scenic and aesthetic values. In some instances the management objectives defined may appear to conflict with land use zoning, especially with regard to the recreational - developed land use classification. It is emphasized

that the management objective, indicated for a specific area, represents the primary objective and is not for the sole purpose of resource management. In keeping with the concept of multiple land use, various degrees of recreational use will be considered within all categories of resource management. To control such use, both present and future, areas may be designated to allow recreational facility development compatible with the long-range resource management objective. The basic management practices set forth will serve as guidelines for the accomplishment of the assigned management objectives. It is further emphasized that such guidelines are not rigid, unchangeable, directives. Management techniques may be altered to keep abreast of technological advances in the sciences of forestry and wildlife management. It should also be noted that the quality desired, in a given stand of timber, is established on the basis of land use associated with the stand rather than strict silvicultural standards. In a broad sense, the management objective may be defined as threefold: (a) to improve species composition; (b) to improve quality; and (c) to increase marketable yield.

(2) Forest management for recreation. The treatment of timber stands having a recreational management objective, will be directed primarily toward maintenance of the aesthetic value of the resource. The approach and degree of management will vary according to the amount of planned recreational development. Fire protection will consist of preventative measures, such as brush and debris removal along roadways, and the elimination of forest litter in areas of intensive recreational use. Timber stand improvement, timber harvest, and fire protection, will be accomplished with programmed maintenance funds.

(a) Recreational - developed.

These areas correspond with those zoned for development of public use facilities and will be managed objectively to obtain optimum recreational benefits. Facility development will take advantage of the existing forest resource in providing shade, screening, landscaping, and erosion control. Necessary thinning or clearing will be accomplished to provide for the construction of facilities. Timber harvest will be considered only as a means of insuring maintenance of healthy stands and desirable specie compositions. Necessary plantings will be made to obtain the desired landscaping effect. The primary concern of timber management will be the contribution of the forest resource to the recreational potential.

(b) Recreational - undeveloped.

Timber stand management will be directed toward the maintenance of undisturbed natural ecological succession. From a recreational standpoint, a part of the forest resource will be preserved in its natural state for use by individuals who enjoy the aesthetic value of undisturbed wilderness. From a timber management standpoint, these areas will serve as controls for evaluating timber management techniques employed elsewhere.

(3) Forest management for wildlife.

Management techniques employed will be specifically designed to benefit certain species of wildlife. Timber harvest will be considered only as a means of implementing the desired forest-wildlife management ratio. Fire protection as well as grazing will be essential parts of all phases of forest management for wildlife. Timber stand improvement, timber harvest, and forest protection measures, will be accomplished with programmed maintenance funds. Plantings, with a primary objective of wildlife management, will be accomplished by other Federal or State agencies.

(a) Forest management for waterfowl.

Areas of management will be manipulated in accordance with acceptable management techniques and designed to obtain desirable habitat effects. In general, timber harvest will be limited to a selective cutting program. Clear cutting of mature timber will be considered where other Federal or State agencies desire to establish waterfowl food plots, resting areas, or flyways. Mass producers and nesting trees will be favored in all cutting operations. Clearing of brush will be permitted where desirable to create resting or feeding areas.

(b) Forest management for upland game.

These areas will be gradually converted to an all-aged forest with age classes well distributed in a groupwise manner and as extensive as possible. Frequent harvesting of mature trees, and systematically applied improvement cutting, will be employed to encourage a stable habitat. The harvest of mature trees will be by clear cutting or group selection, but mast producers and den trees will be favored in all operations. Development of shelter belts and travel

lanes, by planting ecologically appropriate trees or shrubs, will be considered where feasible. Limited clearing for the establishment of annual food plots, by others, will be permitted where such development is considered beneficial.

(4) Forest management for timber.

The management of forested areas for timber production will consider three categories of products: (a) Saw-timber, (b) Pulpwood, and (c) Special products. Management for each category will proceed from detailed recommendations set forth by qualified forestry personnel and all phases will be accomplished with programmed maintenance funds. Fire protection will be implemented primarily through the establishment of fire lanes at strategic locations. The harvesting of wood products will be accomplished through competitive bidding and administered by the Rock Island District Real Estate Division.

