

ERRATA

Master Plan, Design Memorandum 6B, Saylorville Lake

Page 5. Paragraph 3. 33 CFR 305 has been rescinded.

NDCO-MO

5 NOV 1984

SUBJECT: Master Plan, Design Memorandum 6B, Saylorville Lake, Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa, September 1984.

Commander, Rock Island District, ATTN: NCRPD-F

1. Review of the subject document has been coordinated through this office. The Master Plan for Saylorville Lake is hereby approved subject to the following modifications:

- a. Addition of the enclosed errata sheet which notes the rescindment of 33 CFR 305.
- b. Removal of the last page from Exhibit 3.

2. It would have been desirable to have included the stage frequency-duration curves in this document. Similarly, a narrative could have been developed to address the frequency and duration that various recreational features become unavailable for public use due to flooding. Include these items in the Operation Management Plan for Saylorville Lake.

3. Five copies of this plan have been forwarded to the Office of the Chief of Engineers. Unless a directive to the contrary is received within 30 days, this approval is final.

FOR THE COMMANDER:

CARL C. CABLE
Chief, Construction-Operations
Division

NCRPD-F

6 September 1984

SUBJECT: Master Plan, Design Memorandum 6B, Saylorville Lake,
Multi-Purpose Project, Des Moines River Basin, Des Moines
River, Iowa

Commander, North Central Division
ATTN: NCRPD-MO

1. Transmitted herewith in accordance with ER 1120-2-400 is the subject design memorandum for approval.
2. Appendix 3 contains the environmental documentation concerning recommended actions and implementation of the plan.
3. External distribution of the plan will be made upon approval.

ORIGINAL SIGNED BY

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as

WILLIAM C. BURNS
Colonel, Corps of Engineers
Commanding

CF:
Dist File (PD)(2)

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OD-R (1)
OD-RS (2)
RE-R (1)
ED-DG (1)

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

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DISTRIBUTION LIST



REPLY TO
ATTENTION OF:

NCRPD-F

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

MASTER PLAN
DESIGN MEMORANDUM 6B

SAYLORVILLE LAKE

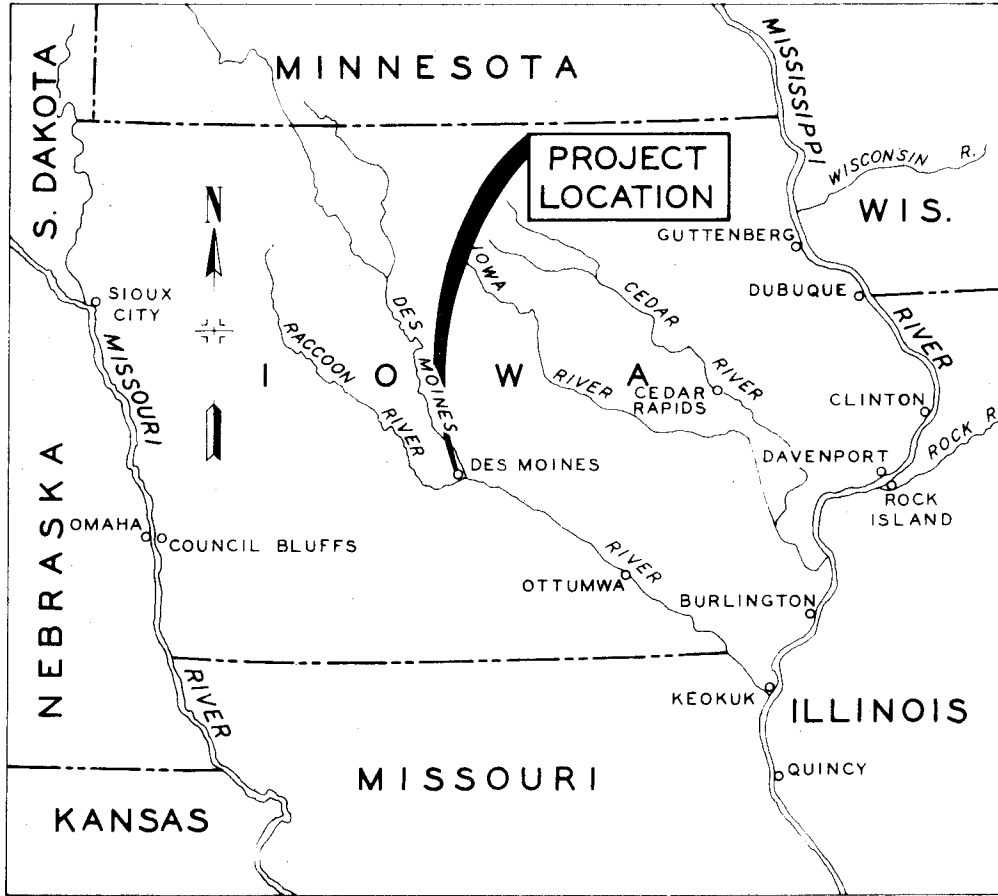
MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

SEPTEMBER 1984

PREFACE

The revised plan to the Saylorville Lake Master Plan 6B has been prepared in accordance with current U.S. Army Corps of Engineers guidelines, policies, and regulations. It incorporates current standards and concepts in resource management and allocation, recreation planning, and environmental enhancement. This document should be viewed as a tool, to guide and direct management and development of the natural resources and the existing and future manmade resources of the project.

SECTION I
INTRODUCTION



VICINITY MAP

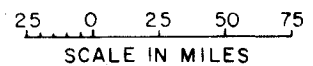


**US Army Corps
of Engineers**
Rock Island District

Saylorville Lake

Master Plan

PROJECT LOCATION



SECTION I - INTRODUCTION

PROJECT AUTHORIZATION

The Saylorville Lake project, located approximately 11 miles northwest of Des Moines, Iowa (see plate 1), was authorized for flood control in the Flood Control Act of 3 July 1958. This authorization was based upon recommendations established in Senate Document No. 9, 85th Congress, 1st Session.

PL 85-500
The development of recreation facilities at Saylorville was initiated at full Federal expense under the direction of Section 4 of the Flood Control Act of 22 December 1944. The development and construction of these facilities was continued at full Federal expense under the authorization of Section 111 of the Water Resources Development Act of 1976.

14-387
In January of 1976 and 1979, the Iowa Natural Resources Council requested that the Corps of Engineers conduct studies to analyze the potential for the reallocation of conservation storage at Saylorville Lake for municipal and industrial water supply. The studies demonstrated that Saylorville Lake has the capability to provide water to meet specified water demands and that benefits would exceed costs. Therefore, water supply was contracted (Contract DACW25-82-C-0053) with the Iowa Natural Resources Council for municipal and industrial water supply. As a result, the Saylorville Lake conservation pool was raised from elevation 833 NGVD* to elevation 836 NGVD. On 13 August 1982, the Chief of Engineers approved the addition of water supply and the contract was approved by the Chief of Engineers and the Secretary of the Army. Section IX of this report contains a discussion addressing the benefits and impacts of water reallocation at Saylorville Lake.

PROJECT PURPOSE

The Saylorville Lake project is a main unit of a comprehensive plan for flood control in the Upper Mississippi River Basin. Lake Red Rock, southeast of Des Moines, and Saylorville Lake are both operated for flood control in the Upper Mississippi River Basin. Both facilities are shown in plate 39. Saylorville Lake, placed in operation in 1977, and the Red Rock project, placed in operation in 1969, provide flood protection to cities, towns, and agricultural lands within the lower Des Moines River Valley and along the Mississippi River below Keokuk, Iowa.

* National Geodetic Vertical Datum of 1929.

In addition to the flood control benefits provided by Saylorville Lake, the project fulfills a multipurpose role by providing low flow augmentation, water supply, recreation, water conservation, and fish and wildlife benefits.

PURPOSE OF THE MASTER PLAN

The revised Saylorville Lake Project Master Plan, hereafter referred to as the "Master Plan," replaces the Master Plan approved on 4 February 1974. The purpose of this revised Master Plan is to provide a comprehensive guide to the sensitive, wise, and orderly use, development, and management of the natural and manmade resources of the Saylorville Lake project.

In keeping with Corps planning policy, this Master Plan is a working document and manual which contains information, analyses, and guidelines for the administration of all land and water areas of the project. It will be referred to frequently by Division, District, and Field Operations personnel. Subsequent aspects of planning, development, and management for the overall project and for specific portions of the project, including leases, will be consistent with the zoning and resource use objectives presented in this Master Plan. The Master Plan is both flexible and conceptual by design, and is subject to revision, as indicated by changing needs and conditions.

SCOPE

The Master Plan identifies and evaluates project resources in order to develop policies that allow use, development, and management for their best use. Evaluation is focused on project lands and their scenic, cultural, recreational, fish and wildlife, and other natural and manmade resource values. Detailed discussions of the primary project purposes of flood control, low flow augmentation, and water supply, as well as the operation and maintenance of structures associated with these purposes, are outside the scope of this study. The Master Plan is, however, based on an understanding of the operation of the project. Accordingly, management recommendations and proposed improvements relative to public use and natural resources management are formulated to be in harmony with primary project purposes.

PLAN FORMULATION

The planning process of this Master Plan involves:

- a. An assumption or determination of objectives to be sought.
- b. Formulation of the plan to be followed.
- c. Execution of the plan.

This process was initiated with the determination that the Saylorville Lake Project Master Plan should be revised and updated to serve as an operating manual for the management and development of the project lands. The process of plan formulation, which constitutes the second step of the overall master plan process, has utilized a technical and creative effort involving four steps:

a. Step one involved research, collection, and organization of information concerning the nature of the region, of the project in its entirety, and of individual project sites. Research included an examination of regional and project resource potentials and capabilities, social and institutional constraints, and other factors influencing the project.

b. Step two involves the formulation and analysis of alternative resource use options and determination of which alternatives appear economically, politically, and socially acceptable.

c. Step three formulates alternatives which produce the preliminary and final forms of the resource use plan. This step includes zoning of project lands and articulating resource use objectives and corresponding development and management recommendations which will serve as a guide to resource use.

d. Step four deals with the formal drafting of the plan in written and graphic form, as well as the development of a course of action for implementation of recommendations.

There is an ongoing process of reevaluation of information and previous findings throughout the process of plan formulation with a resultant overlapping of planning to assure that, as far as practicable, decisions are based on findings that represent an accurate and balanced view of the facts.

The implementation of this plan is primarily the role of the park manager. Coordination and integration are required to keep separate agencies and officials from proceeding with policies that work at cross-purposes. Care must be taken to emphasize action and results. Successful administration of the plan calls for capable and understanding administration, the cooperation of various office elements of the Rock Island District, the cooperation of officials in other agencies and other levels of Government, popular interest in the plan and its results, and continued political and public financial support.

CURRENT POLICY

The construction of recreation facilities at Saylorville Lake was initially implemented under the authority of Section 4 of the Flood Control Act of 1944 (as amended). These facilities continued to be constructed at full Government expense under the authority of Section 111 of the Water Resource Development Act of 1976 (Public Law 94-587).

Congressional add-on appropriations made in Fiscal Year 1984 and Fiscal Year 1985 further indicate that construction of any additional recreation facilities at Saylorville should be done at full Federal expense. However, additional recreation development may also be pursued under cost-sharing provisions of P.L. 89-72 if non-Federal sponsors become available. As of the date of this publication, the Corps of Engineers has been unable to obtain cost-sharing agreements for any new recreational development at Saylorville Lake proper (dam to headwater area).

At the present time, Saylorville Lake is not classified as a completed project. Annual appropriations continue to be allotted for initial construction of the project by Congress. When these appropriations are terminated, the Saylorville Lake project will be classified as completed.

Recreational development proposed in this Master Plan identifies the capabilities of project resources for meeting recognized recreation demand. The development proposed in the plan may not be completed within the proposed time frame of this Master Plan. However, the plan is a legitimate planning and management tool for existing and future recreation developments.

The Iowa Conservation Commission and the city of Des Moines have signed cost-sharing agreements for new recreation development within the Saylorville Downstream Corridor. These contracts were approved by the Secretary of the Army on 16 June 1983. The location of the corridor area is displayed on plates 45 and 46A contained in Section VI. The facilities and cost-sharing agreements are also discussed in Section VI of this report.

