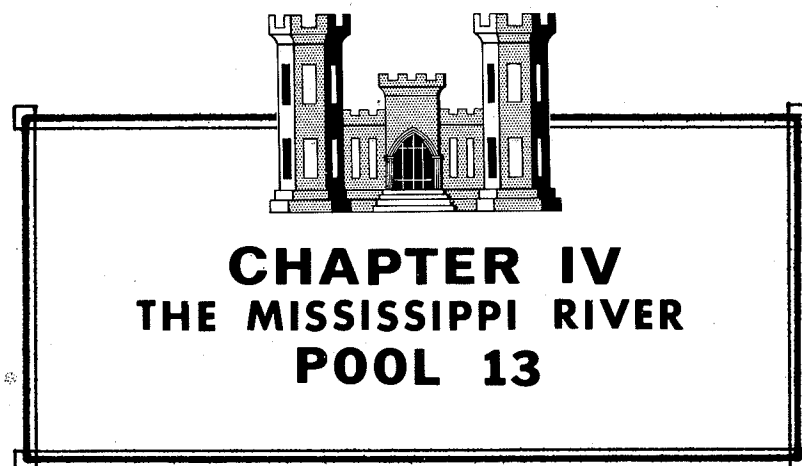


**REVISION OF
MASTER PLAN
FOR
RESOURCE MANAGEMENT**

**POOLS 11-22
9-FOOT CHANNEL NAVIGATION PROJECT**



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



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

25 June 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 IV, Pool 13, of the subject master plan is submitted in accordance with Engineer Manual 1130-2-302.
2. This chapter of the master plan contains specific information concerning the administration and development of the resources within the pool.
3. It is recommended that chapter IV of the master plan for resource management of the Mississippi River 9-foot channel navigation pools be approved.

2 Incls (6 cys)
1. Narrative, Pool 13
2. Maps, Pool 13

WALTER C. GELINI
Colonel, Corps of Engineers
District Engineer

REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

POOLS 11-22
NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER IV
THE MISSISSIPPI RIVER, POOL 13

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REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

POOLS 11-22
NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER IV
THE MISSISSIPPI RIVER, POOL 13

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REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

POOLS 11-22
NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER IV
THE MISSISSIPPI RIVER, POOL 13

SECTION I
INTRODUCTION

As noted in chapter I, a Master Plan is developed to provide a sound instrument of guidance for the administration and operation of water resource projects; to assure sound resource management; and to coordinate activities with interested Federal, State, and local agencies. Pool 13, one of the series of navigation pools in the Upper Mississippi River and within the limits of the Rock Island District, is treated under such master planning requirements. Plate I-1.1 locates the pool with reference to others of the navigational system within the limits of the Rock Island District, U. S. Army Corps of Engineers.



SECTION II

DESCRIPTION OF PROJECT

1. General. Pool 13 extends upstream of lock and dam No. 13, river mile 522.5, to lock and dam No. 12, river mile 556.7 - from approximately 2 miles north of Fulton, Illinois, to Bellevue, Iowa - a distance of 34.2 river miles measured along a determined sailing line. Bordering Illinois counties on the east shore include a part of Jo Daviess, Carroll, and a short stretch of Whiteside. Iowa counties, on the west shore, include parts of Jackson and Clinton.

2. Topography and geology. The course of the pool is through a valley of less precipitous hills and bluffs than those which characterized the preceeding pools. The generally flat flood plain broadens appreciably and supports numerous small farms and wooded tracts. In addition to 8 minor creeks, four small tributary streams - The Apple and Plum Rivers in Illinois, and the Maquoketa and Elk Rivers in Iowa - discharge into the pool. Runoff from these latter streams can be significant following heavy rainfall and can have an appreciable effect on short-range pool levels. Resulting siltation from excess flows of any stream can result in long-range problems from a resource management standpoint.

Numerous and sizeable islands exist throughout the pool, particularly in the middle and upper reaches, and are generally densely vegetated.

The original river valley was excavated by a much larger glacial stream. Subsequent glacial action partially filled the valley floor and covered the foundation rock. As a result, the bottom of the present river lies as much as 200 feet above the original river bed. Loess, eroded from the uplands and combined with decayed vegetative matter, has been deposited on the flood plain by recurring high water over the centuries with resulting fertile soil conditions. The underlying rock strata beneath the pool is classified as Maquoketa shale at and above the dam, and Galena dolomite throughout the remainder of the stretch overlaying Platteville limestone in the extreme upper reaches.

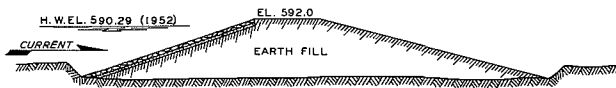
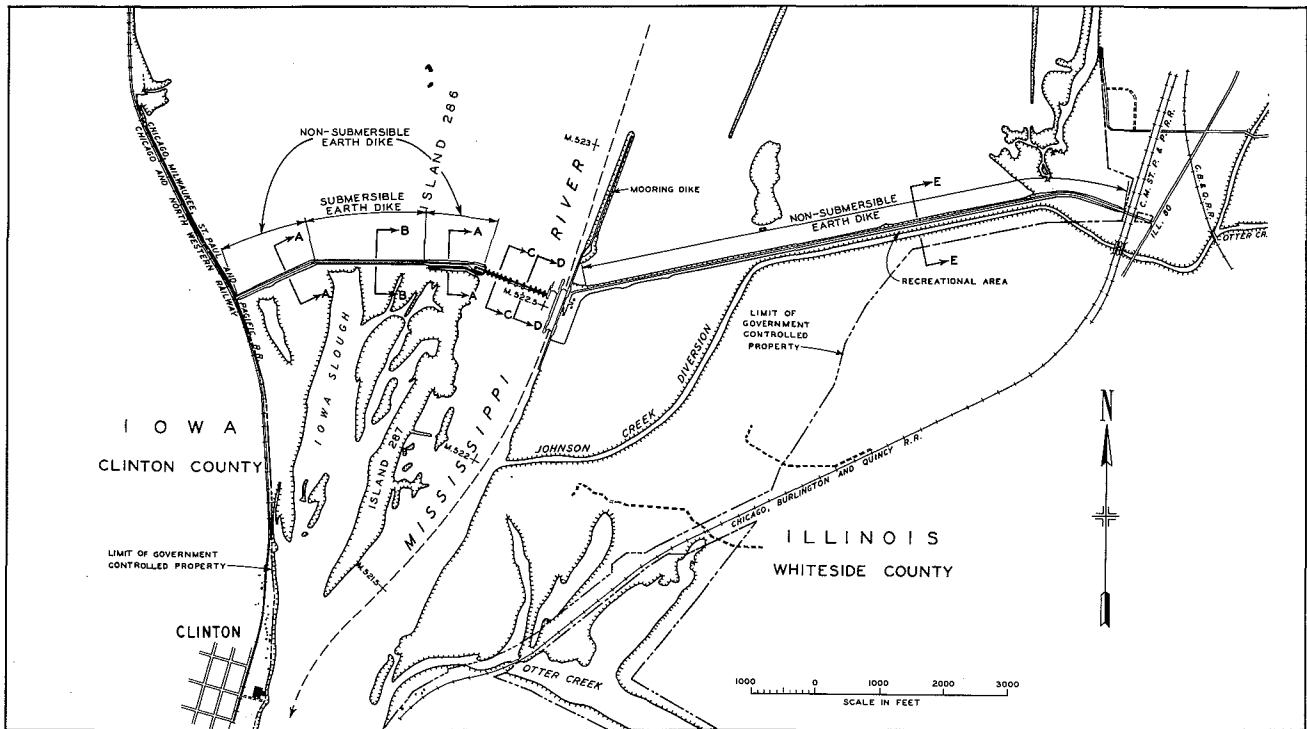
3. Lock and dam No. 13. The existing structure, located at river mile 522.5, is the third of such installations within the Rock Island District considering a downstream

progression concerned with the canalization of the Upper Mississippi River. The 110-foot by 600-foot lock and the completed upper section of a future auxiliary lock lie adjacent to the Illinois shore with a non-submersible section of earthen dike extending easterly to high ground. From the movable gated section of the dam two sections of non-submersible and one section of submersible earthen dike extend westward to high ground in Iowa.

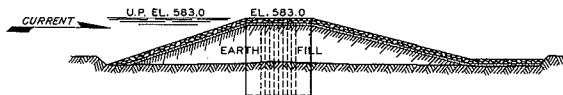
The operable section of the dam consists of 3 roller and 10 tainter gates which are adjusted as necessary to maintain the impounded pool. A plan and location of the installation is shown on plate II-2.1 and on chart No. 96 of the Upper Mississippi River navigation charts.

4. Pool 13. Extending in a generally northerly direction for half its length, the pool turns to the northwest to lock and dam No. 12, a total length of 34.2 river miles. The drainage area covers 85,500 square miles, at the dam, and the pool width varies from 1,000 to 17,000 feet at the authorized elevation (flat pool) of 583.0 feet above mean sea level (1912 adj.). Low water of record, since the dam became operable, was at elevation 581.28, or 1.7 feet below the authorized flat pool level. Record high water was established on 28 April 1965 at elevation 593.73, or 10.73 feet above the established pool elevation at the dam.

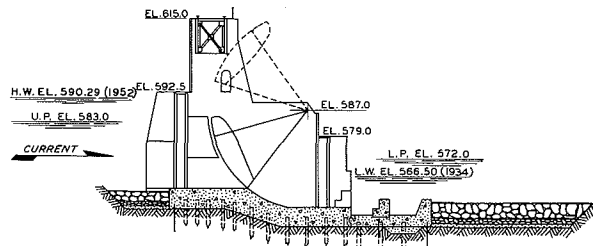
Maintenance dredging, largely in the upper third of the pool, has amounted to 3,160,000 cubic yards of material since the authorized water level was established. One recreation site, the Pleasant Creek Public Use Area, has benefited from spoil disposal during such operations.



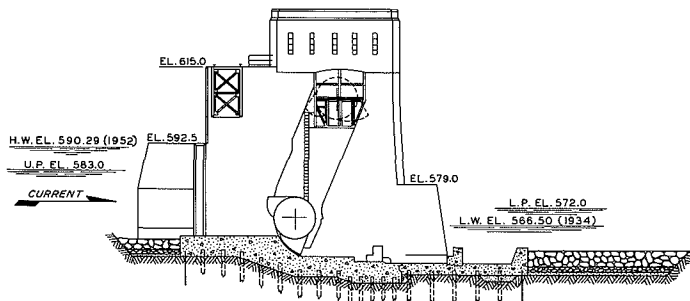
SECTION A-A



SECTION B-B



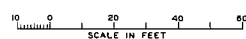
SECTION C-C



SECTION D-D



SECTION E-E



NOTE:

AVAILABLE DIMENSIONS OF LOCKS:

MAIN LOCK 600' X 110'

AUXILIARY LOCK 360' X 110' (FUTURE)

CONTROLLING DEPTH 13' AT NORMAL POOL

NORMAL LIFT 11 FEET.