(a) Saw-timber.

Management will be directed toward the production of mature trees of saw-log size. Established silvicultural practices for timber stand improvement will be essential guidelines and harvest will be made by selection or clear cut methods. The ultimate goal of management will be to establish an all-aged forest with a programmed cutting cycle and a sustained annual yield of high quality timber.

(b) Pulpwood.

Pulpwood will be an important by-product of thinning and release cuttings in the management of saw-timber. Also, pulpwood production will be a primary objective in select areas along the river. Production will be effected by manipulating both natural reproduction and plantings. Intermediate benefits will be food, cover, and protection for wildlife. Harvesting will be accomplished by clear cutting or group selection and coordinated with management objectives on adjacent lands. Cutting cycles will assist in obtaining the desired effect on the forest as a whole.

(c) Special products.

Where ecological conditions permit, high quality timber growth will be encouraged by an intensive program of timber stand improvement. Inter-plantings, and

group or block planting, may be employed as management methods in establishing the desired growing stock. Such plantings will be accomplished with programmed maintenance funds or through cooperation with other Federal or State agencies. This phase of management will be limited to select areas, and will be established on a long-range cutting cycle oriented to the production of high quality products such as veneer logs.

(5) Fire protection plan.

(a) General.

Most of the timbered project lands owned in fee are subject to at least seasonal inundation. Also, forest litter is usually kept moist by ground seepage and fire hazards are further reduced. In addition, the many sloughs and ponds throughout the bottomlands serve as natural fire breaks. In several pools railroad tracks border one or both sides of the river and furnish an effective barrier to fires which could otherwise spread landward.

(b) Prevention.

The principal tools of a fire protection plan are activities designed to prevent or reduce the number of man-caused fires. Educational programs, to keep the public aware of woodland damage caused by fire, will constitute an important part of the plan. Other preventative measures include the establishment of fire lanes at strategic locations, removal of brush and debris along roadways, and elimination of forest litter in areas of intensive recreational use. Uncontrolled burning of slash from timber cutting operations will be prohibited.

(c) Suppression.

Certain permanent employees, such as a Pool Ranger, will be assigned specific positions, locations, and duties during periods of fire hazard. The primary responsibility of such key personnel will be to seek out and maintain liaison with any local agencies which could be called upon to provide emergency assistance in combating fires. Considering the nature of the forest and the area involved, it is probable that the cost of maintaining a permanent fire suppression crew would outweigh benefits received.

Efforts will be made to interest the several States, or other Federal agencies which have been given land management responsibilities, to provide fire protection to general plan lands. Fire protection coverage would not be extended to all Federally-owned lands thereby, but would be a step in a much needed protection program.

4. Wildlife resource.

a. Description of the resource. A variety of wildlife species take advantage of the favorable habitat existing in the marshes and bottomlands of the project. At least 18 species of ducks and 3 species of geese use the project lands and waters for feeding and resting during spring and fall migrations, although the area is not particularly attractive to nesting waterfowl, other than woodducks. Eagles, hawks, owls, egrets, herons, grebes, bitterns, gulls, shore birds, and many species of song birds are common visitors and at least three heron rookeries are known to exist within the District. Muskrats are common in most shallow water areas while beaver are found along the main river, and on many of the tributary streams. The otter, though rare, has been recorded in the District. Other wildlife species that occur include quail, dove, grouse, raccoon, opossum, skunk, fox, rabbit, tree squirrel, ground squirrel, weasel, mink, groundhog and deer. Many species of reptiles and amphibians occur, including the rattlesnake and copperhead. Game populations fluctuate from year to year as a result of flooding or habitat changes induced by timber harvest, fire, or natural ecological succession.

b. Use of the resource. The wildlife resource is exploited through hunting and nature study, and through contributions to the over-all aesthetic value of the river. It is difficult to establish, with certainty, the total influence of the wildlife resource on the recreational use of the river. However, within the Rock Island District there are upwards of 100,000 acres of Government-owned land and water areas which are administered for fish and wildlife purposes. It is known that hunting alone accounts for several thousand visitor-days of use each year. The orderly establishment of both sanctuaries and shooting grounds, and access provisions for the hunter and naturalist, are considered to be of prime importance in the development of the recreational plan.

c. History of management. Following is a resume' of game management activities conducted by the various agencies and groups responsible for the wildlife resources:

(1) Upper Mississippi River Conservation Committee. The Game Technical Committee, of this parent organization, has continually encouraged a refinement of game management by sponsoring meetings of technical personnel for program coordination.