Existing Corps facilities will be operated and maintained to provide a high quality recreation experience to visitors. Rigid control of facility loading in regard to carrying capacity is enforced in the interest of public health and safety. Such principles will also be required of agencies which lease project lands for recreational purposes.

In addition to recreation, other project resource management responsibilities include fish and wildlife conservation, archaeology, forestry, and aesthetics. These responsibilities have been enacted at all Federal water resource projects through various Federal laws and regulations.

The Fish and Wildlife Coordination Act of 1958 states that fish and wildlife conservation shall receive equal consideration with other project purpose. At Saylorville Lake, the fish and wildlife management program involves (but is not limited to):

- a. Leasing 11,787 acres of Corps fee-owned lands to the Iowa Conservation Commission for the development, conservation, and management of wildlife resources.

- b. Implementing a forestry management program, which is oriented towards the preservation, management, and development of habitat required by various wildlife species.

c. Preserving and developing grasslands, prairies, and restored prairie that will provide food, cover, and habitat to various wildlife species.

d. Raising the pool elevation during the fall months (2 feet) for migrating waterfowl purposes.

District responsibilities for treating archaeological and historical properties are based upon the National Historic Preservation Act of 1966 (as amended), the Archaeological and Historical Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, and Executive Order 11593. Further guidance is provided in the implementing regulations from Title 36 of the Code of Federal Regulations (CFR) (Parts 60-66 and 800), and (33 CFR 305. *HAS BEEN RESCINDED*)

The Cultural Resources Management (CRM) program at Saylorville Lake involves the identification (through surveys), evaluation (through testing, documentary research, and architectural recording), and protection (preservation or mitigation) of significant cultural resources. Criteria of significance and effect for National Register property are applied in accordance with Title 36 of the Code of Federal Regulations, 800. The CRM program also requires coordination with the Iowa State Historic Preservation Officer and the Advisory Council on Historic Preservation (as appropriate) to determine research orientations to meet compliance requirements when investigations are necessary for development planning. Effective cultural resource management also requires enforcement of regulations prohibiting the removal or excavation of cultural remains without or in violation of an acquisition permit and authorization from the District and the Iowa State Historic Preservation Officer. The sale and interstate transportation of cultural resources obtained in violation of State or local law from Saylorville Lake is prohibited.

Public Law 86-717 of 1960 states that when practical, timber resource management should be carried out on Corps reservoir land. At Saylorville Lake, the forest management is oriented towards the preservation and management of wildlife habitat, soil stabilization, and the enhancement of project aesthetics and recreation.

APPLICATION OF PUBLIC LAWS

Exhibit 2 contains a listing and brief explanation of the public laws applicable to Saylorville Lake.

PRIOR PERTINENT DESIGN MEMORANDA

Applicable prior pertinent design memoranda are listed in exhibit 1 of this report.

SECTION II
PROJECT DESCRIPTION

SECTION II - PROJECT DESCRIPTION

LOCATION OF SAYLORVILLE LAKE

SAYLORVILLE LAKE

Saylorville Lake is located in central Iowa, within the boundaries of Polk, Dallas, and Boone Counties. The reservoir dam is located in Polk County, and is oriented in an east-west direction within sections 29, 30, 31, and 32, Township 80 North, Range 24 West, and the spillway is located in sections 25 and 36, Township 80 North, Range 25 West, and sections 30 and 31, Township 80 North, Range 24 West. Des Moines, the State Capitol, is located approximately 11 miles southeast of the dam. The city of Omaha, Nebraska, is approximately 120 miles west of the project area, and Chicago, Illinois, is located approximately 320 miles to its east. Plate 1 provides additional information.

BIG CREEK LAKE

Big Creek Lake is located approximately 1 mile north of Polk City in Polk County, Iowa. This lake was built as part of the Saylorville Lake project to provide flood protection to Polk City, Iowa. Briefly, the project consists of a barrier dam near the mouth of Big Creek which excludes reservoir waters from the area, a diversion dam across Big Creek upstream from Polk City, and a diversion channel (spillway) for Big Creek in the ridge separating Big Creek Valley from the Saylorville Reservoir. In addition, a pumping plant at the barrier dam was designed to remove interior drainage from the area between the two dams. Through a cooperative agreement with the State of Iowa, Big Creek Lake and adjacent lands have been developed into a State Park known as "Big Creek State Park." Please refer to plate 30 and section IV for additional information.

SAYLORVILLE DOWNSTREAM CORRIDOR

The Saylorville Downstream Corridor land is located between the downstream side of the Saylorville Dam and the Sixth Avenue bridge in Des Moines, Iowa. The land adjacent to the Des Moines River within this area was acquired for the purpose of conveying releases greater than channel capacity from the Saylorville Dam. The lands within the corridor will be leased to the State of Iowa and the city of Des Moines under a cost-sharing agreement (PL 89-72) for the development of recreation facilities and wildlife management purposes. Plates 45, 46A, 47A, and 48A display the corridor area and section VI contains additional information concerning the area. A detailed

discussion of the corridor area can be found in the Saylorville Lake Downstream Corridor Recreation Master Plan (Supplement No. 2 to Design Memorandum No. 6B) of May 1981. Supplement No. 2 is considered to be a current document. Therefore, Supplement No. 2 and required updates will be incorporated into the next revision of the Saylorville Lake Master Plan.

LOCATION OF RELATED PROJECTS

DES MOINES FLOOD CONTROL PROJECT

This project, authorized by the 1944 Flood Control Act, protects portions of the city of Des Moines from Des Moines and Raccoon River floods up to a frequency of once in 100 years. It includes a system of levees and flood-walls, bridge raises, and the repair and provision of gates on existing sewage outlets. The project was completed in 1971.

OTTUMWA FLOOD CONTROL PROJECT

The Federal portion of this project consisted of improvement of the discharge efficiency of the city sewer system by providing additional gated openings in the sewer, through which high flows would discharge directly into the Des Moines River. The project was completed in 1977.

LAKE RED ROCK

The Red Rock Dam and Lake Red Rock project on the Des Moines River lies mainly in Marion County, but extends into Jasper, Warren, and Polk Counties. The dam is approximately 60 miles downstream from the city of Des Moines. The project is a unit of the comprehensive plan for flood control and other purposes in the Upper Mississippi River region. The project was authorized under the General Authorization contained in the Flood Control Act approved 28 June 1938.

DES MOINES RIVER BASIN - EMERGENCY BANK PROTECTION

Emergency bank protection work has been done in the Des Moines River Basin under authority of Section 14 of the 1946 Flood Control Act, as amended. In 1955, a bank protection project was completed to protect the water supply facilities of the city of Boone, which are located on an island in the Des Moines River about 3 miles northwest of the city.

MAJOR RECREATION FACILITIES ADJACENT TO THE SAYLORVILLE PROJECT

JESTER COUNTY PARK

Jester County Park is located in the northwest corner of Polk County near the northwest end of the conservation pool as shown on plate 32. The park is owned and operated by the Polk County Conservation Board. Section IX of this report contains a discussion addressing the impacts of Jester County Park resulting from water reallocation in the reservoir.

LEDGES STATE PARK

Ledges State Park is located in the southeast corner of Boone County along the east shoreline of the Saylorville Lake headwater area. The facility is approximately 25 miles north of Des Moines. It is owned and operated by the Iowa Conservation Commission. The U.S. Army Corps of Engineers does possess a flowage easement for temporary inundation of this land. Section IX of this report contains a discussion addressing the impacts on Ledges State Park resulting from water reallocation in the reservoir area.

PROJECT SETTING

Saylorville Lake is one of the larger (5,950 acres at elevation 836 NGVD) lakes in the State of Iowa. The lake lies in the lower elevations of a midwestern upper plain region. This type of landform is typical in this portion of central Iowa. The reservoir is complemented by a combination of broad wide flood plains, moderately rolling hills, and upland areas. The rolling hills are usually vegetated with upland forest species (oak, hickory) while the broad flood plains and upland areas are vegetated with grass and weed species common to the area or are utilized for row crop farming.

Recreation associated with the lake and its resources is a major reason for the project's popularity and acceptance within the Des Moines area. The lake is strategically located approximately 11 miles northwest of Des Moines - a metropolitan area with a population of approximately 338,000 (1980 census).

Due to the close proximity of the facility to the metropolitan area, the lack of additional water bodies that could be utilized for recreational purposes in the nearby area, and the increasing popularity in water oriented recreational activities, the lake has become a valuable and heavily used recreation resource within the Des Moines area.

Additional information pertaining to the project resources, recreational use, and setting, is presented in sections IV and V of this report.

PROJECT DATA

PROJECT LANDS

The U.S. Army Corps of Engineers, Rock Island District, fee title real estate interest at Saylorville Lake consists of 25,515* acres of land which includes 5,950 surface acres of water at 836 NGVD. The fee title real estate consists of numerous parcels of land situated along the left and right shoreline of Saylorville Lake in Polk, Dallas, and Boone Counties. In addition, the District has obtained 1,392 acres of flowage easements.

At the time of writing, there are approximately 14,014 acres of land leased for recreational and fish and wildlife purposes at Saylorville Lake. The largest lease is to the Iowa Conservation Commission (ICC) for the administration of 11,787 acres of fee-owned land and water for the purpose of development, conservation, and management of wildlife resources.

The Corps of Engineers has acquired another 2,336 acres of land in the Saylorville Downstream Corridor between the downstream side of Saylorville Dam and the Sixth Avenue bridge in Des Moines. This land will be leased to the city of Des Moines for recreation facilities and to the Iowa Conservation Commission for recreation facilities and wildlife management.

Plates 2, 45, 46, and 47 and table 58 provide additional information. The North Central Division, Rock Island Real Estate Field Office, located in the Rock Island District office, should be consulted regarding the stipulations contained in the various lease agreements.

RESERVOIR SHORELINE

At a conservation pool level of 836 NGVD, Saylorville Lake has approximately 43 miles of shoreline. Forty-two miles of the shoreline are held in fee title by the U.S. Army Corps of Engineers, with the State of Iowa and Polk County owning approximately 1 mile of shoreline.

CLIMATE

The climate of the Des Moines region is characterized by cold winters and hot summers. The city has a mean annual temperature of 49 degrees F. Precipitation is concentrated during the summer season. May, June, July, and August receive 52 percent of the annual precipitation with June being the wettest month. Des Moines averages 31 inches of precipitation annually. The average number of days per year with precipitation of .01 inch or more is 106.

* Includes 2,336 acres acquired for the Saylorville Downstream Corridor.

Wind data for Des Moines reveal a tendency for winds from the southerly quadrants to prevail. Southerly winds are even more prevalent between June and September when most outdoor recreation takes place. The average wind speed for the area is approximately 11 miles per hour.

The use of Saylorville Lake for both educational and recreational purposes is greatly influenced by the weather patterns and climatic characteristics of the area. Factors determining the length of the effective use of the summer season include: mean temperature, prevailing wind direction, number of days of rainfall, and micro-climate characteristics. Analysis of State and local recreation-use data indicates that more than 75 percent of the total days of participation take place in a 17-week summer period from mid-May to late September.

In Iowa, the mean temperature between mid-May and late September is 69 degrees F. During the summer months, prevailing winds are generally from the south and southwest at velocities of 10 to 15 mi/h. Normal monthly precipitation during this period generally ranges from 3.06 inches to 4.87 inches. June is the wettest month of the effective use period. The severe storms of this period primarily come from the northwest, but occasionally from the northeast.

Localized micro-climate is influenced by weather patterns, vegetation, proximity to water, open space, or barriers to air movement (including vegetative windbreaks and topography). Therefore, the careful consideration of existing micro-climate differences in planning, design, and management has maximized the use of favorable situations. In recreation areas, trees will be planted to provide shade from the hot summer sun.

Since some winter recreation activity will take place in the form of snowmobiling, cross-country skiing, ice skating, ice fishing, sledding, ice boating, and winter camping, it is significant to note that the area averages nearly 34 inches of snowfall between November and April. Most of the larger snowfalls occur in January and March, with accumulations in excess of 7 inches. However, a continuous snow cover does not normally persist for more than one month.

Temperature records have been maintained for approximately the same periods as the rainfall records. Observed temperatures for the area have ranged between extremes of -24°F and +105°F. The yearly mean temperature is approximately 49°F; the average for July, August, and September is about 73°F; and the average for December, January, and February is about 22°F.