REFERENCES:

1. ELEVATIONS BASED ON MEAN SEA LEVEL DATUM (1912 ADJUSTMENT).

2. RIVER MILEAGE ORIGINATES AT MOUTH OF OHIO RIVER.

MISSISSIPPI RIVER
RIVER AND HARBOR PROJECT
LOCK & DAM NO. 13
NEAR CLINTON, IOWA
 SCALE AS SHOWN
 ROCK ISLAND DISTRICT
 30 JUNE 1961

SECTION III

POOL RESOURCES

1. General. The existing physical resources of the pool are herein examined on both a qualitative and quantitative basis. Present and proposed management, usage, and recommended developments are predicated on such factors.

As noted in chapter I, paragraph 7b, page II-5, acreage figures have been calculated from Master Plan maps for recreation and general land use planning and are not to be considered accurate for legal purposes. Significant variance may exist between the acreages given and the official records maintained by the Real Estate Division of the Rock Island District Office.

2. Water. The general characteristics of both a river and a shallow lake are present in pool waters which contain 29,103 surface acres at the authorized flat pool elevation. Water is of good quality without extensive sources of municipal or industrial pollution. However, agricultural lands of the adjacent watersheds present possible sources of pollutants with increasing usage of insecticides, fertilizers, and feedlots. Approximately 25%, or 7,276 surface acres are channel waters with a minimum depth of 9 feet, while 75%, or 21,827 acres, are off-channel waters, vary in depth, and may present navigational hazards to recreational boating.

3. Land. The necessary land acquired for the pool project by the Federal Government, both shore and island real property, amounted to 25,285 acres in fee. Prior to project construction, certain lands were owned by the Federal Government, assigned to the Department of Interior, and administered by the Bureau of Sport Fisheries and Wildlife. Such Federal land as presently remains above the flat pool elevation totals 10,233 acres administered by the Corps of Engineers and 3,298 acres administered by the Bureau of Sport Fisheries and Wildlife. The Savanna Ordnance Depot controls and administers an additional 11,566 acres of Federal lands which are not concerned with recreational potential. Of Corps lands, 7,632 acres have been outgranted to the Bureau for fish and wildlife management under the provisions of the General Plan and Cooperative Agreement. Identifiable accretions to Federal lands, administered by the Corps of Engineers, amounted to 63 acres through 1964.

Flat pool shoreline (mainland and islands) totals approximately 503 miles with 274 miles under Corps of Engineers control; 85 miles under the jurisdiction of the Bureau of Sport Fisheries and Wildlife; 117 miles administered by the Savanna Ordnance Depot; and 27 miles owned by States, Counties, municipalities, or private individuals.

Some 331 islands, totaling 5,667 acres, lie within the pool limits, and with exception of 140 acres, are all under Federal ownership.

Existing laws permit the granting of leases for agricultural purposes on project lands. Five such leases, totaling 305.5 acres, are presently in force within the pool limits.

4. Vegetation. Vegetative cover on Federal lands varies throughout the pool reach with the denser growth found largely on islands of the upper area. Of Government lands administered by the three agencies, 5,270 acres, or 21%, is classified as open; 4,769 acres, or 19%, as sparsely covered; and 15,059 acres, or 60%, as supporting medium to dense growth.

Timber associations are much the same as those of the two previous pools with cottonwood, willow, maple, red birch, and locust predominating on the bottomlands and oak, ash, elm, hickory, hackberry, and linden more common on higher elevations.

The timber management program of the Rock Island District, originated in 1941, directs the select harvesting of mature specimens. Contracts granted to private interests, during the period of October 1950 to February 1967, accounted for 2,423,980 board feet of harvest with an income to the Government of \$35,387.12. The management objective, being realized, is towards increased annual yield, quality improvement, and enhanced specie composition.

5. Wildlife. Favorable habitat conditions attract and support a wide variety of wildlife to the pool and adjacent land areas. Concentrations of a given specie, however, may vary in comparison to the previous pools because of the relatively lesser cover to be found within the pool limits. Wildlife sanctuaries have been established on 7,460 surface acres of land and water areas under the administration of the Bureau of Sport Fisheries and Wildlife. Of these, 4,177 acres are water areas, 703 acres are land areas originally

managed by the Bureau before project construction, and 2,580 acres are land areas outgranted to the Bureau by the Corps of Engineers for management purposes.

a. Birds. As a continuing part of the "Mississippi Flyway" the pool is especially attractive to migratory aquatic birds because of the vast water areas created by dam No. 13. Some 19 species of ducks and r species of geese are yearly visitors during migratory flights. The backwaters immediately above the non-submersible section of the dam extending to the Illinois shore, as well as the ponds and sloughs below this section, attract large numbers of the several species which may be viewed from the roadway. Flights of pelicans have also been observed. The wood duck is a resident of the area and mallard, blue-wing teal, coot, and hooded merganser may nest on occasion. Numerous species of shore and songbirds as well as the grebe, American egret, bittern, and gull are either resident or transient. Several species of hawks and owls are fairly common and the bald eagle is often seen.

b. Animals. The most common small mammals to be found in the pool area include raccoon, skunk, weasel, opossum, mink, muskrat, beaver, fox, squirrel, rabbit, and woodchuck with badger and otter in lesser numbers.

The only large game animal inhabiting the area, the white-tailed deer - also known as the Virginia deer, is found mainly in the timbered bottomlands, and while not numerous, has wide distribution.

Muskrat, common to abundant, vary seasonally in numbers depending on water elevations. Beaver and mink, relatively common in the area, are considered to be stable in concentration. Squirrel and raccoon, generally abundant, are subject to periodic changes in habitat conditions caused by floods, fires, or timber-harvesting activities. Populations of other small animals are considered as stable in concentration.

Several varieties of harmless water snakes are fairly common in pool waters, especially in slough areas. Poisonous reptiles which may be found in land areas, although rarely encountered, are the massasauga and timber rattlesnake and the copperhead.

6. Fish. Both sport and commercial species of fish are taken from pool waters. Walleye, northern, sauger, and carp are well represented, but bluegill, crappie, bass,

freshwater drum, and channel catfish account for the species most reported. A 1963 creel census indicates a catch of .601 per man-hour of effort which is low in comparison to previous pools. However, such statistics may be misleading since the census was far less complete in this instance. Bellevue and Sabula, Iowa, and Savanna, Illinois, enjoy reputations as headquarters for fishing activities.

Pool 13, considerably larger than the previous pools, offers more fish habitat which is reflected in greater commercial fishing activity. The preferred commercial species are carp, buffalo, freshwater drum and catfish for retail markets. Statistics compiled over a 12-year period show the commercial catch to be in excess of 630,400 pounds per year.

7. Recreation. More recreational developments, both Federal and non-Federal, exist within the pool 13 area than any other in the Rock Island District. Considerable additional potential is available with access roads existing in some areas and required in others. Hunting opportunities, although substantial, are likely secondary to the fishing potential because of the somewhat lesser cover existing on Federal lands in comparison to previous pools. Sightseeing, nature study, and photography opportunities are outstanding.

8. Historical and Archaeological. Caves of Niagaran dolomite are found along the Maquoketa River, a limestone deposited some 350 million years ago when Iowa and the entire midwest was under the shallow sea that stretched from the Rockies to the Appalachians. Subsequent glacial action and the flow of the new stream hollowed caves in the rock in an age when the water level was 20 feet higher than at present. Skeletons and artifacts found indicate the caves were used for human habitation as much as 8,000 years ago. Many of the caves were also used as hideouts by horse thieves and their stolen stock in the early days of the turbulent West.

Power plants on the Maquoketa River reached a total of 36 in the year 1880. By 1930 the number had dwindled to 6 with power output doubled.

The 12,000-acre Savanna Ordnance Depot was established soon after the United States entered World War I for the purpose of proof-firing gun carriages manufactured on the Rock Island Arsenal. The present use is for storage of Ordnance materiel.

Savanna, one of the earliest settlements in northern Illinois, is on the site of a two-story Indian lodge which once housed more than 1,000 persons.

Indian mounds, all on non-Federal lands, exist on higher ground on both sides of the river, although no extensive archaeological investigations are known to have been made. While the mounds are the remains of numerous Indian tribes of historic times, some date to the prehistoric "Effigy Mound Builders" whose works have been found along the river from St. Paul, Minnesota, to Baton Rouge, Louisiana, and in the Ohio River Valley.

SECTION IV

FACTORS AFFECTING RESOURCE USE

1. General. Pool 13 serves entirely as a connecting link in the river chain of pools, or lakes, from a navigation standpoint. No docks for loading or unloading commercial cargo exist within the pool limits. Plate IV-2.1 graphically portrays the commercial activities at lock No. 13 over a period of nearly two decades of river traffic. Recreational facilities, although more extensive and better developed than on any other pool, are subject to the pressure of increasing numbers of recreationists.

2. Zone of influence. The primary zone of influence is considered as an area two counties in width, or approximately 50 miles, extending inland on each side of the river and following the length of the Rock Island District. The approximate total 1960 population of such zones is given in chapter I; however, it is impractical to attempt a population estimate by pools since a given pool may span parts of several counties. Four small population centers (1960 census) are located on the shores of the pool - Bellevue, Iowa (2,181); Savanna, Illinois (4,950); Sabula, Iowa (894); and Thomson, Illinois (543). Bellevue, Iowa, lies adjacent to both pools 12 and 13, and residents or visitors have the facilities of each for recreational pursuits.

3. Economic conditions. Except for population areas and approximately 12 miles of the Savanna Ordnance Depot, lands bordering the pool are entirely under an agricultural economy. No cargo is supplied to or loaded from industry by means of water transportation. Both Bellevue and Sabula, Iowa, are noted as fishermen's centers and attract numerous recreationists for sport fishing. Vast recreational potential exists in the Sabula area which has yet to be exploited.

An outstanding state park, the Mississippi Palisades, is located some 5 miles upstream of Savanna, Illinois, and adds considerably to the economy of the city. The park encompasses 1,600 acres, overlooks 1 mile of riverfront, and has a wide range of facilities which are being severely taxed by increasing public usage.

Federal lands for industrial development, totaling approximately 50 acres, have been reserved at river miles 529.8 to 530.2 (Illinois), 536.1 (Illinois), and 555.4 to 555.6 (Iowa). None are presently occupied. Should studies

now underway prove the feasibility of a full-year navigation season, interest in exploiting such sites would likely be generated.