(2) Bureau of Sport Fisheries and Wildlife. This agency has sponsored studies of ecological changes resulting from the 9-foot channel project, established and maintained waterfowl refuges and sanctuaries, promoted waterfowl banding operations, and collected waterfowl population data.

(3) States. The Conservation Departments of the States bordering the project have established and maintained public hunting areas and cooperated in research projects concerning waterfowl, furbearers, and upland game.

(4) Corps of Engineers. Contributions to game management include:

(a) Habitat maintenance and manipulation through selective timber harvests.

(b) Scrutiny of land use applications to determine compatibility of proposed uses with plans for resource conservation.

(c) Cooperation with other agencies, through the General Plan and Cooperative Agreement, in making land available for game management.

d. Proposed management by the Corps of Engineers.

Fish and wildlife habitat improvement will be realized as incidental, but anticipated, benefits from the over-all development and management program set forth in the Master Plan. Practices having either a direct or indirect influence upon wildlife include general forest management, land use zoning, and landscaping for recreational development. Specific developments, such as wildlife food plots and maintenance of open areas, will be promoted with cooperating Federal and State agencies and through special agricultural lease procedures. Frequent conferences will be held with agencies participating in land development related to

maintenance and promotion of the wildlife resource. At such conferences, management records will be coordinated and updated with regard to completed projects, new job plans, or program changes. The status of land development activities, relating to wildlife, will be reflected in subsequent pool chapters and summarized in the final chapter.

5. Fishery resource.

a. Sport fishery.

(1) Species and catch composition. Studies indicate that, numerically, the following species are most often found in the creels of river fishermen: Walleye, sauger, bluegill, black and white crappie, striped bass, fresh water drum, channel catfish, flathead catfish, and black bass. In terms of numbers, panfish dominate the sport fish catch while walleye, sauger, and catfish probably account for the greatest poundage.

(2) Fishing effort and success. Seasonal distribution of persons engaged in fishing is generally the same for all pools. Normally, peak activity occurs in May or June with a definite decline developing in July. Fishing activity generally reaches another peak period in mid-September or early October and declines in November. Extensive ice fishing and some open water activity occurs in December, January, and February. Studies indicate that, during the summer months, fishing is best in the upper area of each pool. In spring, fall, and winter, the mid-pool anglers are most successful. Creel census studies, sponsored by the Upper Mississippi River Conservation Committee, indicate that angler success is 0.96 fish per hour of effort.

(3) Trends. Trends in resource use are judged by the daily lockmaster's count of fishermen observed in the tailwater area of the locks and dams, and by creel census work conducted by State fishery personnel. Analysis of these reports indicates a somewhat cyclic fluctuation in fishing effort with a long-range upward trend in fishing activity. In terms of game fish production, available data indicates the current trend as stable to upward. With reasonable management and protection of the resource, the project waters should continue to provide good fishing.

b. Commercial fishery.

(1) Species and catch composition. Carp, buffalo, drum, and catfish constitute upward of 90 percent of the total commercial catch in both numbers and weight. Other species of commercial significance include carpsucker, redhorse, sturgeion, paddlefish, gar, bowfin, American eel, pike, and crappie, as well as turtle.

(2) Effort and success. In terms of the number of fishermen, commercial effort along the river has remained about the same since 1954. However, commercial fishery statistics indicate a gradual increase in the annual catch since 1959. This situation reflects one or more of the following conditions: (a) greater total effort on the part of fishermen, (b) more effective gear, (c) reporting is more complete, and (d) fish are more plentiful.