HYDROLOGY

Approximately 360 miles in length, the Des Moines River watershed begins in southwestern Minnesota and extends across central Iowa to Iowa's southeast corner. The watershed area above Saylorville Dam is 5,823 square miles.

The Des Moines River Basin lies in a glaciated area characterized by moderate relief. In the upper area of the basin above Jackson, Minnesota, the valley is poorly defined, with numerous lakes, ponds, and marshy areas in the drainage network. Runoff rates, even from intense rainfalls, are very low due to flow modification by natural storage in this area. In the reach between Jackson, Minnesota, and Des Moines, Iowa, the uplands have immature topography. The flood plain of the Des Moines River is well defined and bordered with rounded bluffs.

The average width of the Des Moines River Valley is about 4 miles. Morphometry of the valley is steep and narrow above the confluence of the Des Moines and Raccoon Rivers, but the lack of resistant bedrock and the mature stream dissection in the southern part of the river valley have resulted in wider, deeper, rounded bluffs. The stream gradient in the area of the project is about 2 to 3 feet per mile. Average annual runoff is approximately 7 inches. Streamflow is characteristically variable. With the existing reservoir low-flow augmentation plan, a true minimum release of 200 ft³/s is maintained for water quality purposes. The minimum release of 200 ft³/s continued to be maintained with approximately the same reliability when the water supply contract was implemented (October 1983). Low flows are usually either in August and September or in January and February.

RESERVOIR OPERATIONS

The operation of Saylorville Lake is dependent on the availability of hydrological and meteorological data from both daily operation and long-range forecasts within the Des Moines River Basin. This information directly affects Lake Red Rock's operation, as well as the anticipated hydrologic conditions on the Des Moines River between Saylorville Dam and Red Rock Dam, below Red Rock Dam and on the Mississippi River. The Regulation Section of the Rock Island District maintains a continuing record of the hydrologic conditions so that the Red Rock and Saylorville Lakes can be operated in tandem in an optimum manner with regard to all the affected river and damage centers.

A reservoir regulation plan for Saylorville Dam and Lake was approved by the North Central Division of the U.S. Army Corps of Engineers on 13 May 1977. The regulation plan is found in appendix B to the Master Reservoir Regulation Manual for the Des Moines River, dated 1 August 1976. The Regulation Plan is being updated at this writing. A brief description of the Saylorville Lake operation in relationship to the Lake Red Rock operation is presented in the following paragraph.

The individual reservoir operations for Saylorville and Red Rock Lakes are determined as follows: (1) the release from Red Rock (downstream reservoir) is calculated from the downstream constraints, (2) the release from Saylorville which will balance Lake Red Rock's storage is determined, (3) the Saylorville release for controls downstream of Saylorville is computed, and (4) the critical Saylorville release is selected. Once the releases are determined, the pool elevations and modified flows are determined.

DROUGHT CONTINGENCY PLAN

Guidelines for the operation of the reservoir during drought periods are contained in the Revised Master Reservoir Regulation Manual for Saylorville Lake of 1983. The purpose of the guidelines is to determine the best rationing schedule to conserve water during a drought period, and to establish coordination procedures between the State of Iowa and the Corps of Engineers so that joint State-Federal actions can be taken to mitigate the effects of a drought.

PROJECT STRUCTURES AND ENGINEERING FEATURES

Significant project operational structures and related engineering features are summarized in table 1.

TABLE 1

Saylorville Lake Project Data

	<u>General</u>
Other Names for Project	Saylorville Reservoir, Saylorville Dam
Location of Dam	Saylorville, Iowa - on Des Moines River Mile 213.7 above mouth, latitude 41° 42N, Sections 29, 30, 31, 32, Township 80 North, Range 24 West of the 5th Principal Meridian, Polk County, Iowa
Authorized Project Purpose	Flood Control
Authority	Public Law 85-500, 85th Congress
Drainage Area Above Dam	5,823 square miles
Closure Date	2 July 1975
Guide Taking Line	892.0 NGVD
Total Project Fee Lands	25,515 acres
Time of Water Travel	From Headwaters to Dam, 9 days From Dam to Red Rock Dam, 2 days
Maximum Discharge of Record Near Damsite	60,000 ft ³ /s at Saylorville - June 1954

TABLE 1 (Cont'd)

Channel Capacity Below Dam	8,000 ft ³ /s
Estimated Total Construction Cost	\$169,709,000 (Oct 1981)
Conservation Pool Elevation	836.0 NGVD
Flood Pool Elevation	890.0 NGVD
Fall Wildlife Management Pool Elevation (if hydraulic conditions are permissible)	838.0 NGVD
Operating Agency	Engineering and Operations Division Rock Island District
Regulating Agency	Regulation Section, Hydraulics Branch, Engineering Division, Rock Island District
Special Project Features	Big Creek Remedial Works, Downstream Corridor

Dam and Embankment

Type	Rolled Earthfill
Fill Quantity	7.6 Million yd ³
Crest Elevation	915.5 NGVD
Top Width	44 feet
Maximum Base Width	1,125 feet
Length	6,750 feet
Maximum Height Above Streambed	125 feet
Freeboard	5 feet
Date of Closure	November 1975
Date of Operation	April 1977

TABLE 1 (Cont'd)

<u>Pool</u>	<u>Reservoir</u>			
	<u>Capacity (Acre-Feet)</u>	<u>Elevations (NGVD)</u>	<u>Inches of Runoff</u>	<u>Area (Top of Pool) (Acres)</u>
Flood Control				
Capacity, 890 NGVD	602,000	836-890	1.94	16,700
Conservation, 836 NGVD	90,000	836	0.33	5,950
Fall Conservation, 838 NGVD	102,000	838	0.38	6,210
Length at 890 NGVD		54 River miles		
Length at 836 NGVD		24 River miles		
Maximum Width at 836 NGVD		6,730 feet		
Maximum Width at 890 NGVD		8,200 feet		

Spillway

Location	Right (west) end of earth dam
Type	Chute spillway with uncontrolled concrete weir
Length	430 feet
Crest Elevation	884 NGVD

Outlet Structure

Location	Through the base of the earth dam
Number	1
Type	Circular concrete conduit with intake structure and control tower
Size	22 feet diameter
Gates	3 electrically operated gates 8' x 19'
Discharge Capacity of Outlet Works:	
Elevation 836.0 NGVD	13,200 ft ³ /s
Elevation 890.0 NGVD	22,000 ft ³ /s

TABLE 1 (Cont'd)

Hydrology

Climate	Extreme temperature variations
One-inch Runoff	Equals 310,560 acre-feet
Flood Seasons	Spring and summer
Low Flow Season	Fall and winter
Unmodified Minimum Average Daily Flow and Date of Occurrence	24 ft ³ /s (29 January 1930)
Unmodified Minimum Average Monthly Flow and Date	35 ft ³ /s (January 1940)
Unmodified Minimum Average Annual Flow and Year	158 ft ³ /s (1931)
Average Annual Flow	2,128 ft ³ /s (58 years of record)
Maximum Average Annual Flow and Year	5,012 ft ³ /s (1951)
Maximum Average Monthly Flow and Date	23,110 ft ³ /s (April 1965)
Maximum Average Daily Flow and Date	60,000 ft ³ /s (24 June 1954)
Maximum Instantaneous Flow and Date	60,000 ft ³ /s (24 June 1954)
Name and Location of Key Streamflow Stations	Fort Dodge, Webster City, Stratford, Saylorville, SE 14th Street, at Des Moines on Des Moines River and Van Meter on Raccoon River and Grimes on Beaver Creek
Type of Hydrometeorologic Data Recorded at Damsite	Pool and tailwater stage, precipitation, temperature, and wind velocity
Number Precipitation Stations Used in Hydrologic Forecasting	12 rainfall stations
Number of Sediment Ranges	84 category A and B ranges
Ice Breakup	March - April

SECTION III
OPERATING PROJECTS - STATUS

SECTION III - OPERATING PROJECTS - STATUS

GENERAL

To provide the greatest sustained benefit to the public and the project, development and management options must be weighed against physical, economic, environmental, social, and institutional factors. At Saylorville Lake, these factors include the project land base, adjacent land use and ownership, project access, existing and newly assigned project purposes, (i.e., reallocation of reservoir storage), reservoir plan of operation, market area socioeconomic characteristics, social and institutional constraints, competing water resource projects and public use development, market area recreation demand, water quality, threatened and endangered species, and Federal cost-sharing requirements. All of these factors are contained within the framework of the legislative authorizations under which the Saylorville Lake project resources are used, developed, and managed.

In order to provide the greatest sustained benefit to the public and the project, planners and administrators will continue to coordinate their efforts in order to:

- . Maintain and upgrade the natural resources of the project,
- . Protect the public investment in existing recreation areas,
- . Make the best use of recreation areas, and
- . Maintain and upgrade the project's fish and wildlife habitat.

PROJECT LAND BASE

The Corps fee title real estate within the project area is 25,515 acres of land. The previous figure includes 2,336 acres of land in the Saylorville Downstream Corridor and 5,950 acres of land inundated by water at elevation 836 NGVD in the upstream side of the reservoir dam. Approximately 98 percent of the 43-mile shoreline (of the reservoir) at elevation 836 NGVD is owned in fee by the U.S. Army Corps of Engineers. The other 2 percent is owned in fee by Polk County (Jester County Park) and the State of Iowa (Ledges State Park). The lands and shoreline on the upstream side of the reservoir are distributed in parcels along the left and right shoreline of the lake in Polk, Dallas, and Boone Counties. The lands and streambanks (approximately 18 miles) in the Saylorville Downstream Corridor area are distributed in parcels along the left and right streambanks of the Des Moines River within Polk County. These factors enhance the Corps' ability to provide opportunities to satisfy regional recreational needs, to preserve and protect shoreline amenities, and to protect and enhance fish and wildlife habitat.

ADJACENT LAND USE AND OWNERSHIP

Neighboring land use and ownership can influence the development and management of project lands in a number of ways. In some cases, adjacent uses can have a positive or negative influence. For example, highway traffic near or adjacent to existing and/or potential recreation sites can influence the value and enjoyment of the outdoor recreation experience. These audio and visual impacts can be strong constraints in the planning and siting of campgrounds, picnic areas, and other use areas. In addition, noise and traffic generated by public recreation sites can have a negative impact on such things as adjacent residential development.

Offsite influences can be minimized or eliminated if considered ahead of time. Zoning, ownership, and current use plans of adjacent lands must be known before development of potential recreation areas, as well as adjacent land use changes or proposals which might impact existing recreational and wildlife resources. Responsible State, county, and local planning officials should be alerted when such proposals might endanger existing project resources or propose improvements.

RECREATION FACILITIES GENERAL

The Saylorville Lake project has 24 recreation areas (see table 2): 17 owned and administered by the U.S. Army Corps of Engineers (COE), 2 leased to and administered by county conservation boards, 2 leased to and administered by the Iowa Conservation Commission, 1 leased and administered by a local Government entity, 1 leased and administered by a county historical society, and 1 leased and administered by a private concessionaire. Existing COE facilities, State, and county administered facilities, and future facilities to be administered by the Corps are described in sections IV, V, and VI of this report.

OPERATION AND MAINTENANCE EXPENSES

The recreation, operation, and maintenance expenses for the project are as follows:

<u>Fiscal Year</u>	<u>Recreation O&M</u>	<u>Resource O&M</u>	<u>Code 710</u>	<u>Fee Collection*</u>
1979	\$ 344,000	\$ 20,000	0	\$ 8,000
1980	\$ 528,000	\$ 19,000	0	\$ 0
1981	\$ 798,000	\$ 125,000	0	\$ 44,000

* A portion of money generated by recreation user fees which is extracted from the general fund for the maintenance of fee areas at Saylorville Lake.