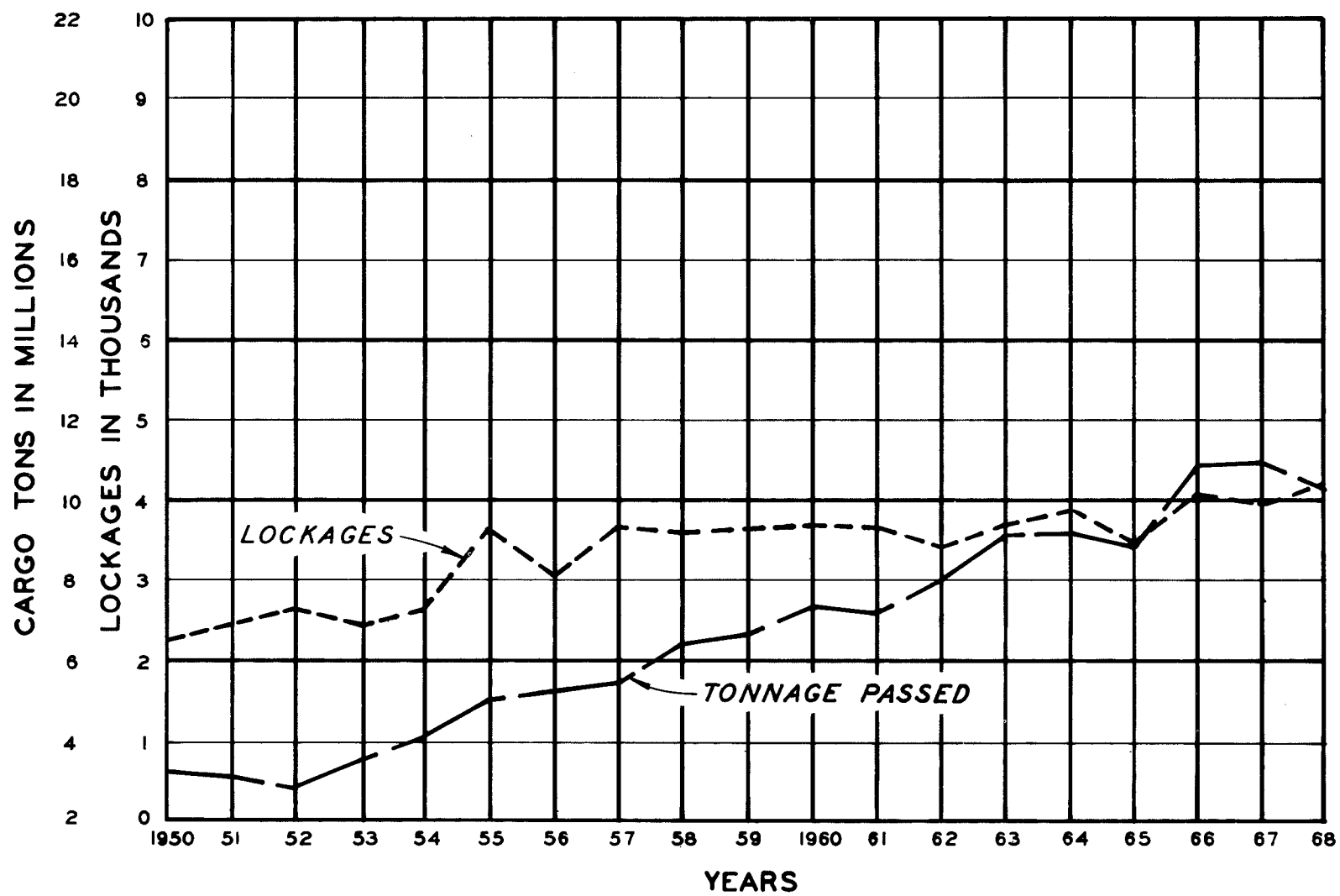
4. Accessibility. Although railroads closely parallel both shores of the pool, passenger service does not exist in Iowa. Passenger service is available from points east to Savanna, Illinois, and upstream along the Illinois shore only. Bus transportation, however, connects all population centers adjacent to the pool. Commercial, but no scheduled air service is available at Savanna, Illinois, and landing facilities do not exist at either Bellevue or Sabula, Iowa. Road access to the river exists at 8 points in Iowa and 11 in Illinois, all through Government-owned lands. The Great River Road, by means of State and County construction and relocation, will eventually follow the shores of the river from Canada to the Gulf of Mexico and offer outstanding scenic attractions. Segments, at present, offer a view of the river only at Bellevue, Iowa, and the Sabula, Iowa - Savanna, Illinois, area. No scheduled sightseeing or excursion boats are known to operate within the pool limits. Two bridges span pool waters - a high clearance highway bridge which crosses above Savanna and a swing-span railroad structure crossing below Sabula.

5. Existing recreational facilities.

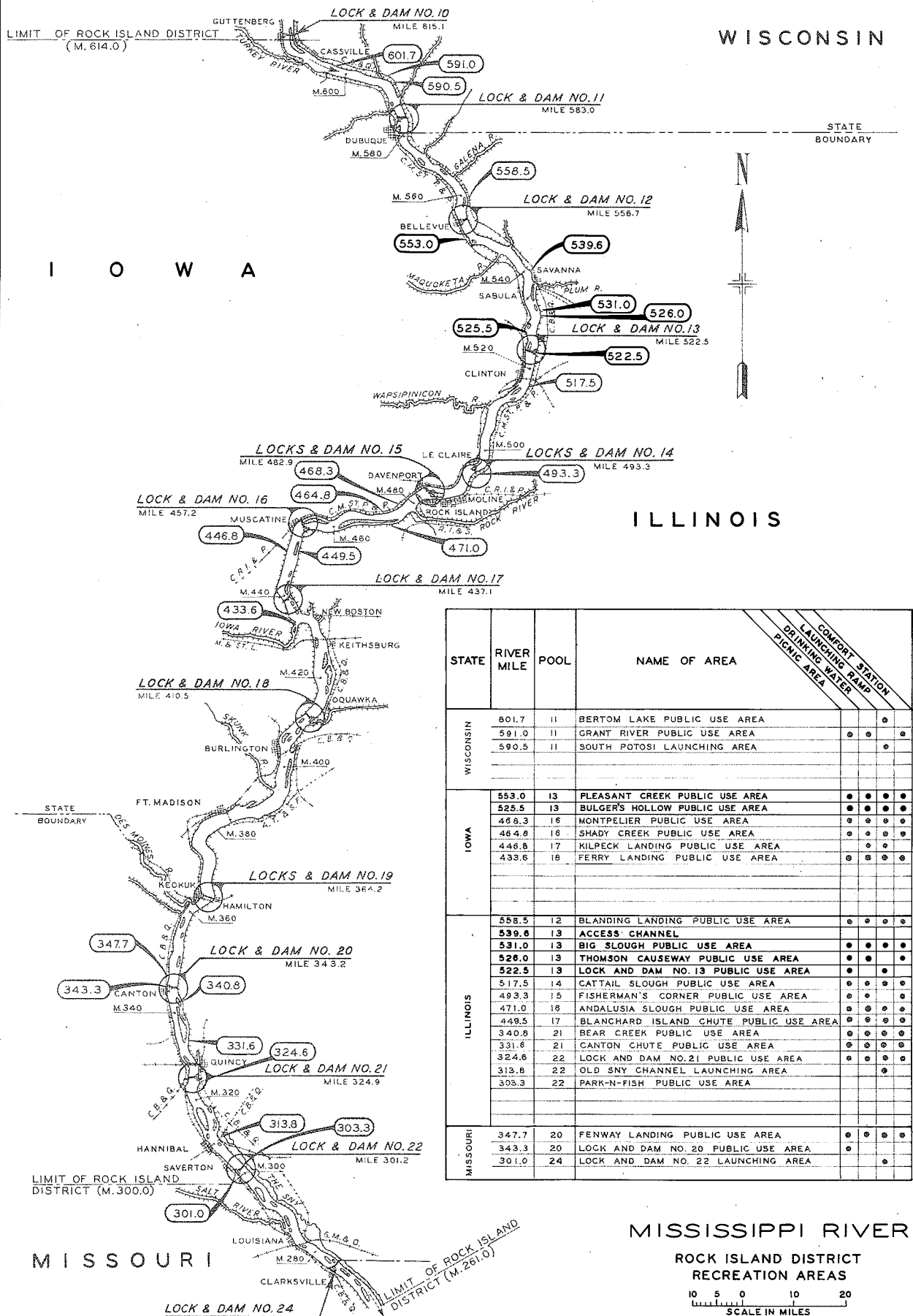
a. Of the 25 recreation areas established and maintained by the Corps of Engineers within the Rock Island District, plate IV-2.2, 5 are located within the pool limits on both Iowa and Illinois shores.

(1) Pleasant Creek Public Use Area. Located at river mile 552.9, approximately 3 miles below Bellevue, Iowa, the 4-acre area, plate IV-2.3, experiences some of the heaviest usage within the District. Additional camping spurs were developed in 1968 to partially serve the increasing pressure of public demand. Present facilities include a concrete boat launching ramp, a graveled maneuvering area, parking for 10 car-boat trailer units, 4 pit-type toilets, 10 camping spurs, a well and hand pump, 16 picnic tables, 10 pedestal fireplaces, 10 trash receptacles, and 2 fire rings. A sand beach fronts the river and swimmers make use of this attraction. Approximately 0.4 mile of graveled access and circulation roadway serves the area.

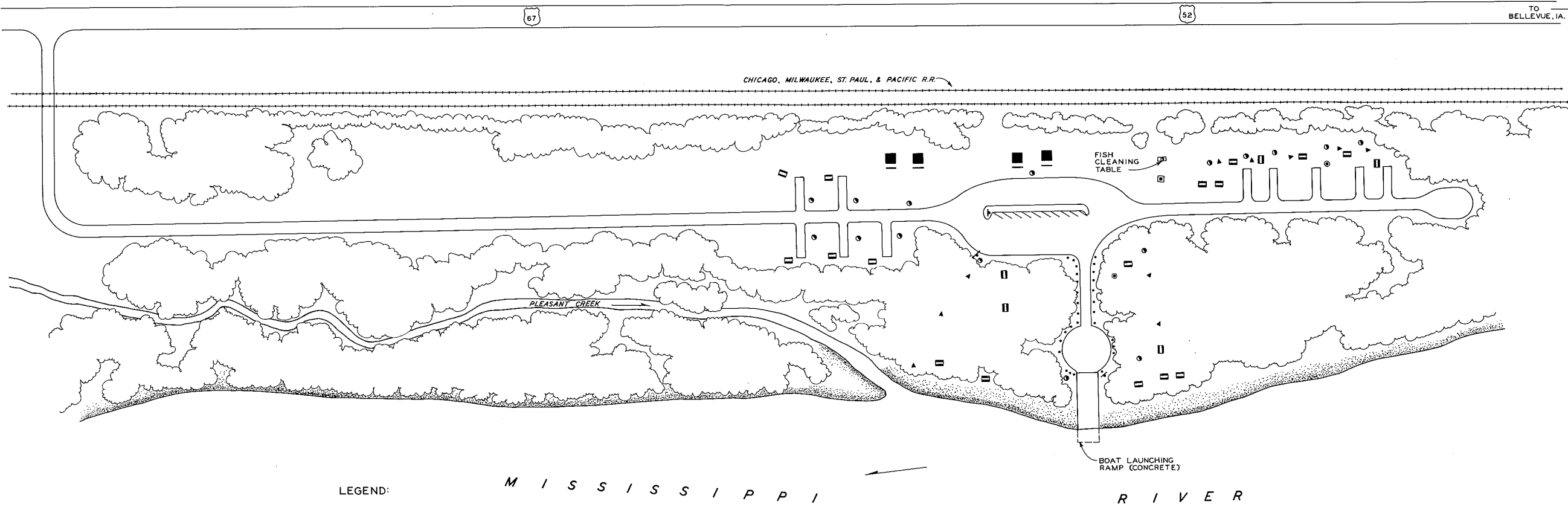
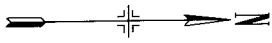
(2) Big Slough Public Use Area. Located at river mile 531.0, approximately 4 miles north of Thomson, Illinois,