(3) Trends. As indicated above, the number of commercial fishermen operating on the Mississippi River throughout the District has remained essentially the same since 1954. The explanation is likely that the commercial fishery has reached an economically stable balance between fishermen, efficiency, and demand for the product. Unlike the sport fishery, the commercial product has a tangible value and it is reasonable to assume that fluctuations in effort will be governed by the well established law of supply and demand. In terms of production, with reasonable management and protection of the resource, the project waters should continue to provide good commercial fishing.

c. History of management. The fishery resource of the Upper Mississippi River has likely received more attention from a research standpoint than any other natural asset. The following is a summary of management activities conducted by various responsible agencies or groups:

(1) Upper Mississippi River Conservation Committee. The Fish Technical Committee, a part of this parent organization, has compiled commercial and sport fishing statistics for each pool, made management recommendations, and promoted reciprocal fishing laws and regulations between the several States bordering the project.

(2) Bureau of Sport Fisheries and Wildlife. This agency conducted a water quality investigation in 1944 and has cooperated with the Upper Mississippi River Conservation Committee in the promotion of better over-all management. Dredge spoil disposal problems have been investigated and cooperative action initiated with the Corps of Engineers.

(3) States. The several States, bordering the project, have cooperated in creel census work, conducted population and life history studies of various species, studied fishing effort and success, provided access points, and tabulated both sport and commercial annual fishery statistics.

(4) Corps of Engineers. The Corps of Engineers has participated in Upper Mississippi River Conservation Committee activities, conducted the daily fishermen counts at locks and dams, cooperated with the Bureau of Sport Fisheries and Wildlife on dredge spoil disposal studies, and supplied other agencies with flow and sedimentation data pertinent to fishery problems.

d. Proposed management by the Corps of Engineers. Direct fish habitat management by the Corps of Engineers will be limited to activities which can be accomplished by practical adjustment of standard operational procedures. Activities which will have a definite relationship on fish management are:

(1) Maintenance of liaison with other Federal and non-Federal agencies directly involved in fish management.

(2) Development of Public Use Areas to provide access to the waters of the project.

(3) Continuing evaluation and adjustment of spoil disposal to preserve fish habitat.

(4) Continuing collection of fishing activity data at each lock and dam.

(5) Providing available data on sedimentation, flows, etc., to agencies involved in fishery management.

(6) Application of regulations to prevent pollution from originating on Government-owned lands.

SECTION IX

PROJECT ADMINISTRATION

1. General.

Functional responsibilities for implementation of policies and procedures, as set forth in engineering manuals and regulations, are shown in Appendix A, Linear Responsibility Chart, Regulation 1130-1, 2 July 1968. Certain deviations from assigned responsibilities may be considered upon recommendation of the District Engineer and approved by higher authority. Responsibilities of each division, as applicable to the Mississippi River, 9-foot navigation channel project, are:

a. Engineering Division. To secure views of other agencies relative to project planning and land use; to prepare plans for public use sites and Priority I areas; to prepare both preliminary and final project Master Plans; to update various Master Plans as required; to prepare and review plans for management of fish and wildlife resources; to prepare plans for interim use; and to cooperate with interested agencies in archaeological and historical investigations.

b. Operations Division. To administer project lands during the preimpoundment period, and thereafter, in accordance with the provisions of the approved Master Plan; to review plans for structures or facilities to be placed by others on project lands or waters in the interest of controlling water pollution, water levels, and water use; to construct and maintain public use and access sites; supervise all project development construction and maintenance; and to assemble reports and statistics of public use on project developments.

c. Real Estate Division. To review preliminary and final Master Plans assuring sound real estate management practice, and endorse concurrence; to make studies for agricultural, grazing and forest management; to negotiate and administer all out-grants; to prepare plans for Priorities 2, 3, and 4 lands; to prepare plans and manage forest areas; to conduct compliance inspections and enforce terms of leases and licences; and to perform utilization inspections of all project lands.