CONTRACT CONSTRUCTION COST

Construction costs for the various recreation facilities at Saylorville Lake are listed below:

<u>Recreation Facility</u>	<u>Amount (Completion Date)</u>
Lakeview	\$912,888 (May 1978)
Walnut Ridge	\$685,426 (May 1983)
Acorn Valley	\$1,008,983 (August 1982)
Cottonwood	\$1,553,354 (August 1982)
Prairie Flower	\$1,515,412 (May 1980)
Cherry Glen	
Picnic Area	\$759,730 (May 1979)
Campground	\$1,155,281 (June 1977)
Boat Launch	\$375,489 (June 1977)
Cherry Glen Total	<u>\$2,290,500</u>
Oak Grove	
Picnic Area	\$170,595 (May 1979)
Swimming Beach	\$275,780 (May 1978)
Oak Grove Total	<u>\$446,375</u>
Bob Shetler	
Bob Shetler Campground	\$588,664 (May 1979)
Fisherman and Tailwater	\$128,251 (May 1978)
Bob Shetler Total	<u>\$716,915</u>
Satellite Areas	
River Bend	\$81,389 (June 1977)
Dogwood	\$78,076 (June 1977)
Laurie Park	\$68,599 (June 1977)
Satellite Total	<u>\$228,064</u>
Visitors Center	\$582,805 (May 1976)
Saylorville Marina	\$262,661 (May 1977)
Downstream Corridor	
Federal	\$868,619
State	\$401,794
City	\$458,825
Corridor Total	<u>\$1,729,238 (under construction)</u>
TOTAL	\$11,932,621

TABLE 2

Saylorville Lake Recreation Development - Existing

Corps of Engineers - Rock Island District

Cherry Glen Recreation Area
Cherry Glen Picnic Ground
Cherry Glen Boat Launch
Cherry Glen Campground
Oak Grove Recreation Area
Oak Grove Beach
Oak Grove Picnic Ground
Prairie Flower Recreation Area
Bob Shetler Recreation Area
Class A Campground
Class B Campground and Fishing Area
Acorn Valley Recreation Area
Cottonwood Recreation Area
Lakeview Recreation Area
Satellite Areas
Laurie Park Boat Launch
Dogwood Boat Launch
River Bend Boat Launch
Saylorville Marina Launch Ramp
Saylorville Lake Visitors Center/Visitors Center Annex
Walnut Ridge Recreation Area

Iowa Conservation Commission

Big Creek State Park and Recreation Area
Saylorville Wildlife Management Area

Boone County Conservation Board

Swede Point Park

Polk County Conservation Board

Jester County Park
S&V Bridge Boat Launch

Polk City

Recreation Sports Complex

Boone County Historical Society

Kate Shelley Memorial Park

Private Concessionaire

Saylorville Marina

COE RECREATION NAME CHANGES

The 1973 Saylorville Lake Master Plan grouped the major COE recreation facilities at the project into four numbered areas with each facility in a given numbered area having a different name. In the spring of 1979, the area number system was eliminated and seven facilities were given different names. The change was made to end public confusion about which specific recreation facilities were in which numbered areas. The use of names rather than numbers also simplified the verbage required on highway directional signs, entrance signs, and at intersections within the recreation areas. Table 3 reflects the changes previously discussed.

TABLE 3

COE Recreation Name Changes at Saylorville Lake

<u>Old Number and Name System</u>	<u>New System</u>
Recreation Area 1 Cherry Glen Campground Sourwood Group Picnic Ground Lake Bluff Picnic Ground Windy Harbor Boat Ramp	Cherry Glen Recreation Area Cherry Glen Campground Cherry Glen Picnic Ground Cherry Glen Picnic Ground Cherry Glen Boat Ramp
Recreation Area II Oak Grove Picnic Ground McBride Beach Locust Hill Group Campground Prairie Flower Campground	Oak Grove Recreation Area Oak Grove Picnic Ground Oak Grove Beach Prairie Flower Recreation Area Prairie Flower Group Campground <u>1/</u> Prairie Flower Campground
Recreation Area III River Valley Campground Willowwood Picnic Ground Cottonwood Picnic Ground	Bob Shetler Recreation Area Bob Shetler Campground Bob Shetler Picnic Area <u>1/</u> Cottonwood Picnic Ground
Recreation Area IV Acorn Valley Picnic Ground Walnut Ridge Picnic Ground Laurie Park Picnic Ground Dogwood Picnic Ground River Bend Picnic Ground Pole Cat Hill <u>2/</u> ←	Acorn Valley Campground Walnut Ridge Recreation Area Laurie Park Boat Ramp Dogwood Boat Ramp River Bend Boat Ramp

*What happened
to Pole Cat Hill?*

1/ Undeveloped area.

2/ Proposed area eliminated from future consideration, see Section VI, Trails.

SECTION IV

ENVIRONMENTAL AND RECREATION
RESOURCES OF THE PROJECT AREA

SECTION IV - ENVIRONMENTAL AND RECREATION
RESOURCES OF THE PROJECT AREA

GEOLOGY

The geology of the Saylorville Reservoir area is primarily defined by a number of glacial events involving the erosion and depositing of material which left a complex sequence of deposits. While a particular deposit may not be present over the entire area, there is a systematic sequence and distribution of deposits which can be recognized.

PLEISTOCENE PERIOD

The typical sequence of pleistocene deposits is shown in figure 1. The youngest deposits in the uplands are Wisconsinan age glacial deposits of the Des Moines lobe. These deposits are predominantly glacial till (a poorly sorted mixture of cobbles, sand, silt, and clay), although interbedded lenses of sorted melt water deposits (predominantly sand, silt, or gravel) may occur within the till. Initial advance of the Des Moines lobe into the Saylorville area probably occurred about 14,000 years before present (B.P.), and this movement was completed about 13,000 B.P. Typical thickness values for the Des Moines lobe deposits in the uplands around Saylorville range from 45 to 60 feet.

Directly underlying the Des Moines lobe deposit in the uplands is Wisconsinan age loess, a wind-deposited (or eolian) silt. It is generally massive. In the Saylorville area, the Wisconsinan age loess is typically 5 to 10 feet thick, although it may be absent in places as a result of erosion, or may locally reach as much as 20 feet in thickness. The Wisconsinan age loess was deposited during the interval from 29,000 B.P. to 14,000 B.P.

Underlying the loess in the uplands is a complex sequence of Pre-Wisconsinan sediments. This sequence may include a number of Pre-Illinoian age glacial tills, separated by buried soils or various fluvial deposits (stratified sands, gravels, etc.). The Pre-Illinoian tills may also contain interbedded, stratified melt water deposits. Unfortunately, the details of this sequence in the upstream Saylorville Reservoir area are not known because of poor exposure and little subsurface data.

The Pre-Illinoian age tills were previously referred to as Kansan and Nebraskan age tills. In the Saylorville area, the thickness of the Pre-Wisconsinan sediments typically ranges between 10 and 50 feet. Figure 2 shows a typical sequence of deposits in exposures along the Des Moines reach just northwest of Boone, Iowa, which is upriver from the Saylorville Reservoir.

The complex sequence of Pre-Wisconsinan deposits is, in turn, underlain by Pennsylvanian age bedrock. In the Saylorville area, the uppermost bedrock is the Pennsylvanian age Cherokee Group. The Cherokee Group consists of cyclical deposits of carbonaceous shale, clay, siltstone, sandstone, and coal, with minor, but persistent, limestone beds.

HOLOCENE PERIOD

At the close of the Pleistocene period, about 10,500 B.P., the valley floor was probably occupied by a downcutting meandering stream which flowed in a narrow meanderbelt along the eastern valley wall. Approximately 8,000 B.P., the meanderbelt moved away from the eastern valley wall. East flowing tributary valleys were actively downcut and carried large volumes of sediment to the Des Moines valley where it was dropped to decreased gradient; thus, alluvial fans began to develop, burying the earliest high terrace sediments and merging with contemporaneous high terrace overbank deposits.

During the early and middle Holocene period, the meanderbelt continued to migrate across the valley floor, destroying various terraces in the process. There may have been one or two types of river channels during this period. About 8,000 B.P., the river might have had a braided channel, owing to the high sediment load that emerged from smaller side valley tributaries. A substantial portion of the high terrace could have been found over most of the valley floor. By about 5,000 B.P., the river had formed a meanderbelt against the west valley wall where its westward migration was halted by coarse bedrock deposits along the valley margin.

In the beginning of the late Holocene period (about 4,000 B.P.), the Des Moines River began a minor downcutting episode and a new meanderbelt about 1 to 1.5 meters below the level of the early Holocene flood plain (the current high terrace). The eastern margin of this new flood plain was in the position indicated by the eastern border of the intermediate terrace today. As this new meanderbelt was developing, precipitation increased until it was comparable to amounts in the area today. Trees increased in abundance and oak-hickory forests became established on the steep, east- and west-facing walls. Prairie remained in many portions of the low and high terrace areas. Tributary valleys stabilized, and alluvial fan development had virtually ceased by around 2,500 B.P.

Sometime shortly after 1,000 B.P., the Des Moines River occupied several large meanders which were abandoned by the mid-19th century. These became the new flood plain or low terrace which was covered with bottom land forest and flooded on a regular basis.

BEDROCK STRATIGRAPHY

The bedrock of the entire reservoir area is sedimentary rock of the Cherokee Group of the Des Moines Series which is lower Pennsylvanian in age. The Cherokee Group is composed of cyclic deposits of a deltaic environment.

FIGURE 1

GEOLOGICAL CROSS SECTION -
SAYLORVILLE LAKE

UPLAND ———> DES MOINES RIVER VALLEY ———> UPLAND

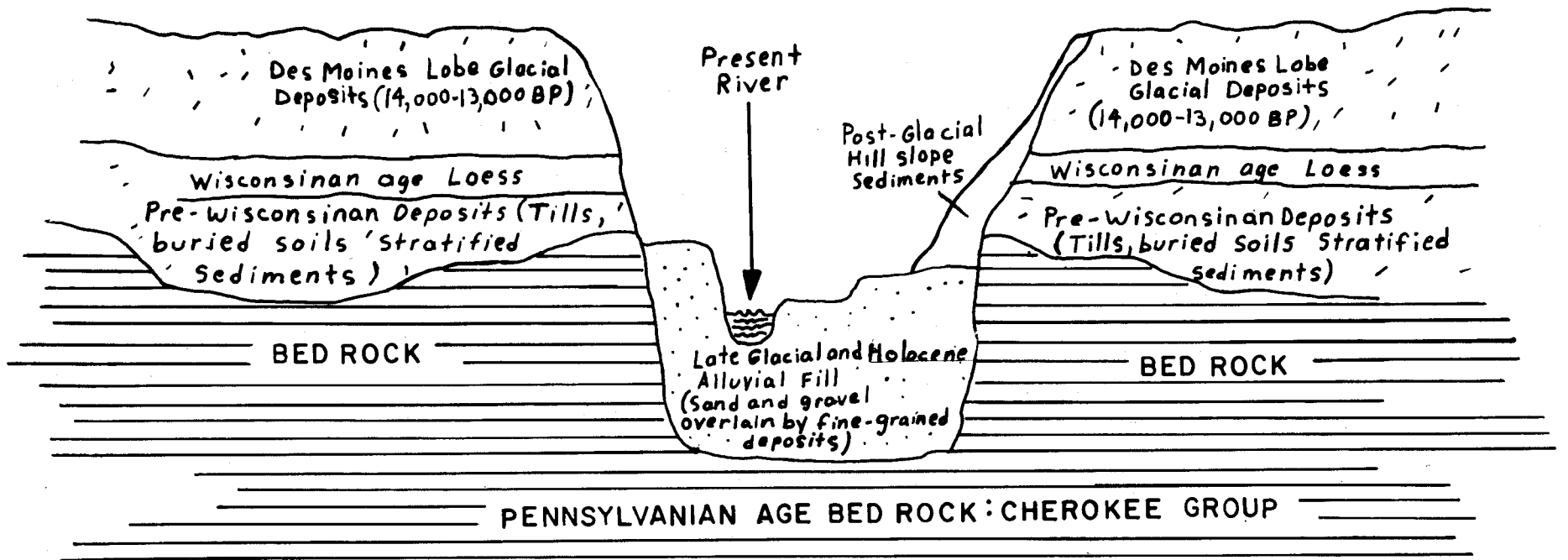
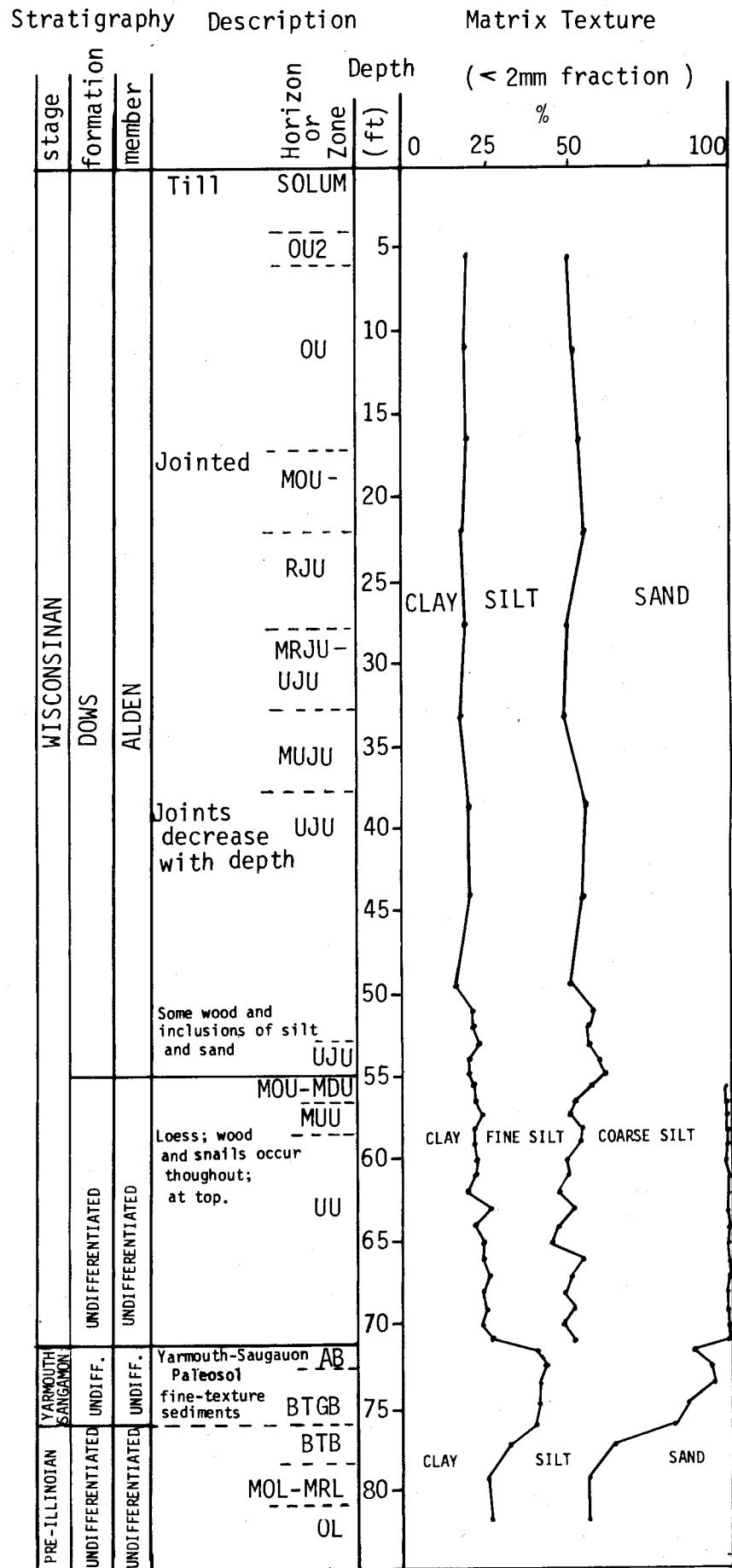