LOCK NO. 13



I O W A



- LEGEND:
- PICNIC TABLE
 - TRASH CONTAINER
 - FIREPLACE
 - FIRE RING
 - WATER SUPPLY
 - SIGN
 - SANITATION - PIT TYPE
 - GUARDRAIL
 - EXISTING VEGETATION

UPPER MISSISSIPPI RIVER
REVISED MASTER PLAN
PLEASANT CREEK PUBLIC USE AREA
POOL 13, RIVER MILE 552.9

SITE PLAN
SCALE IN FEET
CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS
ROCK ISLAND DISTRICT
JUNE 1968

the 1.3-acre site is shown on plate IV-4.1. Although quite small, the area experiences considerable usage and cannot be presently expanded because of leased adjoining lands. Existing facilities include a graveled boat ramp, a graveled maneuvering area, parking for 20 car-boat trailer units, 2 pit-type toilets, 14 picnic tables, 6 pedestal fireplaces, a well and hand pump, 6 trash containers, and 2 fire rings. Approximately 600 feet of graveled access and circulation roadway serves the area.

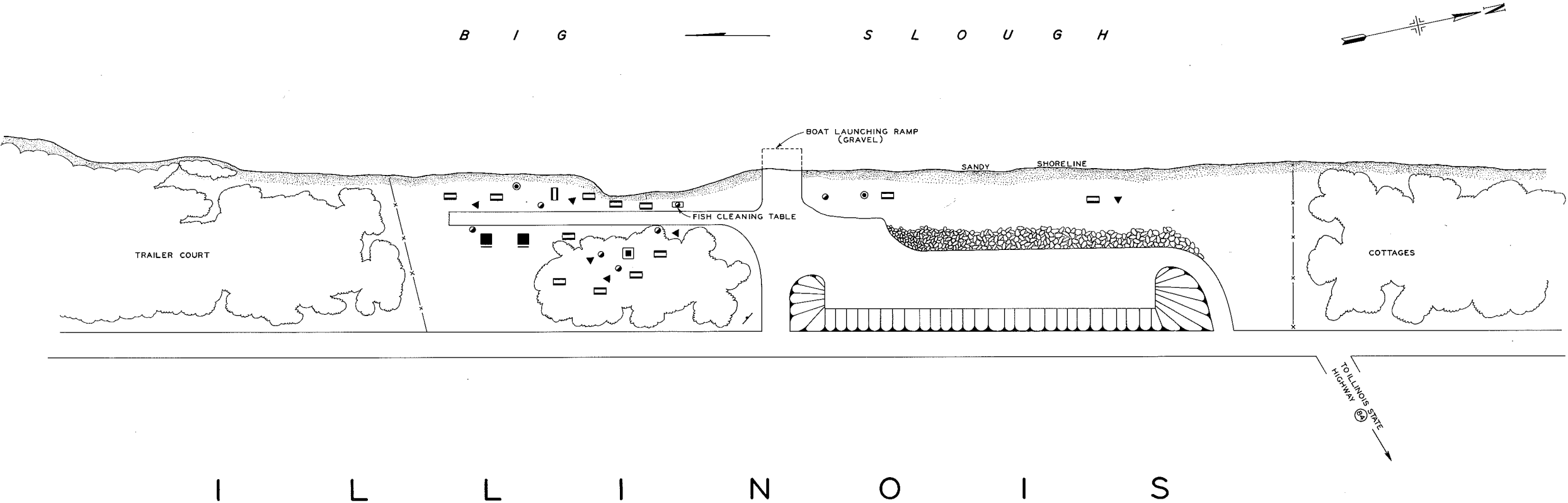
(3) Thomson Causeway Public Use Area. The largest development maintained within the District by the Corps of Engineers, plate IV-4.2, is located at river mile 526.0 immediately riverward of the town of Thomson, Illinois. Three separate sites have been developed within the area and several expansion programs accomplished to keep pace with steadily increasing public usage. Considerable space yet exists for future expansion, improvement, and facility additions. Because of generally shallow water conditions, the site is not suitable for pleasure boating. No boat ramps, therefore, have been developed although fishermen make use of three locations suitable for flat-bottomed boats. Existing facilities include 32 picnic tables, 29 pedestal fireplaces, 34 trash containers, 6 pit-type toilets, 4 wells with hand pumps, and 32 graveled camping spurs. Four rock-filled fishing jetties have been constructed upstream of the causeway road between the mainland and island. Approximately 1.5 miles of graveled access and circulation roadway serves the area and the separate sites. Ice fishing is a popular winter sport at this location.

(4) Bulger's Hollow Public Use Area. A 4-acre site, plate IV-4.3, is located at river mile 525.5 approximately 4 miles north of Clinton, Iowa. Facilities consist of a graveled boat ramp and maneuvering area, a well with hand pump, 20 picnic tables, 15 pedestal fireplaces, 19 trash containers, 2 pit-type toilets, and 10 graveled camping spurs. Graveled access and circulation roadway, serving the area, totals approximately 0.3 mile.

(5) Lock and Dam No. 13 Public Use Area. The few facilities presently existing in this area are located at diverse points and no acreage, therefore, is assigned. Plate IV-4.4 depicts the facilities available at river mile 522.5 which consists only of a graveled boat launching ramp and maneuvering area, and 6 picnic tables. Total facility access, leading from the existing lock and dam service road, totals approximately 1,000 feet of graveled surface. Ice fishing is a popular winter sport at this location.

b. An access channel, plate IV-4.5, has been dredged near the Illinois shore to serve the boat launching ramp maintained by the State of Illinois, and the adjacent concessionaire, opposite river mile 541.0. The 3,000-foot channel provides small boat access to and from downstream river areas. This project was constructed under the recreational funding program and is maintained under routine operation and maintenance.

c. Other existing recreational sites within the pool limits are: At river mile 556.6, Iowa - a launching ramp operated by the town of Bellevue on Government property; also at river mile 556.6, Iowa - a commercial boat dock operated by private interests on municipal property; at river mile 556.1, Iowa - two commercial boat docks operated by private interests on municipal lands; at river mile 555.0, Iowa - a boat ramp operated by Jackson County Conservation Board on Government-owned land; at river mile 547.9, Iowa - a public use area maintained by the Iowa State Conservation Commission on Government property; at river mile 542.6, Illinois - a private resort operated on private property; at river mile 541.0, Illinois - a marina operated by a commercial concessionaire on Government property, and a launching ramp maintained by the Illinois Department of Conservation on Government property; at river mile 537.6, Illinois - a privately operated marina on municipal property; also at river mile 537.6, Illinois - a launching ramp operated by the city of Savanna on municipal land; at river mile 537.2, Illinois - a commercial boat dock operated by private interests on municipal property; at river mile 536.9, Iowa - a launching ramp maintained by the Jackson County Conservation Board on Government property; at river mile 535.7, Iowa - a public use area operated by the Jackson County Conservation Board on county land; at river mile 535.5, Iowa, off Federal Highway 52 in Middle Sabula Lake (not shown on navigation chart No. 99) - a parking-fishing area with sanitary facilities maintained by the Iowa State Conservation Commission on state property; at river mile 534.8, Iowa - a commercial harbor operated on private property along with a public boat parking area and fuel facilities located on Federal property under a commercial concession lease; also at river mile 534.8, Iowa - a public launching ramp owned by the Chicago, Milwaukee, St. Paul and Pacific Railroad Company on Government property; at river mile 534.4, Iowa - a public use area operated by the Iowa State Conservation Commission on Government property; at river mile 532.3, Illinois - a resort operated by a commercial concessionaire on Government

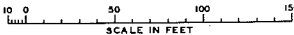


LEGEND

- PICNIC TABLE
- FIREPLACE
- TRASH CONTAINER
- FIRE RING
- WATER SUPPLY
- SIGN
- SANITATION - PIT TYPE
- EXISTING VEGETATION

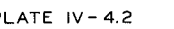
UPPER MISSISSIPPI RIVER
REVISED MASTER PLAN
BIG SLOUGH PUBLIC USE AREA
POOL 13, RIVER MILE 531.0