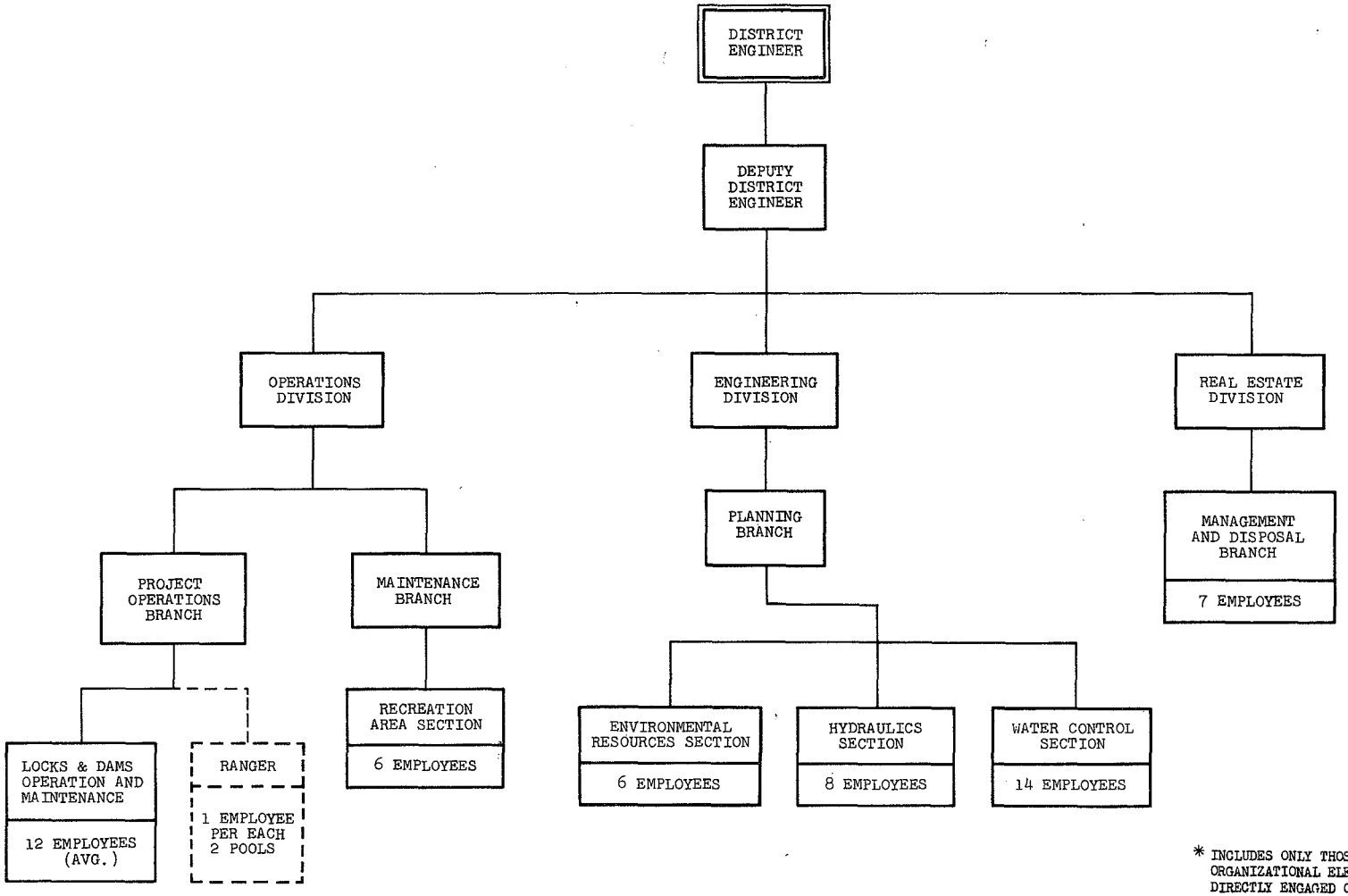
2. Staff organization.

The primary function of personnel assigned to the locks and dams is strictly that of operation and maintenance of the structures and related property. No personnel, therefore, are assigned specific individual resource management duties for the navigation pools which are considered as separate reservoirs. Such duties are normally administered by personnel of the District Office and involve elements of several departments, depending on the nature of specific problems which may arise.