FIGURE 2
Stratigraphy and Particle Size-Saylorville Lake



Underlying the overburden discharge channel the bedrock is typically a shale with interbedded strata of siltstone, sandstone, limestone, and coal. Within the area of the damsite the bedding is almost horizontal, appearing to slope gently southwestward from the left abutment to the spillway area. Minor variations to the general slope of the bedding occur locally.

The texture of the shales varies from silty to clayey and in color from black and carbonaceous to light gray. The silty shales are generally harder whereas the clayey types range from stiff to soft. The bedding ranges from fissile (less than 2mm in thickness) in the silty shales, to massive (more than 100mm in thickness) in the clayey shale.

Two types of siltstone have been identified. The most common is hard but brittle lamellar, with thin shale partings, usually having calcareous cementation and grades into silty shales at top and bottom. The second variety is associated with sandstone as a facies gradation from the sandstone. These beds are usually massive, moderately hard to hard, calcareous and have the limited extent of the sandstone.

A discontinuous but locally persistent strata of channel deposited sandstone which ranges from about 10 feet in thickness under the spillway is found around the reservoir rim. A few thin beds are also present, appear to be lenticular, and are not persistent over a wide area.

The limestone beds are generally 1 to 2 feet thick. At least one bed appears to be persistent through the area of the damsite, at about elevation 850. This one, as well as a second bed at about elevation 860, is present under the spillway and discharge channel through Station 13+00B. These beds are hard, dense, brittle limestone while other limestones appear to be lenticular and vary from soft, argillaceous and shaley, to hard and sandy.

BEDROCK WEATHERING

Weathering of the Des Moines Series shales by ground water solution has been described as one of its most significant features. About half of the shales at Saylorville have a carbonate matrix. Solution activity by ground water destroys this matrix and thereby breaks down the natural fissile structure of the shale. The limestone beds, which are mostly calcilutites are usually corroded and leached. Some beds have been reduced to lime nodules surrounded by a carbonate mud. Weathering of the shales contributes to their low resistance to erosion and wave action and unstable slopes throughout the reservoir area. This greatly influences the suitability of potential sites for development.

SOILS

GENERAL

On the project land of Saylorville Lake there are numerous soil associations and soil series. This discussion will focus on those soil associations and series adjacent to the project shoreline in Polk County. The majority of the Corps recreation facilities, main pool area, and Corps managed project lands are located within Polk County. The majority of project land in Dallas and Boone Counties is leased to the Iowa Conservation Commission for wildlife management purposes.

SOIL ASSOCIATIONS

In the main pool area of Saylorville Lake (Polk County) there are three major soil associations: (1) The Clarion-Nicollet-Webster association, (2) the Hayden-Lester association, and (3) the Waukegan-Dickinson-Dorchester association. Table 4 displays the soil series found in the Corps recreational areas along with their identification symbol, capability class, series name, slope, and potential for erosion. Table 5 is a summary of the properties for each soil within the association previously referenced. Exhibits 5A through 5K display aerial photographs of each Corps recreational area showing their soil classes and location. Table 6 provides an explanation of soil capability class as shown on table 4 for each soil series.

TABLE 4
Soils Information - Saylorville Lake

Soil ID Symbol	Capability Class	Soil Series Name	Slope	Erosion	Soil Series in the Saylorville Lake Recreation Area
<u>Existing Areas</u>					
As C2 (192)	IIIw	Adair clay loam	5-9	Moderate	Acorn Valley, HcF2, HcC2, HcG2, LhA, LeC2, LeB, NaA, CFB, LeB, LgF, LeD2
Ac (1315)	IIw	Alluvial land	-	-	Administration and Maintenance Building, HcC2, HcE2
Ad	IIIw	Ames loam	-	-	Cherry Glan
Ae	IS	Ankeny sandy loam	-	-	Campground, LeB, LgE, LeC2, LcB, LeE2, LgF, AaA, AeB, Kba, LcC2, LdC, LdD
AeA	IIa	Ankeny sandy loam	0-2	-	Picnic Area, LeE2, LgF, LeB, LdC, LdD, Lec2, LaD2
AeB	IIa	Ankeny sandy loam	2-5	Slight	Launching Area, LeB, LeF, WeB, LcC2, KaA, DaE2, LaD2, AaA, AeB, TcB, LeD2
CaC2	IVe	Cantril silt loam	5-9	Moderate	Cottonwood, WaA, Ac, Sa, Hd, Hf, Df, Dg, De, Kba, WeB, Ae
CcE2	VIIa	Chelsea loamy fine sand	14-20	Severe	Visitor Center CAC2, LgF, CeC2, HcB, HcD2
CFB	IIe	Clarion loam	2-5	Slight	Visitor Center Annex, HcC2, HcD2
CFC2	IIIe	Clarion loam	5-9	Moderate	Lakeview, HcC2, LgF, HcB, LeC2, HcG2, HcD2
CuC2	IIIa	Crocker loamy fine sand	5-9	Slight	Saylorville Marina, LcC2, LgF, LeB, CFB, DaC2, CFC2, Wf, DbB, Fab, FeC2, LcB, Kba, WaA, Mb, ShE3, Wf, WdB
CuD2	IVa	Crocker loamy fine sand	9-14	Moderate	Oak Grove
DaC2	IIIa	Dickinson fine sandy loam	5-9	Moderate	Picnic Area, HcC2, LDD, LgF, LaE2, LgF, LdC, LeD2, HcD2, AeB, WdB
DaD2	VIa	Dickinson fine sandy loam	9-14	Moderate	Beach Area, Kba, LcC2, TcB, LeD2, LeE2, Ac, LcF2, WdB, WeB, CuC2
DaE2	VIIa	Dickinson fine sandy loam	14-20	Severe	Prairie Flower, HcC2, LeB, LhA, HcB, LeB, LeC2, LgF, LeD2, HcD2, WeB, CuD2, DbC2, CFB, ShE2
DbB	IIa	Dickinson loam	2-5	Slight	Shetler
DbC2	IIIa	Dickinson loam	5-9	Moderate	Class A Campground, Hf
DcA	IIIa	Dickinson sandy loam	0-2	Slight	Class B Campground and Fishing Area, Hf, TcB, HcD2, HcE2
De	I	Dorchester silt loam	-	-	Satellite Areas
Df	IIIa	Dorchester silt loam	Moderately shallow over sand	-	Dogwood, 73f, 356g, 1636
Dg	I	Dorchester silt loam	Deep over sand	-	Laurie Park, 356g, 1636, 5010
FaB	IIa	Farrar fine sandy loam	2-5	Slight	River Bend, 356g, 1636, 5010
FaC	IIIa	Farrar fine sandy loam	5-9	-	Walnut Ridge, HcB, HcG2, HcC2, Hd, HcD2, LgF, LeB
HcC2	IIIe	Hegener loamy fine sand	5-9	Moderate	
HcD2	IIIe	Hayden loam	9-14	Moderate	
<u>Potential Areas</u>					
HcE2	IVe	Hayden loam	14-20	Severe	Prairie Flower Group Camping, LeB, LhA, CuC2
HcF2	VIIe	Hayden loam	20-30	Severe	Proposed Marina - Prairie Flower Site, LeC2, CuC2, CuD2, Mb, TcB, Hf, AeA
HcG2	VIIe	Hayden loam	30-40	Severe	Proposed Marina - Lakeview Site Disturbed Soils
Hd	IIa	Huntsville sandy loam	-	-	Sandpiper Beach and Launch Area, CFB, Mb, FaB, WdB, WdA, Kba, LcB, LgF, DaC2
Hf	I	Huntsville silt loam	-	-	Shetler Picnic Area, Ac, Hf
KaA	IIa	Kato loam, deep over sand and gravel	-	-	
Kba	I	Kato loam	1-3	-	
LcC2	IIIe	Lakeville sandy loam	5-9	Moderate	
LcD2	VIa	Lakeville sandy loam	9-14	Moderate	
LcE2	VIIa	Lakeville sandy loam	14-20	Severe	
LcF2	VIIa	Lakeville sandy loam	20-40	Severe	
LcB	IIIa	Lakeville sandy loam	2-5	Slight	
LdB	IIa	Lamont fine sandy loam	2-5	Slight	
LdC	IIIa	Lamont fine sandy loam	5-9	Moderate	
LeB	IIe	Lester loam	2-5	Slight	
LeF	VIIe	Lester loam	20-40	Severe	
LeC2	IIIe	Lester loam	5-9	Moderate	
LeD2	IIIe	Lester loam	9-14	Moderate	
LeE2	IVe	Lester loam	14-20	Severe	
LFD3	IVe	Lester soils	9-14	Moderate	
LgE	IVe	Lester-Colo complex	0-20	Severe	
LgF	VIIe	Lester-Colo complex	20-40	Severe	
LhA	I	LeSueur loam	1-3	-	
Mb	IIw	Marshall silty clay loam, deep over sand and gravel	-	-	
NaA	I	Nicollet loam	1-3	-	
Sa	IIIa	Sarpy loamy sand	-	-	
ShE3	IVe	Storden soils	14-20	Severe	
TcB	IIe	Terril loam	2-5	-	
WdA	IIa	Waukegan loam	0-2	-	
WdB	IIa	Waukegan loam	2-5	Slight	
WeA	I	Waukegan loam, deep over sand and gravel (0-2 percent slopes)	-	-	
WeB	IIe	Waukegan loam, deep over sand and gravel (2-5 percent slopes)	-	-	
Wf	IIw	Webster silty clay loam	-	-	