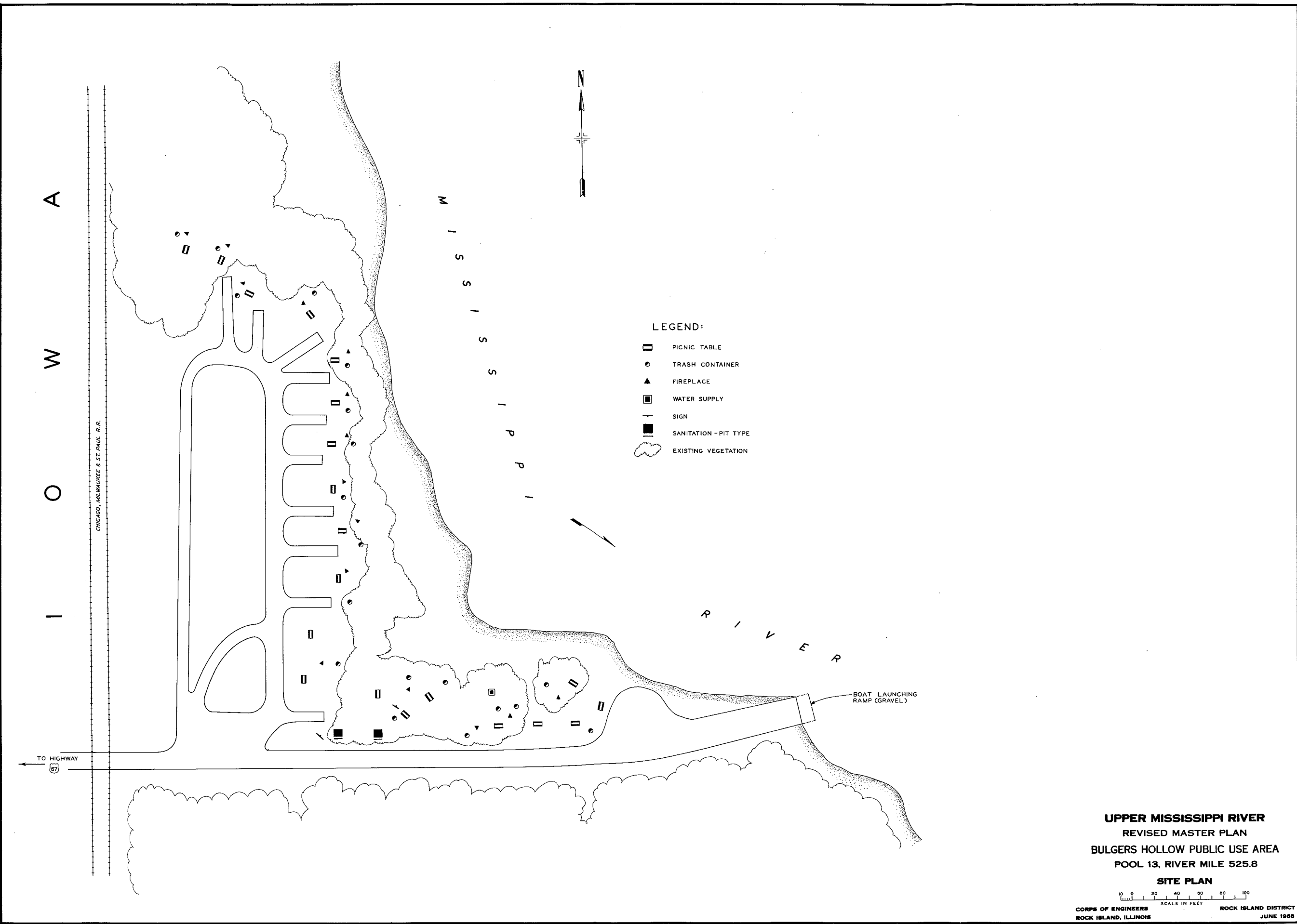
SITE PLAN

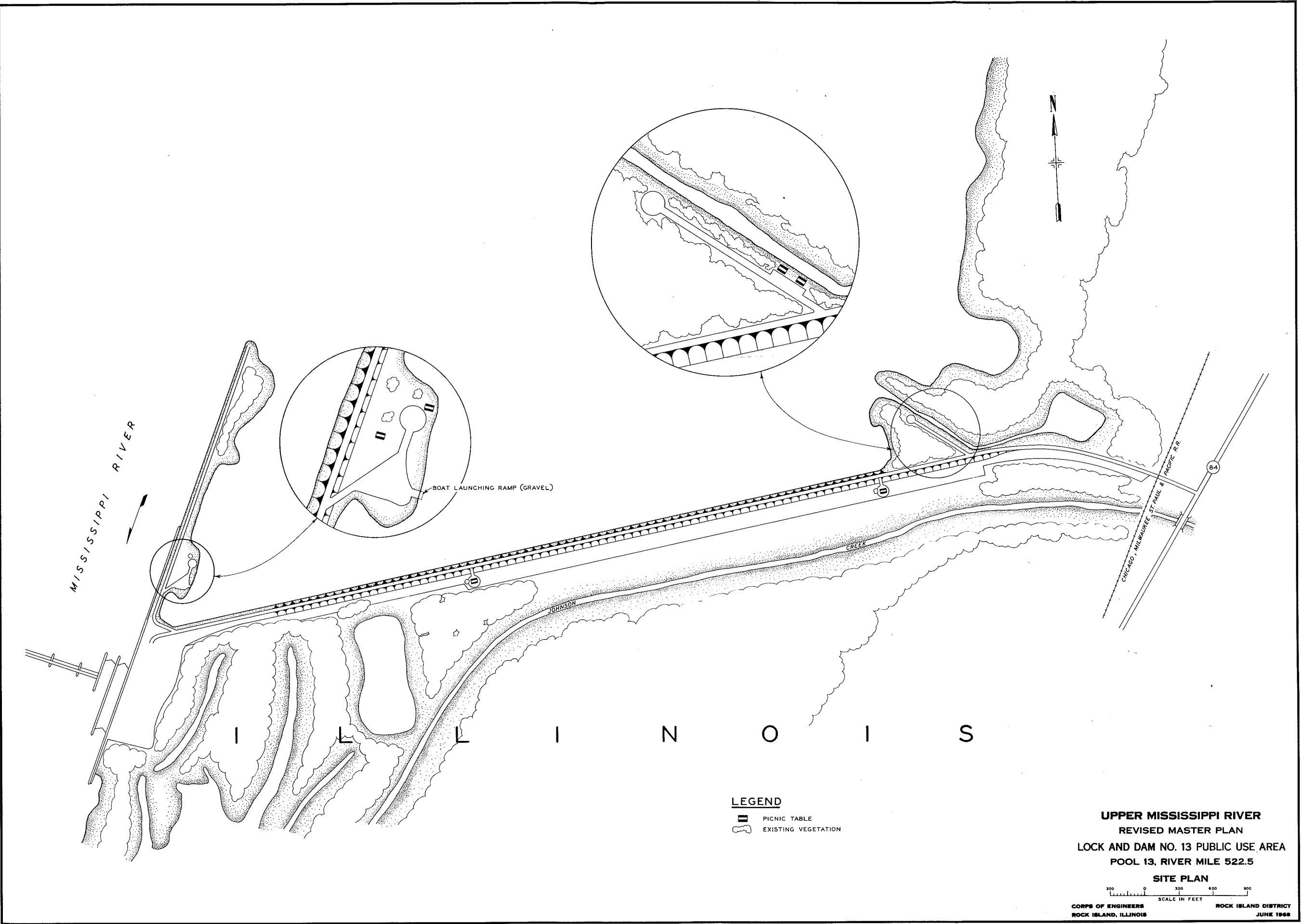


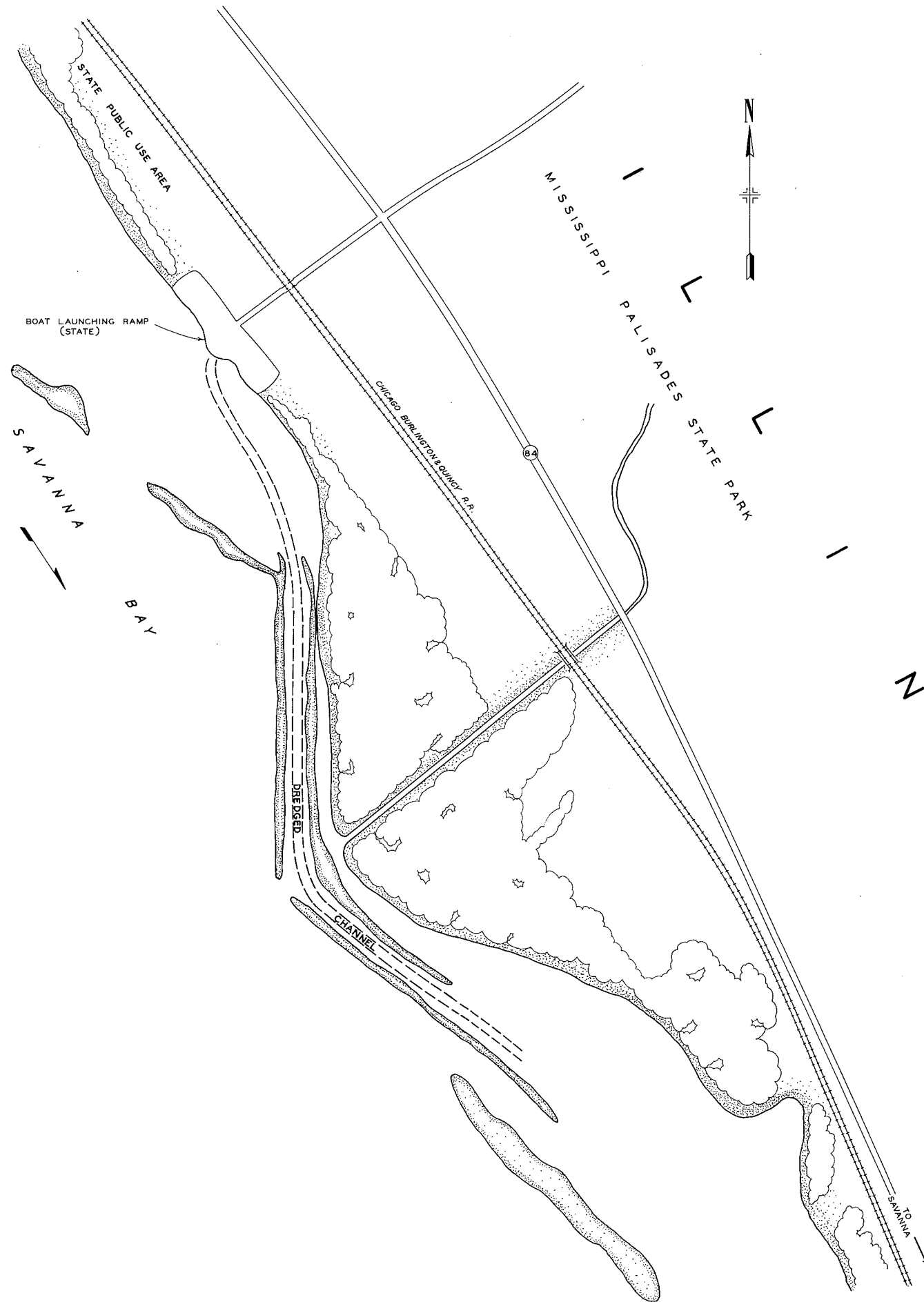
CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS

ROCK ISLAND DISTRICT
JUNE 1966



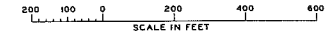






UPPER MISSISSIPPI RIVER
REVISED MASTER PLAN
ACCESS CHANNEL
POOL 13, RIVER MILE 541.0

SITE PLAN



CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS

ROCK ISLAND DISTRICT
JUNE 1968

property; and at river mile 531.6, Illinois - a resort operated by a commercial concessionaire on Government property.

d. Two state parks, with a wide range of recreational facilities, are located adjacent to and overlooking the river within the pool limits. Bellevue State Park, immediately south of Bellevue, Iowa, offers a panoramic view of lock and dam No. 12 as part of its attractions. Mississippi Palisades State Park above Sayanna, Illinois, by far the larger of the two, offers outstanding scenic views and camping opportunities.

6. Water quality. The waters of pool 13 are considered of satisfactory quality for all forms of water-oriented recreation. With the exception of the Savanna Ordnance Depot and railroad yards at Savanna, Illinois, the shoreline of the pool is devoid of industrial activities that could directly affect water quality of the pool. The three small population centers within the pool limits currently have adequate treatment of municipal wastes. Excessive agricultural pollutants from tributary runoff and potential industrial development near Savanna appear to present the greatest threat to the water quality of the pool in the future.

7. Climatic conditions. Precipitation in the pool area averages 35 inches per year and the growing season extends over a period of 165 days between early April and late September. Prevailing summer winds are from the southwest and west and from the northwest and north during the winter period. A mean annual temperature of 48°F. is experienced with a summer average of 62°F. and a winter average of 26°F. Navigation is normally halted by ice in early December and generally resumes by late March. Studies, presently under way, are being conducted towards ways and means of providing a full 12-month navigation season.