The rapid and constantly increasing public use of the pools and their facilities, due to population growth, higher income, more leisure time and sophisticated recreational equipment, points to a pressing need for the establishment of Manager-Ranger positions to patrol and administer one or more pools per individual. The duties of such persons would be many and varied - to protect Government property against unauthorized use; to observe and report sources of potential water pollution; to supplement and enforce Coast Guard regulations; to maintain liaison with State and County Game Wardens; to cooperate with Bureau of Sport Fisheries and Wildlife programs; to possibly assist in the timber management program; and other duties as may be properly assigned such positions. To be fully effective a Manager-Ranger should be uniformed, have the authority to make arrests, and to refer violators to civil and/or United States courts of law. The periodic patrolling of the public use areas, during the crowded summer months, would have a salutary effect on the public sense of safety since local law enforcement officials have limited authority on Government-owned property and would not normally have the time or personnel to make regular appearances.

Plate IX-2.1 delineates the organization of the Rock Island District components and assigns the Manager-Ranger position to the recommended unit.

CORPS OF ENGINEERS



* INCLUDES ONLY THOSE ORGANIZATIONAL ELEMENTS DIRECTLY ENGAGED ON MISSISSIPPI RIVER RESOURCE MANAGEMENT.

ROCK ISLAND DISTRICT ORGANIZATION CHART*

U.S. ARMY

PLATE IX-2.1

SECTION X

RULES AND REGULATIONS

1. General.

The basic rules and regulations governing public use of reservoir areas are prescribed by the Secretary of the Army upon the recommendation of the Chief of Engineers, either in the form of Rules and Regulations, applicable to a specific reservoir area, or by amendment to "Rules and Regulations Governing the Public Use of Certain Reservoir Areas" (Title 36, Chapter III, Code of Federal Regulations). The latter is preferable, except where special conditions warrant separate regulations applicable to a specific project. Such is the case in regard to Mississippi River navigation pools, each of which is considered as a reservoir, but where conditions warrant separate regulations. Rules and regulations governing public use on the river are generally found throughout various engineering manuals, primarily EM 1130-2-302. More specific regulations pertaining to recreation boating, safety, and fishing are found in Title 33, Chapter II, Part 207 - "Navigation Regulations - Ohio and Mississippi Rivers". Following are excerpts from various sources applicable to land and water use of the navigation pools and are considered as providing the various users of this plan with a general understanding.

2. Navigation and water use.

a. Procedure at locks. The vessel first arriving at a lock shall be first to lock through, except that precedence shall be given to vessels belonging to the United States and to commercial vessels in order named .....

b. Lockage of pleasure boats. Lockage of pleasure craft ..... shall be expedited by locking through with commercial craft .... If, after arrival of such craft, no separate or combined lockage can be accomplished within a reasonable time, not to exceed the time required for three other lockages, then separate lockage will be made.

c. Station while awaiting lockage. Descending boats, while awaiting turn to enter lock, shall lie at least 400' above lock .... Ascending boats ..... shall either tie up sufficiently far below the lock or keep out far enough to give free passage to boat entering or leaving lock.

d. Mooring. Tying to lock ladders is strictly prohibited. Mooring of unattended or nonpropelled vessels or small craft, at the upper or lower channel approaches, will not be permitted within 1,200' of the lock.

e. Refuse in locks. The placing of ashes, refuse, or obstructions of any kind, in locks or on the walls thereof ..... is prohibited.

f. Trespass on lock property. Trespass on locks and dams, or other U. S. property pertaining to the locks and dams, is strictly prohibited ..... No fishing will be permitted from the lock walls or guard walls of any lock, except in areas designated and posted by the responsible District Engineer as fishing areas.

g. Special regulation applicable to Mississippi River locks and dams. Water areas 300 feet downstream and 600 upstream of the movable gates of the dam have long been considered hazardous to small boats and their occupants. Recently, however, the downstream limitation has been modified to a 100-foot distance with the U.S. Coast Guard and State law enforcement agencies empowered to force compliance. Signs and flashing lights at such limiting points are a requirement of the Department of the Army safety regulations.

3. Regulations pertaining to land use.

a. All Federal or State laws and regulations, pertaining to the management and/or harvest of fish and wildlife, shall be applicable to these resources on the lands and waters administered by the Corps of Engineers.

b. Camping is permitted only in the areas so designated and for periods not exceeding 14 consecutive days.

c. House trailers requiring electrical and/or sanitary connections will occupy only such sites as may be so designated.

d. Where camp grounds are managed by other Governmental agencies pursuant to lease or license from the Corps of Engineers, campers are required to comply with rules and regulations of such agencies when such rules are not inconsistent with those prescribed in 36 CFR 311.7.

e. Resources permitting, District Engineers may designate remote areas or islands as wilderness or explorer type camping sites for overnight or short term periods.