TABLE 5

Soil Associations

<u>Soil</u>	<u>Occurrence</u>	<u>Slope</u>	<u>Drainage</u>	<u>Erosion</u>	<u>Parent Material</u>	<u>Texture</u>	<u>Fertility</u>	<u>Location</u>
<u>Clarion-Nicollet Webster Association</u>								
1. Clarion	Uplands	0-3%	Well-Drained	Highly Vulnerable	Glacial Till	Loam	Moderate-to-High	Northwest side of reservoir
2. Nicollet	Transition Zone	1-3%	Well-Drained	Slightly Vulnerable	Glacial Till	Loam	Moderate-to-High	Northwest side of reservoir
3. Webster	Bottom Land	0-1%	Poorly Drained	Not Vulnerable	Glacial Till	Loam	Moderate-to-High	Northwest side of reservoir
<u>Hayden-Lester Association</u>								
1. Hayden	Dissected Upland	0-40%	Well-Drained	Highly Vulnerable	Glacial Till	Loam	Moderate	Adjacent to east and west shoreline - main pool area
2. Lester	Bordering Upland	0-40%	Well-Drained	Highly Vulnerable	Glacial Till	Loam	Moderate	Adjacent to east and west shoreline - main pool area
<u>Waukegan-Dickinson-Dorchester Association</u>								
1. Waukegan	Upland	0-9%	Well-Drained	Severely Vulnerable	Glacial Outwash	Loam	Moderate-to-Low	Along east and west shoreline and adjacent land areas of the reservoir
2. Dickinson	Upland	0-30%	Well-Drained	Highly Vulnerable	Sandy Material	Loam	Moderate-to-Low	Along east and west shoreline and adjacent land areas of the reservoir
3. Dorchester	Bottom Land	-	Well-Drained	Moderately Vulnerable	Dorchester Soils	Loam	Moderate-to-Low	Along east and west shoreline and adjacent land areas of the reservoir

TABLE 6

Capability Classes and Subclasses of
Soils in the Saylorville Lake

Class I - Soils that have few limitations that restrict their use. Class I consists of the silty bottom land soils that do not require artificial drainage and the level or nearly level upland and bench soils that do not require artificial drainage or erosion control practices.

Class II - Soils that have some limitations that reduce the choice of plants or require moderate conservation practices.

Subclass IIe - Gently sloping soils that require simple erosion control practices.

Subclass IIw - Soils that have wetness problems but can usually be drained satisfactorily with tile.

Subclass IIs - Slightly droughty soils that may or may not be subject to erosion.

Class III - Soils that have severe limitations that reduce the choice of plants or require special conservation practices, or both. These soils may need terracing to control erosion, or intensive water management on flat, wet areas.

Subclass IIIe - Moderately sloping to rolling soils that can be cultivated safely if protected by terracing, contour stripcropping, or other erosion control practices.

Subclass IIIw - Soils that have serious wetness problems because they pond after heavy rains or because they have clay subsoils that make them difficult to drain with tile.

Subclass IIIs - Droughty and slightly droughty soils that are also subject to wind or water erosion.

Class IV - Soils that have very severe limitations that restrict the choice of plants, require very careful management, or both. As a rule, they are best used for pasture or hay, but some soils in this class in Polk County may be cultivated occasionally if properly safeguarded.

Subclass IVe - Moderately sloping to steep soils that can be cultivated safely only if rotations contain a high percentage of meadow and other appropriate conservation practices are followed.

Subclass IVs - Droughty and slightly droughty sloping soils that are subject to wind or water erosion, or both.

Class V - Soils that have little or no erosion hazard but have other limitations that are impractical to remove that limit their use largely to pasture, range, woodland, or wildlife food and cover. These are most commonly bottom land soils that flood frequently. They have little or no erosion hazard.

Class VI - Soils that have severe limitations that make them generally unsuitable for cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass VIe - Rolling to very steep soils that erode readily but, under careful management, are fairly well suited to trees and pasture.

Subclass VIi - Droughty soils that erode readily. They are not suitable for cultivation but, under careful management, may be used for pasture and woodland.

Class VII - Soils that have very severe limitations that make them unsuitable for cultivation and restrict their use largely to grazing, woodland, and wildlife.

Subclass VIIe - Rolling to very steep soils that have a severe erosion hazard. They are suited to trees or pasture if they are carefully managed.

Subclass VIIi - Droughty soils that have a severe erosion hazard. They are not suitable for cultivation but, under very careful management, may be used for pasture or woodland.

CULTURAL RESOURCES

Cultural resources in the Central Des Moines River Valley have been studied since the late 19th century. It was not until the initiation of the Saylorville Lake project, however, that extensive field investigations were undertaken. Based upon the results of sample surveys, the Saylorville Lake project area was determined eligible for listing in the National Register of Historic Places as a District. This was because of the large number of sites, the range of cultural periods represented by the sites, and the potential of the sites for answering current research questions about both prehistoric and historic cultural development in the central Des Moines River Valley. Once the Determination of Eligibility was obtained, a priority system was agreed upon by the COE and the Iowa State Historic Preservation Officer (SHPO) for application to a Memorandum of Agreement with the SHPO and the Advisory Council on Historic Preservation. Further investigations are proceeding under this Memorandum of Agreement. It is anticipated that specific sites will be evaluated for separate nomination in the future.

By December 1982, 486 sites had been located and recorded above the dam, and 38 sites below the dam in the Saylorville Downstream Corridor. Investigations at Saylorville Lake (including the Saylorville Downstream Corridor) have uncovered evidence of Paleo-Indian, Archaic, and Woodland cultures from the prehistoric period; Ioway, Oto, Sauk, and Fox from the proto-historic and historic periods; and remnants of various activities by Euro-Americans in the historic period. A summary of investigations that have taken place is presented below:

UNIVERSITY OF IOWA SURVEY - 1964

The University of Iowa undertook a reconnaissance level survey of the project area under the auspices of the National Park Service (NPS). This survey was conducted by personnel of the University of Iowa under the direction of Marshall McKusick, then the State Archaeologist. Sixty-one sites were reported in that survey. The field effort was of a very broad, cursory nature as mandated by the funds appropriated for the survey.

RIVER BASIN SURVEY - 1966

The 1966 archaeological reconnaissance of the Saylorville Reservoir was conducted as a part of the Interagency Archaeological Services (IAS) Salvage Program. The 1966 activities were conducted by the River Basin Surveys, Smithsonian Institution, Lincoln, Nebraska, as a supplement to the 1964 survey carried out by the University of Iowa. The report combines the results of both the University of Iowa and River Basin Surveys activities. The purposes of the second reconnaissance were: to reexamine previously known sites in the area, to locate and plot additional sites, to evaluate the archaeological importance of the sites involved, and to provide recommendations regarding the feasibility of salvage operations for the sites. Field work conducted during the period of 5-21 July 1966, was performed by a two-man team.

IOWA STATE UNIVERSITY SURVEY - 1973

In May 1973, the Iowa Historic Department, Division of Historic Preservation, SHPO, sponsored a small but intensive survey performed by Iowa State University at Ames, Iowa, under the direction of David Gradwohl. This survey report initiated the program established to systematically obtain an adequate archaeological resource inventory for the entire project area, as mandated by Section 106 of the National Historic Preservation Act of 1966.

The area directly upstream of the damsite was surveyed. Only one site had been previously identified in this area; this intensive survey yielded an additional 20 sites. The results of this study indicated that an extensive number of sites in the project area had yet to be identified. Prior to the preparation of the Final Environmental Impact Statement for the Saylorville project (filed 16 May 1974), the COE assumed the responsibility for undertaking an intensive survey involving remaining project lands. This work was continued by David Gradwohl of Iowa State University, beginning in late 1973 and ending in 1974.

IOWA STATE UNIVERSITY SURVEY - TESTING AND MONITORING, 1975-1981

Under a series of contracts between COE and Iowa State University, David Gradwohl and Nancy Osborn directed work that included: (1) completing surveys upstream of the dam, (2) testing and recovery of data from selected sites in the conservation pool, (3) monitoring of construction activities, and (4) testing of sites designated as Priority I under the mitigation plan. This plan established a priority system for archaeological sites and six general research questions applicable to research at Saylorville Lake. The plan was developed by Roy Eichhorn and Stan Riggle in January 1980. Several reports describe this work, the most comprehensive being Saylorville Stage 2 Contract Completion Report - Archaeological Investigations in the Saylorville Lake Project, Iowa, dated January 1981.

LUTHER COLLEGE SURVEY - 1981

An archaeological and geomorphological survey conducted by the Luther College Archaeological Research Center (LCARC) during 1981, identified 26 prehistoric and 12 historic sites within the Saylorville Downstream Corridor at Saylorville Lake (Benn and Bettis, 1981) where previous surveys had identified only two sites. The historic sites date between ca. 1870 and 1920, and the prehistoric sites represent Archaic, Woodland (EW, LW), and post Woodland (Oneota) occupations. A number of the sites are multicomponent.

As a part of this study, Benn and Bettis developed a general geomorphological sequence for the Des Moines River Valley: (1) high terrace development, 8,500 B.P. before the present B.P. to 4,000 B.P., (2) alluvial fan development, 8,000 B.P. to 2,000 B.P., (3) intermediate terrace development, 4,000 B.P. to 1,000 B.P., and (4) low terrace development, A.D. 1000 to present. As a result of this study, it was clear that river valley development (including meanders and terraces) affected the way in which prehistoric groups utilized the landscape. Benn and Bettis were able to determine relationships between site locations (and their functions and cultural affiliations) and various landforms in the Des Moines River Valley. Historic materials would be scarce on low terraces, but relatively dense on intermediate and high terraces. Paleo-Indian sites and Early through Middle Archaic sites would be most common on high terraces where erosion and historic disturbances have also been most severe. Woodland and Late

Archaic sites would occur most frequently on intermediate terraces (habitation and campsites), but these sites may be buried by alluvium. Woodland Period mortuary sites would be expected on the bluffs at the edge of the valley. Therefore, the majority of extant sites within the reservoir area tend to be small lithic scatters from the Paleo-Indian and Early through Middle Archaic Periods which are often exposed on remnant high terraces. This may mean that in spite of extensive survey and mitigation, a major portion of the prehistoric and historic record for the reservoir area has been lost, primarily because the problem of site burial was not fully considered, and that the extractive camps that remain upstream of the dam are in areas where erosion and recent historic disturbances have been the greatest.

The potential for locating major Woodland and later (i.e., Oneota) Great Oasis village sites upstream of the dam appears to be low because of inundation. On the other hand, the potential for locating similar sites in the Saylorville Downstream Corridor is high due to the LCARC survey which improved our understanding of river valley geomorphology as related to utilization by prehistoric and historic populations. Although mound complexes (Woodland) may be encountered on bluffs, and habitation sites on high and intermediate terrace remnants, most of these tracts are on high terraces in heavily dissected areas where erosional actions have likely deflated or completely displaced many sites. Most of these areas were farmed or used for pasture during the last 100 years, further exacerbating an already severe erosional situation. Thus, the Saylorville Downstream Corridor is significant because landforms which are under the pool upstream of the dam remain exposed and accessible for archaeological investigations. This and future work in the Saylorville Downstream Corridor will be useful to determine the full range of prehistoric and historic occupations for the area and to understand what resources are now inundated upstream.