SECTION V

CURRENT AND ANTICIPATED RECREATIONAL USE

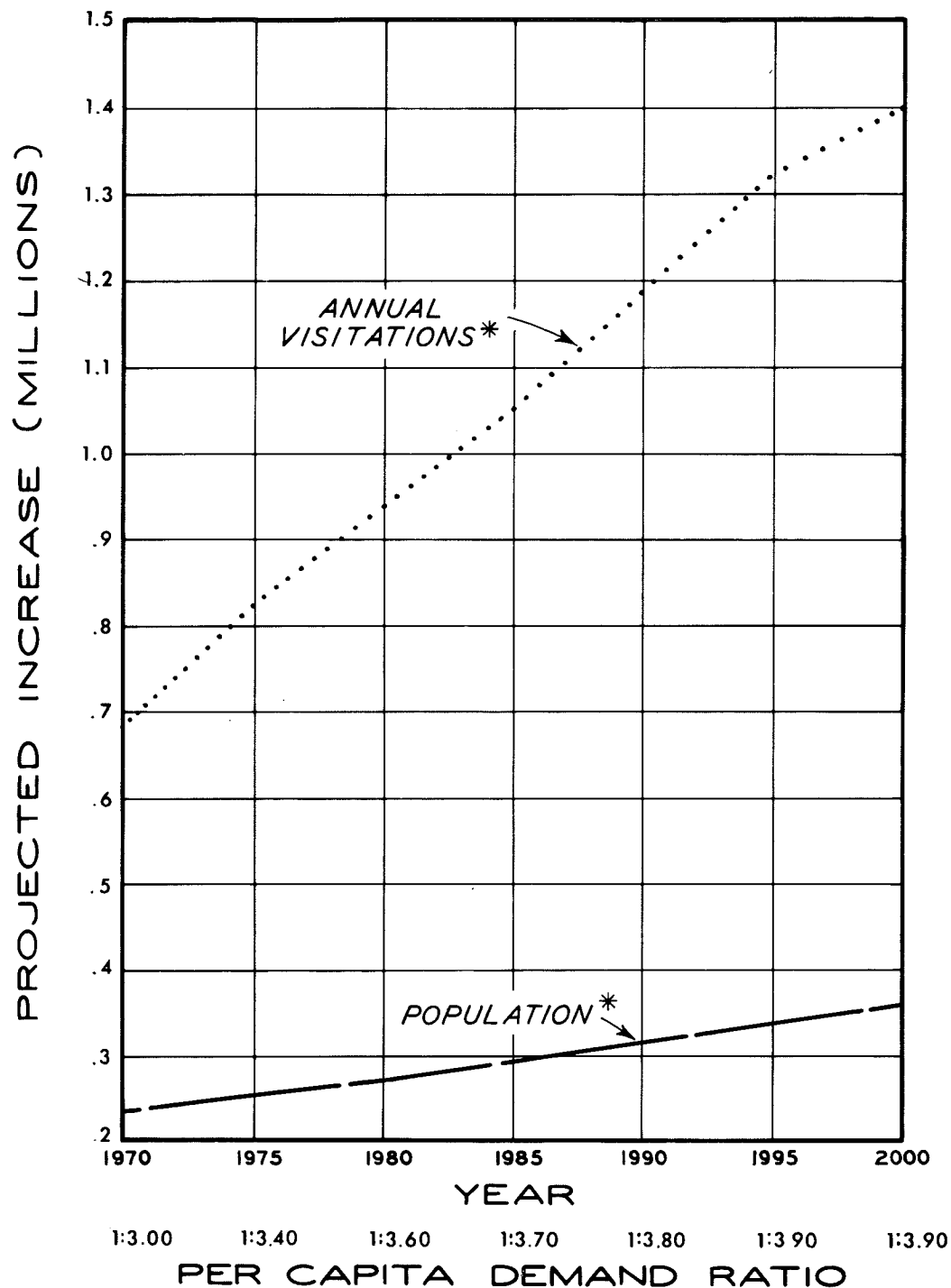
Among the 12 Mississippi River navigation pools within the Rock Island District of the Corps of Engineers, pool 13 ranks in second place in terms of public recreational attendance. Visitations during 1968 totaled nearly 692,000 persons ranging from a February low of 9,786 to a high of 123,541 in August. The pool is well suited to hunting and ice fishing, which accounts for the high winter recreational incidence.

Plate V-1.1 presents the anticipated population increase and corresponding projected recreational demand within the primary zone of influence - an area two counties in width (approximately 50 miles) extending inland on each side of the pool. The per capita use ratio, calculated on past reported visitations and the projected area 1970 population, is expected to hold relatively constant during the immediate future.

Plate V-1.2 tabulates recreational facilities established and maintained by Federal agencies as well as developments by non-Federal governmental bodies and private individuals. Non-Federal installations are considered only when located immediately adjacent to the river and regardless of whether or not located on lands leased from the Federal Government.

Proposed non-Federal facilities are those known to be scheduled for completion within the near future by State, County, or municipal entities.

Future facility requirements, to satisfy anticipated demand, are based on indicated population increases and expected public participation. Projected facility items are calculated from criteria established in ER 1130-2-312 for visitations and use. On this basis it is apparent that demand is not being served, in most instances, with facilities presently existing and proposed.



* PRIMARY ZONE - AREA TWO COUNTIES
IN WIDTH (APPROX. 50 MILES) EXTENDING
INLAND ON EACH SIDE OF POOL.

POOL 13
MISSISSIPPI RIVER
PROJECTED
POPULATION & VISITATIONS

POOL 13 1969 EXISTING AND PROPOSED FACILITY DATA

	EXISTING FEDERAL FACILITIES	EXISTING NON-FEDERAL FACILITIES	TOTAL EXISTING FACILITIES	RECOMMENDED FEDERAL FACILITIES	*PROPOSED NON-FEDERAL FACILITIES	TOTAL PROJECTED FACILITIES	†TOTAL REQUIREMENTS FOR ANTICIPATED DEMAND			
							1970	1980	1990	2000
<u>DAY - USE</u>										
PARKING (UNITS)	44	45	89		20	20	172	235	263	350
PICNIC TABLES	44	40	84		20	20	172	235	263	350
FIREPLACES	21	5	26		20	20	86	117	131	175
POTABLE WATER	7	2	9		1	1	5	7	9	11
SHELTERS	0	1	1		1	1	51	69	78	103
<u>BOAT LAUNCHING</u>										
PARKING (UNITS)	36	170	206		20	20	170	230	260	350
RAMPS	4	16	20		1	1	17	23	26	35
CONCESSIONS, FUEL, ETC.	0	8	8		0	0	-	-	-	-
<u>SANITATION</u>										
PIT TOILETS	14	10	24		4	4	6	10	12	14
FLUSH TOILETS	0	10	10		0	0	NONE PROPOSED UNDETERMINED			
TRAILER STATIONS	0	0	0		1	1				
<u>CAMPING</u>										
PARKING SPURS (GRAVEL)	46	15	61		0	0	92	125	140	186
PICNIC TABLES	46	5	61		0	0	92	125	140	186
FIREPLACES	40	5	45		0	0	92	125	140	186

* SCHEDULED FOR COMPLETION IN 1972

† BASED ON ER 1130-2-312 CRITERIA:

- 1 PICNIC TABLE PER 4000 ANNUAL VISITORS
- 1 PARKING SPACE PER TABLE
- 1 FIREPLACE PER 2 DAY-USE PICNIC TABLES
- 1 FIREPLACE PER CAMP SPUR
- 1 SHELTER PER 225 WEEK-END DAY VISITORS
- 1 LAUNCHING RAMP PER 40,000 ANNUAL VISITORS
- 10 CAR-TRAILER PARKING SPACES PER RAMP
- 2 PIT TOILETS PER 3000 WEEK-END DAY VISITORS
- 1 CAMP SPUR PER 7500 ANNUAL VISITORS

NOTES:

- Primitive camping is permitted on Federal property - islands, shorelands, and sandbars.
- No supervised river swimming areas are in operation.
- Road access to the river exists at 19 rural locations within the 225 miles of mainland shoreline.

SECTION VI

POOL RESOURCE MANAGEMENT

1. General. The stated purpose of a Master Plan requires analysis and examination of the existing physical features of the pool as well as proposals for the utilization and development of the scenic, biological, and recreational potential. The management program is predicated on orderly and controlled resource protection and development.

2. Land use zoning. Section VI, chapter I, describes and outlines the zoning classifications established to meet the criteria of a Master Plan development. Lands under Government ownership within the pool limits, both mainland and islands, are extensive throughout the entire reach and are administered in part by the Corps of Engineers, the Bureau of Sport Fisheries and Wildlife, and the Savanna Ordnance Depot.

Only lands under the jurisdiction of the Corps of Engineers and the Bureau of Sport Fisheries and Wildlife are assigned zoning classifications. Of these 13,531 acres 12,480, or 92%, are zoned recreational-undeveloped; 557, or 4% as recreational-developed; 104, or 0.9%, as recreational-commercial; 110, or 0.9%, for existing private use; 115, or 0.9% for special use; 80, or 0.6%, for houseboat mooring sites; and 85 or 0.7%, for industrial developments. No provision has been made for quasi-private use.

Of the total 25,097 acres of Federal land within the pool area, 10,233 acres, or 41% is administered by the Corps of Engineers and includes 7,632 acres outgranted to the Bureau of Sport Fisheries and Wildlife under the General Plan and Cooperative Agreement; 3,298 acres, or 13%, is administered directly by the Bureau; and 11,566 acres, or 46%, is under the control of the Savanna Ordnance Depot. Of the 13,531 acres of Corps and Bureau administered lands, 3,283 acres, or 13%, are reserved as wildlife sanctuary.

3. Water zoning. Except for houseboat mooring sites, partially a land feature, detailed water zoning is not a matter of consideration in the Master Plan. The pool contains 29,103 acres of water surface at the authorized flat pool elevation of which 7,276 acres, or 25%, are classified as channel waters of a minimum 9-foot depth and 21,827 acres, or 75%, are considered as off-channel waters of varying depths.

Wildlife sanctuaries, managed by the Bureau of Sport Fisheries and Wildlife, occupy 4,177 acres, or 14% of the total water area. Submerged wing dams and stump fields, as located on the navigation charts, will not generally present hazards to small boats in the lower and middle reaches of the pool, but may in the upper areas. To indicate off-channel water depths in such areas would be impractical since varying currents and shifting sandbars could soon render any published information obsolete.

Water zoning will become a necessity in the future, at least in certain areas, as population and use of the water resource for recreational purposes continues to increase.