4. Relationship of other Federal laws and regulations. Violations of the rules and regulations governing public use of reservoir areas are not misdemeanors carrying penalty clauses, but such regulations are nonetheless enforceable where the United States is the owner of the property. Laws protecting Government-owned property direct explicit penalties for the following offenses:

a. The unlawful removal, cutting, or injury of trees on Federal property. (18, U.S.C. 1853, 1854, and 1855)

b. Fires left unattended and unextinguished (18, U.S.C. 1856).

c. Fences destroyed or livestock entering (18, U.S.C. 1857)

d. Survey marks destroyed or removed. (18 U.S.C. 1858)

Other Federal laws concerning the removal or damage to Federal property are applicable to certain sections of the established rules and regulations.

5. Other applicable laws.

In addition to the foregoing rules, regulations, and laws, two recently enacted statutes have indirect effect upon land and water use of the project:

a. The Federal Boating Act of 1958, PL 85-911 (72 Stat. 1754)

b. The Water Pollution Control Act (33 U.S.C. 466 et. seq.)

6. Non-discrimination. All Government-owned property normally open to general public use shall be available to all persons without regard to race, creed, color, or national origin, and whether or not entrance or user fees are imposed. Such policy will also be binding on any concessionaire, lessee, other persons or organization, to whom an outgrant or permit has been issued for public recreational use and development.

7. Enforcement of rules and regulations. Every effort will be made to enlist the cooperation of the public in the preservation of property and resources of the project. Willful destruction, unauthorized use of Government property, or unauthorized commercialization or exploitation of project lands and waters will be dealt with promptly and firmly. To avoid trespass, the local public will be widely informed of the official property and boundary maps available for examination at the project office. Report or evidence of unauthorized use of Government-owned lands or property will be made to the Real Estate Division of the District Office for appropriate legal action. Local, County, and State law enforcement agencies will be encouraged to assist in enforcing rules and regulations on project lands.

SECTION XI

SUMMARY

General. Chapter I of the Master Plan has been prepared as a comprehensive guide for the administration of project lands and waters. While primarily directed toward present and anticipated public use, it is considered to be all-inclusive and to provide a firm guide to resource management. Preparation has been accomplished with consideration being given to the basic principles of: (1) the available physical resource, (2) the planned and anticipated development, and (3) the convenience and demands of the using public - all of which are within the framework of current Corps of Engineers policies and procedures for Master Plan preparation.

a. Determination of the quantity of land, water, and other resources administered by the Corps of Engineers along the Mississippi River and within the Rock Island District.

b. An evaluation of the status and condition of existing resources and of current or anticipated use.

c. A determination of the administrative or management procedures best suited to provide maximum utilization without endangering, wasting, or dispoiling the indigenous resources. Recreational and biological assets being inseparable, preservation of the biological resources will, to a large extent, determine the value of the recreational resource. The full value of the recreational potential is also inseparable from the physical resources.

d. The application of the broad concepts of administration and management set forth in this chapter, and used in conjunction with specific procedures set forth in subsequent chapters, will assure successful implementation of assigned responsibilities.

SECTION XII

REVIEW OF MASTER PLAN

1. Real Estate Division

Pursuant to paragraph 5b of ER 405-2-835 the Master Plan was submitted for review and the Real Estate Division concurs that the Master Plan was prepared in accordance with sound real estate acquisition, management and utilization practices.

C. E. KELLEY, Attorney
Chief, Real Estate Division

2. Operations Division

Sections of this Master Plan that have a direct or indirect bearing upon the operation and maintenance of the Mississippi River have been coordinated with the Operations Division.