SOUTHWEST MISSOURI STATE UNIVERSITY, CENTER FOR ARCHAEOLOGICAL
RESEARCH -1982 TESTING PROGRAM, SAYLORVILLE DOWNSTREAM CORRIDOR

The purpose of this investigation was to determine the research potential of nine archaeological sites and to collect sufficient information for the COE and the Iowa State Historic Preservation Officer to consider the question of eligibility for listing in the National Register of Historic Places on an individual basis. The draft report (Benn and Harris, 1983) was reviewed by the National Park Service and the Iowa State Historic Preservation Officer. A final report was received by the Corps of Engineers, Rock Island District, in June 1983. This report describes and refines a new epistemological/methodological approach for studying cultural deposits in alluvial settings initiated while the principal investigator (Dr. Benn) was at Luther College (1981 Survey of Saylorville Downstream Corridor). The nine sites were also considered in light of proposed recreational developments currently in the planning stage; problems with erosion were also addressed. As a result of the study, a bicycle path and an access road were redesigned to avoid impacts on sites 13PK410 and site 13PK413. In addition, site 13PK407 (an Oneota occupation) will be salvaged

in the fall of 1983. Sites 13PK05, 13PK409, 13PK411, 13PK415, and 13PK424 were determined to be small, partially or wholly destroyed, and insignificant. Site 13PK414 contained insufficient evidence to justify immediate eligibility to the National Register of Historic Places, but in case of future impacts the right-of-way should be tested for significant cultural deposits.

The more than 450 archaeological sites encompassed by the Saylorville Lake Archaeological District constitute a significant cultural resource which has been and is being adversely affected by project-related actions. Work is continuing in accordance with the Memorandum of Agreement to mitigate the effects on the resource through intensive investigation and analysis. Current plans call for this work to be completed by 1984. Preservation and stabilization of significant resources will be handled on a site-by-site basis.

IMPACT SERVICES INCORPORATED - 1982 AND 1983

Investigations by Impact Services, Incorporated (Pat Emerson) refined the understanding of cultural resources at Saylorville Lake, and, in particular, for the sites potentially within the area to be affected by the proposed pool raise. A total of 44 archaeological sites (via previous surveys) were identified that would be affected by the proposed pool raise (833 to 836 NGVD) based upon previous investigations of the pool perimeter. Enough information had been collected for 17 of these sites for the Iowa State Historic Preservation Officer and the Rock Island District staff archaeologist (consulting parties) to agree that their loss by inundation would not affect those qualities which caused the creation of the archaeological district. The deteriorated condition of the sites obviated the recovery of significant data from undisturbed contexts. Information for these sites is fully presented in the draft report entitled, Resurvey and Intensive Testing of Archaeological Sites at Saylorville Lake, Polk and Dallas Counties, Iowa (Emerson, 1983).

Comparatively little was known about the remaining 27 sites. In this case the consulting parties agreed that additional investigations were necessary to effectively evaluate the effects of the pool raise. All of the sites potentially contained undisturbed cultural deposits of sufficient quality to merit further consideration. Therefore, the consulting parties agreed to provide for the resurvey of the 27 sites in July 1982. The resurvey was done by Impact Services, Incorporated.

Based upon the results of the resurvey, the consulting parties selected 10 sites for further investigation at the intensive survey/testing level. The remaining 17 sites (of the 27 resurveyed) were deleted from further consideration because of minimal informational content and disturbances which precluded the loss of significant in situ cultural deposits. By agreement, the consulting parties directed Impact Services, Incorporated (October 1982),

to conduct the requisite intensive survey/testing level investigation to refine the understanding of geomorphological factors, cultural affiliations (potential situations of multi-componency), and levels of preservation for the 10 sites.

As a result of the intensive survey/testing level investigation, the consulting parties identified six archaeological sites for further excavation. The selection was made based upon the results of investigation as described in a document entitled, Interim Report: Intensive Testing of Ten Archaeological Sites at Saylorville Lake, prepared by Impact Services, Incorporated (Emerson, 1983). These six sites are targeted for excavation in the 4th quarter of 1983 under a Data Recovery Plan (approved by the SHPO) to mitigate the effects of the pool raise.

ECOLOGICAL RESOURCES

VEGETATION RESOURCES

Prior to any project land acquisition, approximately 43 percent of the project area was forested, 38 percent was cropland, 13 percent was open grass or pasture land, 1 percent was utilized for sand and gravel mining, and the remainder included campsites, cottage sites, parks, farmsteads, and public roads. Due to preproject and existing project land uses, the percentage of vegetative types previously referenced has changed. These changes are the result of natural succession and man's utilization of the land.

As a result of natural and manmade changes, there are four major types of vegetation found at the Saylorville Lake project lands. They are: deciduous forest, transition zone (grasses and forbs), land in the early stages of natural succession (annual weed, perennial grass, grass, and shrub), and restored prairie.

The deciduous bottom land and upland forest located within the project boundaries represent approximately .2 percent of the State's forested lands. Unfortunately, the area received heavy logging just prior to Government acquisition. Approximately 75 percent of the quality sawlog-size stands were harvested from the then privately owned tracts, thus leaving many residual stands of low quality and/or immature trees. These forest stands are generally located on the poorer sites of the project lands where the soil conditions were less productive for agricultural purposes. Therefore, prior to project acquisition, the better quality sites were cleared of timber and were utilized for agricultural or grazing purposes.

The majority of the forested project lands are upland forest that are uneven age mixed stands, predominantly of oak and hickory. These stands are commonly found on the slopes and ridge tops located at higher elevations (above elevation 850 NGVD) due to their inability to tolerate inundation and selective cutting employed up to elevation 870 NGVD. Table 7 lists those species found in the project upland forest.

TABLE 7

Project Upland Forest Species

<u>Common Name</u>	<u>Scientific Name</u>
Black Maple	<u>Acer nigrum</u>
Sugar Maple	<u>Acer saccharum</u>
Ohio Buckeye	<u>Aesculus glabra</u>
Horse Chestnut	<u>Aesculus hippocastanum</u>
Paper Birch*	<u>Betula papyrifera</u>
Bitternut Hickory	<u>Carya cordiformis</u>
Shagbark Hickory	<u>Carya ovata</u>
Butternut	<u>Juglans cinerea</u>
Black Walnut	<u>Juglans nigra</u>
Red Mulberry	<u>Morus rubra</u>
Big Tooth Aspen	<u>Populus grandidentata</u>
Quaking Aspen	<u>Populus tremuloides</u>
Black Cherry	<u>Prunus serotina</u>
White Oak	<u>Quercus alba</u>
Northern Pin Oak	<u>Quercus ellipsoidalis</u>
Chinkapin Oak	<u>Quercus muehlenbergii</u>
Northern Red Oak	<u>Quercus rubra</u>
Black Oak	<u>Quercus velutina</u>
Basswood	<u>Tilia americana</u>
American Elm	<u>Ulmus americana</u>
Slippery Elm	<u>Ulmus rubra</u>
Rock Elm	<u>Ulmus thorasii</u>
Black Locust	<u>Robinia pseudoacacia</u>
Osage Orange*	<u>Maclura pomifera</u>
Southern Catalpa*	<u>Catalpa bignonioides</u>
Eastern Redbud	<u>Cercis canadensis</u>
Lombardy Poplar*	<u>Populus nigra</u>
Wild Plum	<u>Prunus americana</u>
Sumac	<u>Rhus spp.</u>
Tree of Heaven*	<u>Ailanthus altissima</u>
Dogwood	<u>Cornus spp.</u>
Hawthorn	<u>Crataegus spp.</u>
Buckthorn	<u>Rhamnus spp.</u>
Flowering Pear	<u>Pyrus idensis</u>
Wild Privet	<u>Ligustrum spp.</u>

Conifers (evergreens)

Eastern Red Cedar	<u>Juniperus virginiana</u>
Eastern White Pine*	<u>Pinus strobus</u>
Austrian Pine*	<u>Pinus nigra</u>
Scotch Pine*	<u>Pinus sylvestris</u>
Red Pine*	<u>Pinus resinosa</u>

TABLE 7 (Cont'd)

<u>Common Name</u>	<u>Understory</u>	<u>Scientific Name</u>
Wildrose		<u>Rosa blanda</u>
Blackberry		<u>Rubus spp.</u>
Raspberry		<u>Rubus spp.</u>
Multiflora Rose*		<u>Rosa multiflora</u>
Poison Ivy		<u>Toxicodendron radicans</u>
Wild Grape		<u>Vitis riparia</u>
American Elder		<u>Sambucus canadensis</u>
Gooseberry		<u>Ribes grossularia</u>
Bladdernut		<u>Staphylea trifolia</u>
Chokeberry		<u>Prunus virginiana</u>
Serviceberry		<u>Amelanchier arborea</u>
Prickly Ash		<u>Zanthoxylum americana</u>
Buckrush		<u>Symphoricarpos orbiculatus</u>
Greenbrier		<u>Smilax spp.</u>
Leatherwood		<u>Dirca palustris</u>
Snow Trillium		<u>Trillium nivale</u>
Dog Tooth Violet		<u>Erythronium albidum</u>
Silky Dogwood		<u>Cornus amomum</u>
Blue Beech		<u>Carpinus caroliniana</u>

* Introduced species.

The bottom land forest of the project is predominantly Chinese elm, ash, box elder, willow, and cottonwood. These species are found in small stands (usually less than 1 acre) in the bottom land areas adjacent to the lake. Bottom land forests composed primarily of elm, ash, and cottonwood are also found in the Saylorville Downstream Corridor. Table 8 lists those species of trees and shrubs found within the flood plain of the Saylorville Lake project.

TABLE 8

Project Bottom Land Forest Species

<u>Common Name</u>	<u>Scientific Name</u>
Box Elder	<u>Acer negundo</u>
Silver Maple	<u>Acer saccharinum</u>
River Birch	<u>Betula nigra</u>
Hackberry	<u>Celtis occidentalis</u>
Black Ash	<u>Fraxinus nigra</u>
Green Ash	<u>Fraxinus pennsylvanica</u>
Honeylocust	<u>Gleditsia triacanthos</u>
Hop Hornbeam	<u>Ostrya virginiana</u>
Sycamore	<u>Platanus occidentalis</u>
Eastern Cottonwood	<u>Populus deltoides</u>
Swamp White Oak	<u>Quercus bicolor</u>
Bur Oak	<u>Quercus macrocarpa</u>
Black Willow	<u>Salix nigra</u>
Weeping Willow*	<u>Salix babylonica</u>
American Elm	<u>Ulmus americana</u>
Chinese Elm	<u>Ulmus Chinensus</u>
Kentucky Coffeetree	<u>Gymnocladus dioica</u>
Osage Orange*	<u>Maclura pomifera</u>
American Elder	<u>Sambucus canadensis</u>
Poison Ivy	<u>Toxicodendron radicans</u>
Trumpet Vine	<u>Campsis radicans</u>
Virginia Creeper	<u>Parthenocissus quinquefolia</u>
Wild Cucumber	<u>Sicyos angulatus</u>
American Hornbeam	<u>Carpinus caroliniana</u>
Red Mulberry	<u>Morus rubra</u>
Common Greenbrier	<u>Smilax rotundifolia</u>

* Introduced species.

The Forestry-Fish and Wildlife Management Appendix for the project lands outlines management plans for the forestry resources at Saylorville Lake. These plans focus on preserving and creating various wildlife habitats through forestry management practices and enhancing the aesthetics of the reservoir area. This appendix is further discussed in section XII of this report.

The transition zone areas within the project are lands that were previously used for grass crops and/or pastures prior to the project. These areas are located on sloping terrain between the upland and bottom land areas of the project. The vegetative composition of these transition zones consists of various grasses, herbs, rushes, and sedges listed in table 9. The majority of these plants are tolerant to inundation for short periods of time.

TABLE 9

Transition Zone Vegetative Species

<u>Common Name</u>	<u>Scientific Name</u>
Bullrush	<u>Scipus spp.</u>
Sedges	<u>Carex spp.</u>
Bluegrass	<u>Poa spp.</u>
Timothy	<u>Phleum spp.</u>
Cheats	<u>Bromus tectorum</u>
Nodding Fescue	<u>Festuca spp.</u>
Wild Rye	<u>Elymus spp.</u>
Wild Barley	<u>Hordeum spp.</u>
Blue Joint	<u>Calamagrostis spp.</u>
Mannagrass	<u>Glyceria spp.</u>
Wild Oat Grass	<u>Dauthonia spicata</u>
Slough Grass	<u>Spartina pectinata</u>
June Grass	<u>Koeleria cristata</u>
Drop Seed Grass	<u>Sporebolus spp.</u>
Needle Grass	<u>Stipa spp.</u>
Beardgrass (blue stem)	<u>Andropogon spp.</u>

Approximately 9,000 acres of upland project land was utilized for pasture and rowcrop land before it was acquired for project purposes. These lands are located above elevation 860 NGVD. At the present time, the majority of these lands are in various early stages of natural succession (annual weeds, perennial grass, and shrub stage). The plant species found in these areas are a combination of those species listed in tables 7 and 9. Depending upon management, these areas have the potential to become forest, reestablished prairie, or remain in the stages of natural succession previously referenced. Specific vegetative management practices for project lands managed by the Corps have been designated and discussed in the Forestry-Fish and Wildlife Management Appendix.