4. Timber management. Subsection 3 of section VIII, chapter I, describes and details the forestry resource on Federal lands administered by the Corps of Engineers within the Rock Island District. Each base map of the Master Plan features a transparent overlay delineating the type and location of forestry cover, management objectives, species association, and related information. The management program, currently under extensive study, may modify or revise objectives presently indicated. Of the 10,233 acres of Federal land administered by the Corps of Engineers, significant stands of timber are to be found on 7,736 of those acres. Management objectives presently planned for the timber resource are: 565 acres, or 6%, as recreational-developed; 7,848 acres, or 76%, for wildlife-waterfowl; and 1,820 acres, or 18% for wildlife-upland game. No recreational-undeveloped lands have been classified nor have the sawlogs, pulpwood, or special products categories been considered.

5. Wildlife management. The administration of certain Federal lands, within the limits of the established pool, was vested in the Department of the Interior, Bureau of Sport Fisheries and Wildlife, prior to the construction of the 9-foot channel project and remain under such jurisdiction. Lands subsequently acquired in fee by the Federal Government for the 9-foot channel project, and assigned to the Corps of Engineers, have, in part, been outgranted to the Bureau for fish and wildlife management only. The Bureau, in turn, has outgranted certain of these assignments to the bordering states only for wildlife management purposes. In any case the Corps of Engineers retains basic administration, the right of road use, and control of the harvesting and sale of merchantable timber.

6. Shoreline ownership. Of the 503 miles of shoreline, contained within the pool limits at the established water elevation, 476 miles are owned in fee by the Federal Government. The Corps of Engineers administers 127 miles of mainland and 147 miles of island shoreline; the Bureau of Sport Fisheries and Wildlife 25 miles of mainland and 60 miles of island shoreline; and the Savanna Ordnance Depot 76 miles of mainland and 41 miles of island shoreline.

7. Additional recreational developments.

a. Corps of Engineers. No additional sites are presently under study or recommended for development.

b. Bureau of Sport Fisheries and Wildlife. Pipeline Landing, river mile 536.9 - 1 mile northwest of Sabula, Iowa - has been partially developed by the Bureau. Additional facility development in the amount of \$3,000 is planned.

c. States.

(1) Iowa. A lease on 19.2 acres of Federal property has been granted the State Conservation Commission for a development located downstream of Mill Creek at the lower limits of Bellevue, Iowa, river mile 555.5. The \$50,000 project will include a water and biology administration and service building, water, sanitary facilities, boat ramps, roads, parking area, and possibly a lift station. Completion is scheduled for July 1970.

(2) Illinois. The Department of Conservation has no present plans to request outgrants of Federal lands for recreational projects.

d. Counties.

(1) Jackson (Iowa). The Jackson County Conservation Board is interested in further development near the Pleasant Creek Public Use Area, river mile 552.9. Studies are planned towards diverting a portion of Pleasant Creek to a new meeting with the river, thereby adding land to the existing public use area and gaining expansion space. The cooperation of the Jackson County Conservation Board, the Corps of Engineers, and the Bureau of Sport Fisheries and Wildlife will be required should the plan prove feasible.

(2) Clinton (Iowa). The Clinton County Conservation Board plans to develop recreational facilities at Elk River, river mile 528.0 and at Heldt Ditch, river mile 526.6. Planning has not presently progressed, however, to the stage of making formal request for an outgrant or lease of Federal lands or for an estimate of development costs.

(3) Jo Daviess, Carroll, Whiteside (Illinois). While State law permits the organization of a county conservation board, none of these three counties is presently served by such entities.

e. Municipal.

(1) Town of Bellevue, Iowa.

Federal lands in pool 13 below Bellevue will be developed by the State as previously outlined. No other property under Government ownership exists.

Plate VI-4.1 locates the small-boat harbor authorized by the River and Harbor Act of 1962. Planning funds are not presently available for the project.

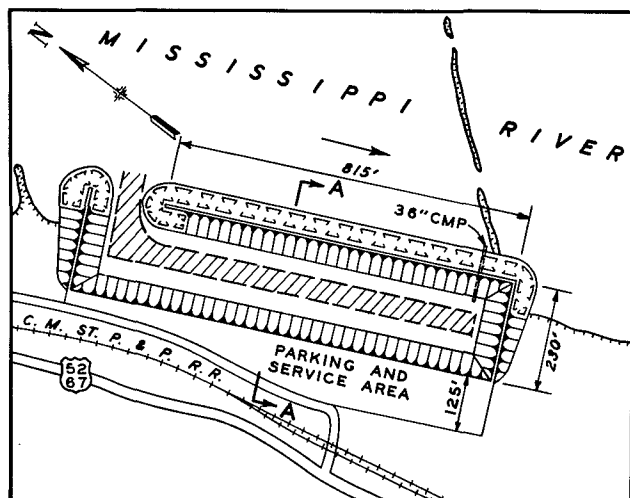
(2) City of Savanna, Illinois.

Federal lands existing immediately below the city are extensive, but are isolated with reference to existing access. No interest has been expressed by the city in developing recreational facilities in the area.

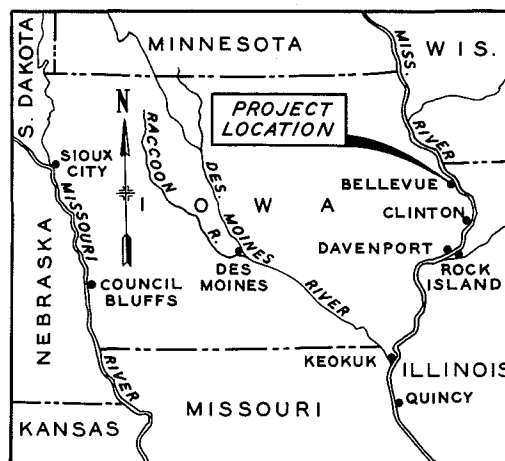
Plate VI-4.2 locates the small-boat harbor authorized by the River and Harbor Act of 1962. The project has been deferred because of lack of local support.

(3) Town of Sabula, Iowa.

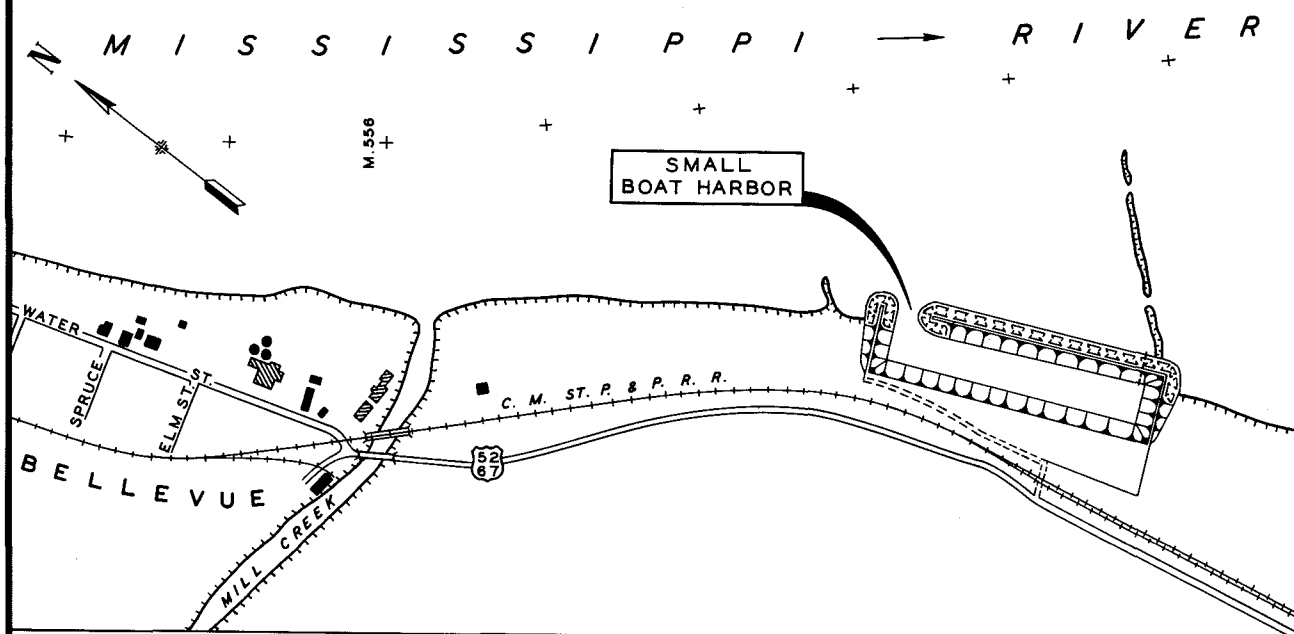
Vast potential exists in adjacent Federal lands, and the unique location of the island town could be the basis of developing the locale into an outstanding vacation and recreation center. County, municipal, and Federal officials have met and plan additional discussions concerning future facility developments.

**PLAN**

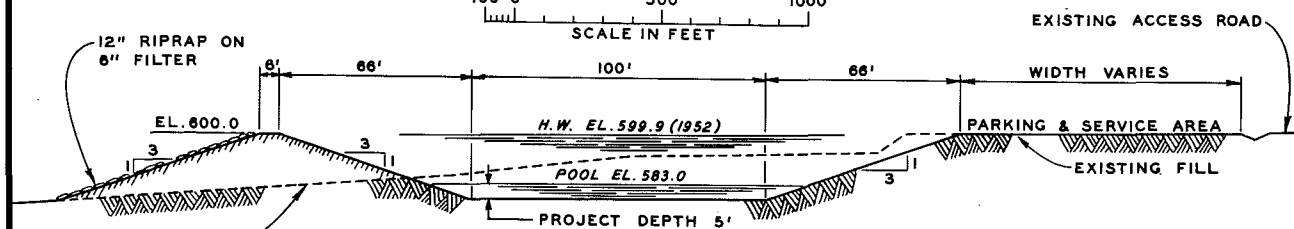
100 0 100 200 300
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**VICINITY MAP**

25 0 25 50 75
SCALE IN MILES


**LOCATION MAP**

100 0 500 1000
SCALE IN FEET

**SECTION A-A**

10 0 50 100
SCALE IN FEET

LEGEND

 DREDGING

MILEAGE ORIGINATES AT MOUTH OF OHIO RIVER

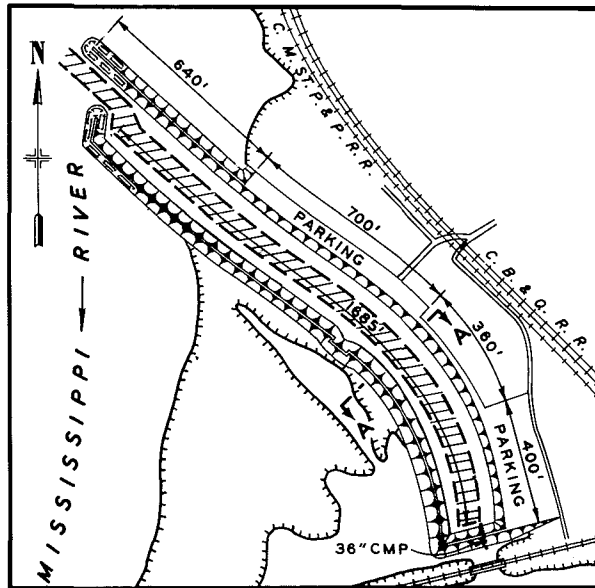
ELEVATIONS BASED ON MEAN SEA LEVEL DATUM (1912 ADJUSTMENT)