ROBERT E. CLEVENSTINE
Chief, Operations Division

REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

UPPER MISSISSIPPI RIVER
POOLS 11-22

NINE-FOOT CHANNEL NAVIGATION PROJECT

APPENDIX A

LINEAR RESPONSIBILITY CHART

U. S. Army Engineer District, Rock Island
Corps of Engineers
Clock Tower Building
Rock Island, Illinois

APPENDIX A

LINEAR RESPONSIBILITY CHART

P - Primary
C - Coordination
R - Review

Responsibility. The division of the responsibility for planning and for the administration of civil works lands between organizational elements is as follows:

Function	Responsible Element			
	Const	Engr	Oper	RE
I. INTERIM MANAGEMENT AND USE BEFORE MASTER PLAN				
a. Care and custody during acquisition	C	C	C	P
b. Interim use for former owners or others	C	C	C	P
c. Care and custody after completion of acquisition (See III below for after Master Plan) (Priority 1 lands only)	C	C	P	C
d. Property responsibility during construction	P	C	C	C
e. Property responsibility after construction	C	C	P	C
II. MASTER PLAN				
a. Preliminary planning		P	C	C

Function	Responsible Element			
	Const	Engr	Oper	RE
b. Preparation and submission for approval, preliminary and final plans		P	C	C - R
c. Land use studies and planning, priorities 2, 3, and 4		C	C	P
d. Revisions to Master Plan		P	C	C - R
e. Preparation and review of site layout and development plans		P	C	C
f. Construction standards	C	P	C	C
g. Prepare general plan for fish and wildlife		P	C	C
h. Resource planning, forestry	C	P	C	C
III. ADMINISTRATION OF WATER AREA AND PRIORITY 1 LANDS (EXCEPT OUTGRANTS)				
a. Project development, construction				
(1) Initial development	P	C	C	C
(2) After completion of initial development		C	P	C
b. Fire protection, debris removal, erosion and mosquito control		C	P	
c. Reports and statistics on public use		C	P	
d. Security and safety measures			P	
e. Permits for boats, moorage, trailer and tent encampments			P	C

Function	Responsible Element			
	Const	Engr	Oper	RE
f. Administers Priority 2, 3, and 4 lands after approval of Master Plan but prior to execution of outgrants		C	P	C
IV. COORDINATION WITH INTERESTED AGENCIES, SUCH AS OTHER FEDERAL, STATE, OR LOCAL GOVERNMENTS				
a. Prior to approval of Master Plan		P	C	C
b. Revisions to Master Plan		P	C	C
c. Subsequent to approval of Master Plan				
(1) Prior to impoundment of reservoir to normal operating levels		P	C	C
(2) Subsequent to impoundment of reservoir to normal operating levels		C	P	C
V. OUTGRANTS				
a. Priority 1:				
(1) Planning		P	C	C
(2) Preparation of instruments, including land description and map			C	P
(3) Advertising or negotiation and closing transaction				P
(4) Administration		C	C	P
b. Priority 2, 3, 4 and excess				

Function	Responsible Element			
	Const	Engr	Oper	RE
(1) Land use plan		C	C	P
(2) Negotiation, preparation of instrument and closing				P
(3) Administration		C	C	P
VI. COMPLIANCE INSPECTIONS				P
VII. UTILIZATION REPORT OF ALL LANDS OF PROJECT				P
VIII. MANAGEMENT OF FOREST RESOURCES				
a. Commercial		C	C	P
b. Other (scenic, wildlife, etc.)		C	P	C
IX. TRESPASS OR UNAUTHORIZED USE				
a. Government structures or other restricted area			P	
b. Land encroachments, including timber cutting:				
(1) Discovery and initial report			P	C
(2) Final action			C	P
X. DISPOSAL OF EXCESS LANDS		C	C	P

In the interest of economy, applications for the use of reservoir lands on completed projects (or subsequent to approval of Master Plan) will be referred to the Reservoir Manager for preliminary field work and for his comments. Past experience indicates that in most cases the Reservoir Manager will be the first recipient of applications by reason of his locale. In these cases, the Reservoir Manager will complete the

preliminary field work and forward the application, together with his comments, to the Real Estate Division through Operations Division for appropriate action. If, after proper coordination between Real Estate, Operations, and Engineering Divisions, an application is considered unfavorably, the applicant will be so advised by the Real Estate Division. Applications favorably considered will be processed in accordance with existing regulations and standard operation procedures.