**MISSISSIPPI RIVER
RIVER AND HARBOR PROJECT
BELLEVUE, IOWA
SMALL BOAT HARBOR**

SCALES AS SHOWN

ROCK ISLAND DISTRICT

30 JUNE 1963



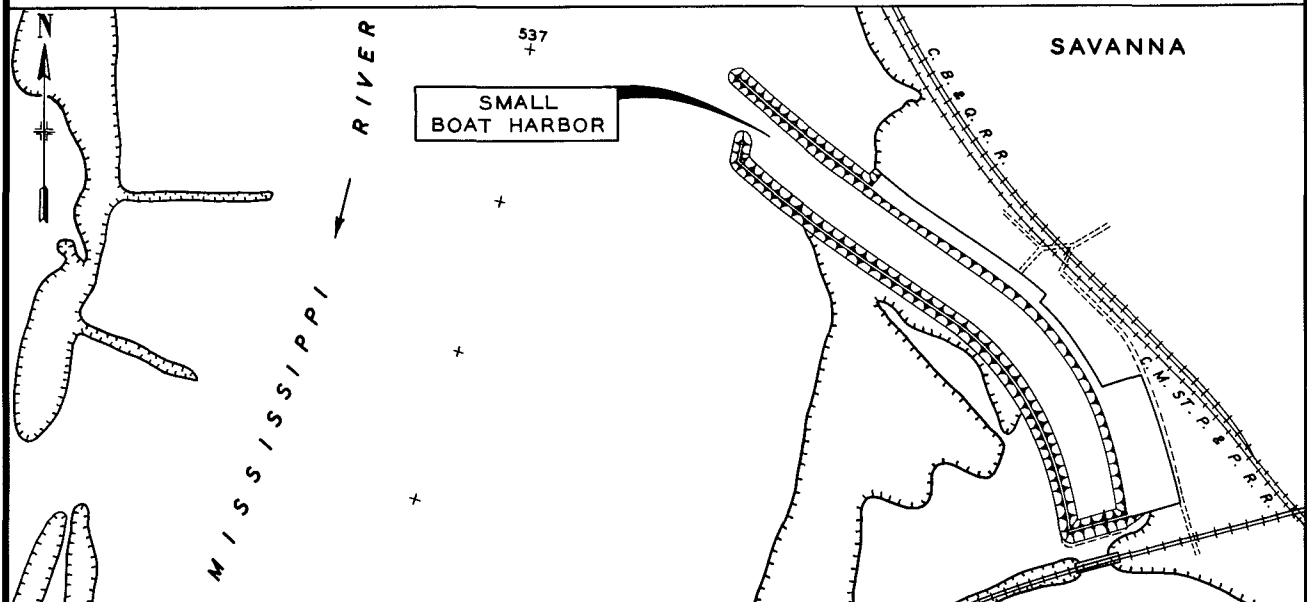
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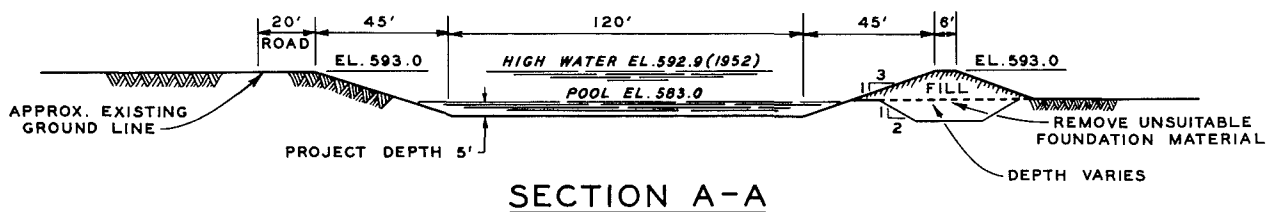
VICINITY MAP

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SCALE IN MILES



LOCATION MAP

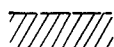
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SCALE IN FEET



SECTION A-A

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SCALE IN FEET

LEGEND

 DREDGING

MILEAGE ORIGINATES AT MOUTH OF
OHIO RIVER

ELEVATIONS BASED ON MEAN SEA
LEVEL DATUM (1912 ADJUSTMENT)

MISSISSIPPI RIVER RIVER AND HARBOR PROJECT SAVANNA, ILLINOIS

SMALL BOAT HARBOR

SCALES AS SHOWN

ROCK ISLAND DISTRICT

30 JUNE 1963

(4) Town of Thomson, Illinois.

Thomson has little reason to develop independent recreational facilities since the major public use area of the Rock Island District has been developed by the Corps of Engineers immediately adjoining the town limits. Extensive expansion opportunities are present.

SECTION VII

OPERATION AND MAINTENANCE

1. Manager-Ranger. The pressing need for and suggested duties of a Manager-Ranger are detailed in chapter I, section IX, paragraph 2. The services of such a position should especially benefit pool 13 because of its extent, amount of Government property with timber stands, and existing recreational developments.
2. Recreation facilities maintenance. Construction responsibility and maintenance, within present recreational site limits, rests with the Operations Division of the Rock Island District, Corps of Engineers. A field crew of 6 persons, operating under this department, accomplishes the necessary work which continues throughout the year. The supervisor of the force also acts as a contracting officer in negotiating with private individuals for trash removal, grass cutting, etc.

SECTION VIII

SUMMARY AND RECOMMENDATIONS

1. General summary. Considerable recreational development has been realized along the shores of the pool, both Federally sponsored and under private enterprise. In addition, two state parks - one of major proportions - attract large numbers of recreationists. The physical nature of the original terrain, affected by the impoundment above the dam, has created unusually large expanses of water thereby giving extensive opportunities for water-oriented recreational pursuits.

2. Recommendations.

a. Consideration is urged towards establishing the Manager-Ranger concept as outlined in chapter I, section IX, paragraph 2. Considerable time and effort on the part of District Office personnel could be eliminated, improved liaison with other Federal and non-Federal agencies should result, unauthorized use of Government land and vandalism would be minimized, and closer public relations established.

b. Dredging is suggested along the Illinois shore at river mile 543.1 to provide access and flowage through the slough and lake complex in and above Savanna Bay.

c. Approval is recommended for the zoning established on Federal lands as indicated on the transparent overlays accompanying the base charts of the Master Plan for the pool. By order of the Chief of Engineers, private use areas shall cease to exist after 30 November 1988 and such sites will then be reclassified as to priority and use. However, the concept of a Master Plan allows for flexibility and is subject to continual review and revision. Other areas of priority, therefore, may be reclassified as demand and circumstances dictate prior to the elimination of the private-use category. Any of the existing private-use areas are also subject to reclassification, prior to the date indicated, should a higher priority of use become apparent.

d. No immediate change is planned for the timber management program presently outlined for the pool; however, future programs will be designed to reach assigned management objectives. Although Dutch elm disease has all but eliminated the stand of American elm throughout the pool, no program of removal of affected trees is considered since

costs would be prohibitive. Nor is reforestation of open areas presently contemplated, although future plans may include the propagation of walnut and pecan species in some of the more desirable and suitable areas. Timber management objectives, pending the management study, should be fully pursued through the implementation of sound silvicultural practices.

e. The Pleasant Creek Public Use Area has, in the past, benefitted from dredge disposal material. An existing low-lying area, upstream of the boat ramp, would benefit from additional fill, when available, and create additional recreational space.

f. Shore protection is becoming a necessity at Bulger's Hollow Public Use Area. No river bank exists in the area, and wave action is having a detrimental effect on the flat shoreline upstream of the launching ramp.

3. Suggested future recreation facilities.

a. A large complex of sloughs and islands lies offshore of the Savanna Proving Grounds, administered by the Savanna Ordnance Depot, and extends some 6 miles between the main river channel and the Illinois shore. The area is part of the Savanna Ordnance Military Reservation and as such is restricted. It is suggested that this particular offshore area be opened to the public for fishing and canoe trails, but that no land- or water-based facilities be provided.

b. An access road leads to and along the crown of the levee between Blake's Lake and Upper Brown's Lake inland of the Iowa shore at river mile 545.9, suggested is improvement of the roads and the construction of ramps off the levee to parking areas near the lakes for recreational fishing activities.

c. Float-marked canoe trails are suggested for the slough and lake area inland of the Iowa shoreline between river miles 541.5 and 545.5.

d. The island, on which the Thomson Causeway Public Use Area is located, offers a considerable area for the development of nature trails. Specimens of flora and fauna along such trails could be identified as an educational feature.

The lagoon above the causeway, leading to the island, is a very popular site for winter ice fishing. A stone shelter building is suggested on the island shore, containing a stone fireplace or wood-fired metal stove to serve the public who follow this mode of recreation.

e. A partially virgin sand prairie extends along the Illinois shore from the dam No. 13 embankment to the lower limits of Thomson, largely under Government ownership. The State of Illinois has purchased similar tracts adjoining such Federal holdings. The entire area should, perhaps, be reserved for biological and ecological studies rather than development for general public recreational use.

f. Vantage points for sightseers, artists, and photographers could be located at various points of outstanding scenic views, especially at locations affording a view of the spectacular autumn coloring which draws great numbers of visitors to the river shores each year. Specific locations would need to be established by seasonal surveys.

g. Fishing jetties or shore-anchored floats might be located near road access points for the convenience of sport fishermen. Any fill-type construction would require the approval of hydraulic specialists of the District Office.

h. Of the five public use areas operated by the Corps of Engineers within the pool limits, Pleasant Creek and Bulger's Hollow are sufficiently isolated to require phone facilities in the event of emergencies. Emergency phone numbers should be prominently displayed with such installations.

i. All 5 sites might profit from a sealed bulletin-board type of display with posted information concerning regulations, hunting and fishing laws, vandalism warnings, littering appeal, etc. Identified specimens of the flora and fauna of the area could be featured as an educational service.

j. The sand beach along the river at the Pleasant Creek site is especially attractive to swimmers. Ample space exists for change houses to serve this form of recreation.

k. Public acceptance and usage indicates the need at all sites, except the lock and dam No. 13 area, for lights, water-borne sewage disposal, and hard-surfaced circulation and access roads. Concrete platforms for the picnic tables in the upper Big Slough area would alleviate the shifting sand problem.

l. Trailer-sanitation stations should be provided at Pleasant Creek, Bulger's Hollow, and Thomson Causeway sites.

m. All sites would benefit from planned landscaping and additional shade tree plantings.

n. Postage-free cards might be supplied at all sites to enable visitors to write the District Office for recreation brochures or for comments and suggestions.

SECTION IX
REVIEW OF 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