For research and interpretive purposes, approximately 171 acres of prairie have been reestablished. These areas are adjacent to the Prairie Flower Campground (7 acres), project borrow areas (160 acres), Visitor Center Arboretum (2 acres), and project radio tower (2 acres). These areas were replanted in native prairie species which have become reestablished within these areas. In future years, efforts will be made to reestablish additional prairie areas for wildlife purposes in additional project borrow areas, in areas with erosion problems, and in abandoned fields. Table 10 lists these prairie species which have been reestablished on the 171 acres of project land.

TABLE 10

Project Restored-Prairie Vegetative Species

<u>Common Name</u>	<u>Scientific Name</u>
<u>Grasses</u>	
Big Blue Stem	<u>Andropogon gerardi</u>
Little Blue Stem	<u>Andropogon scoparius</u>
Sideoats Grama	<u>Bouteloua curtipendula</u>
Indiangrass	<u>Sorghastrum nutans</u>
Switchgrass	<u>Panicum virgatum</u>
Western Wheatgrass	<u>Agropyron smithii</u>
Sand Bluestem	<u>Andropogon halli</u>
Sand Lovegrass	<u>Eragrostis trichodes</u>
Canada Wildrye	<u>Elymus canadensis</u>
<u>Forbs</u>	
Heath Aster	<u>Aster ericoides</u>
Blazing Star	<u>Liatris pycnostachya</u>
Gray Headed Coneflower	<u>Ratibida pinnata</u>
Maximilian Sunflower	<u>Helianthus maximiliana</u>
Purple Prairieclover	<u>Petalostemum purpureum</u>
Gray Goldenrod	<u>Solidago nemoralis</u>
Butterfly Milkweed	<u>Asclepias tuberosa</u>
Compassplant	<u>Silphium integrifolium</u>
Black-eyed Susan	<u>Rudbeckia hirta</u>
Wild Bergamot	<u>Monarda fistulosa</u>
<u>Shrubs</u>	
Leadplant	<u>Amorpha canescens</u>

FISH AND WILDLIFE RESOURCES

GENERAL

The presence of aquatic or terrestrial animals within the project and water resources is a function of the quality and quantity of habitat created by the terrain, plant communities, water quality, and nature of the project's aquatic habitat. Population dynamics of fish and wildlife species will vary with seasonal conditions, disturbance factors, and changes within the species habitat. The relative abundance of the various aquatic and terrestrial species at the project is quite likely to be less during periods of and/or in areas of extensive human activity. The abundance of the species will also be dependent upon their mobility and the quantity and quality of adjacent habitat available.

TERRESTRIAL MAMMALS

Table 11 lists those terrestrial animals found on the Saylorville Lake project lands. The large number of animals listed under table 11 can be attributed to the variety of habitat types found on the project lands. This variety of species reflects the diverse quality and quantity of these habitat conditions.

TABLE 11

List of Terrestrial Animals Utilizing
Saylorville Lake Lands

Whitetail deer	Big freetail bat
Raccoon	Silver-haired bat
Eastern fox squirrel	Eastern pipistrel
Eastern gray squirrel	Big brown bat
Red squirrel	Red bat
Southern flying squirrel	Hoary bat
Thirteen-lined ground squirrel	Western harvest mouse
Franklin ground squirrel	White-footed mouse
Opossum	Deer mouse
Spotted skunk	House mouse
Striped skunk	Meadow jumping mouse
Red fox	Plains pocket mouse
Gray fox	Prairie vole
Mink	Pine vole
Longtail weasel	Meadow vole
Least weasel	Masked shrew
Whitetail jackrabbit	Least shrew
Eastern cottontail	Shorttail shrew
Badger	Muskrat
Coyote	Beaver
Little brown myotis	Eastern chipmunk
Keen myotis	Ground hog (woodchuck)
Small-footed myotis	Eastern mole

When the project was established, there was a loss and displacement of species which utilize flood plain habitats (i.e., raccoon, woodchuck, etc.). The inundation and loss of this flood plain habitat also had a mild temporary adverse effect upon upland populations in the project lands by the disruption of existing travel-ways and winter cover. Fortunately, these impacts have been reduced through natural succession and habitat management programs implemented by the Iowa Conservation Commission and U.S. Army Corps of Engineers. These programs involve the planting of vegetation species for wildlife habitat enhancement, reforestation, and the implementation of various forestry and savannah habitat management practices. In addition, the ICC leases approximately 11,787 acres of land and water

within the upper reaches of the project for wildlife management purposes. This area is managed for upland game species and a small refuge is maintained to provide habitat for various waterfowl species (i.e., ducks, geese, and shorebirds). The ICC also has nongame species management programs specifically developed to improve the habitats required for nongame species.

AQUATIC RESOURCES

The existing conservation pool of 836 NGVD inundates approximately 19 miles of existing riverbed fishery. When the reservoir was placed into operation the aquatic habitat was expanded to include transition and lacustrine zones. The fish species that were present in that reach of the river before the reservoir was placed in operation are present in the reservoir. Due to the additional aquatic habitat, the fish populations have increased in the reservoir, headwater and tailwater areas. In addition, the development of transition (river and lake) and lacustrine (lake) habitats made it possible for new species of fish (i.e., largemouth bass, wiper) to be supported in the reservoir, headwater and tailwater areas.

The primary game species of fish found in the reservoir, headwater and tailwater areas include the largemouth bass, walleye, northern pike, wiper, catfish and crappie. Carp, carpsucker, sucker and buffalo are the principal rough species found in the three areas of the reservoir. The major forage species in all three areas of the reservoir is the gizzard shad. Table 12 provides a detailed list of species inhabiting the lake.

The ICC is responsible for the management of the fishery resource at the project. Due to the increase in aquatic habitat and the efforts of the ICC stocking program, the reservoir has become a good fishery resource which is stable in nature. On an average annual basis the ICC stocks approximately 500 thousand largemouth bass, 5 million walleye fry, 3 million northern pike fry, and one-half million hybrid wiper.

The ICC does not permit commercial fishing in Saylorville Lake. There is a possibility that in the winter months of 1986 or the spring months of 1987 the ICC may begin a commercial fishery program in the lake. A commercial fisherman would be required to obtain a commercial fishing license and inland commercial fishing permit from the State in order to commercially fish at Saylorville Lake. The enforcement of regulations and laws concerning commercial fishing would be the responsibility of the State of Iowa.

The majority of the commercial harvest would be comprised of carp, carpsucker, sucker, buffalo and freshwater drum. It is estimated that the commercial harvest at Saylorville Lake would average approximately 200,000 pounds per year. This is based on harvest averages and similar commercial species at Lake Red Rock and Coralville Lake.

The increased quantity and quality of aquatic habitat, and the efforts of the ICC have greatly enhanced the fishery resource of the headwater, tailwater and reservoir areas. As a result, all three areas of the project are heavily used for sport fishing, and it is felt that the project will be utilized for commercial fishing if approved by the ICC. The close proximity of the project to Des Moines and the shortage of lakes in Iowa account for the majority of heavy fishing pressure the project receives. Table 37 of Section V reflects the existing and projected amount of fishing use for the project area (headwater, reservoir and tailwater). The heavy use of project area for fishing can also be attributed to the variety of species which can be caught throughout the project area, the increase in the quantity and quality of game species available, the added variety of aquatic habitats and the addition of new game fish species.

In the northern end of the main pool area, siltation has destroyed a small portion of spawning and food producing areas. The pool raise (discussed in Section IX of this report) to 836 NGVD will temporarily resolve this impact (for a 15- to 20-year period) by creating additional spawning and food producing areas.

TABLE 12

Fish Species Inhabiting Saylorville Lake

Carp	Bigmouth shiner
River carpsucker	Spot fin shiner
Channel catfish	Sand shiner
Flathead catfish	Common shiner
Buffalo (all species)	Bluntnose shiner
Walleye	White sucker
Crappie	Redhorse sucker
Largemouth bass	Black bullhead
Bluegill	Slender madton
Green sunfish	Goldeye
Slenderhead darter	Hogsucker
Northern pike	Suckermouth
Rock bass	Brassy minnow
Yellow perch	Bullhead minnow
Brook stickleback	Flathead minnow
Gizzard shad	Wiper
Freshwater drum	Yellow Bullhead

BENTHIC ORGANISMS

The species composition and relative abundance of benthos organisms in Saylorville Lake are typical to those found in most midwestern prairie-type streams and rivers. Table 13 lists those aquatic life forms that occur in the lake.

TABLE 13

Benthos Organisms Inhabiting Saylorville Lake

Freshwater mussels	Crayfish (all species)
Mayfly	Dobson fly
Midge	Caddis fly
Dragonfly	Damsel fly

AMPHIBIANS

Unfortunately, no agency consulted (State, Federal) has ever conducted an in-depth study concerning amphibians and reptiles within the project area. Table 14 lists some of the species that have been observed or are known to exist within the project area.

TABLE 14

Amphibian and Reptile Species Known or Possible on Saylorville Lake Project Lands

Bullfrog	Smooth softshell turtle
Leopard frog	Northern water snake
Gray tree frog	Graham's water snake
Cricket frog	Red-sided garter snake
Western chorus frog	Eastern yellow-bellied racer
Green frog	Bullsnake
Common toad	Western fox snake
Mudpuppy	Eastern hognose snake
Tiger salamander	Texas brown snake
Snapping turtle	Western smooth green snake
Western painted turtle	Prairie ringneck snake
Ornate box turtle	Red milk snake
Spiny softshell turtle	Plains garter snake

ORNITHOLOGICAL RESOURCES

A listing of birds which has been positively identified at Saylorville Lake (table 15) has been compiled by members of the ICC, professors from the Iowa State Ornithology Department, and from project staff.

TABLE 15

A List of Birds Seen at Saylorville Lake

<u>Blackbirds, Orioles</u>	Red-Necked CM2	<u>Geese</u>	<u>Hummingbirds</u>	Hudsonian Godwit UM2	<u>Thrushes</u>	Palm CM1
Bobolink UN3	Ruddy CM2	Canada CM2	Ruby-Throated UN3	Knot A2	Am. Robin CN,RP3,5	Prothonotary RM2
Brewer's UM2	White-Winged Scooter A2	Snow CM2	Blue CP1,3,5	Least Sandpiper CM2	E. Bluebird UN3	Tennessee CM1
Brown-Headed Cowbird DM2,3,8	Wood CM2	White-Fronted UM2	Blue-Gray UM1	Lesser Yellowlegs CM2	Gray-Checked CM1	Wilson's CM1,2
Common Grackle CNRP3,5	<u>Finches, Sparrows, Etc.</u>	<u>Gnatcatchers, Kinglets</u>	Kingfisher	Long-Billed Dowitcher UM2	Hermit CM1	Yellow CM1,3,5
E. Meadowlark CN,UN3	Am. Goldfinch CP3,5	Blue-Gray UM1	Belted CN,UM2	Marbled Godwit A2	Swainson's CM1	Yellow-Breasted Chat UM1,2
N. Meadowlark CN3	Am. Tree CW3	Golden-Crowned CM, RM1	Larks	N. Phalarope A2	Verry UM, RM1	<u>Woodpecker</u>
N. Oriole UM1,3	Chipping CN3	Ruby-Crowned CM1	Horned CP3	Pectoral Sandpiper CM2	Wood CM1	Common Flicker CP1,3
Orchard Oriole UM1,3	Clay-Colored UM3	Goatsuckers	Loons	Ruddy Turnstone RM2	Downy CP1,3,5	Dowry CP1,3
Red-Winged CN,UP2,3,5	Common Redpoll UM1,3	Nighthawk CM3,5	Common CM2	Sanderling RM2	Red-Bellied CP1,3	Red-Headed CP1,3
Rusty CM2	Dickcissel CN3	Whip-Poor-Will UM1	<u>Mimics</u>	Semipalmated Sandpiper CM2	Yellow-Bellied Sapsucker CM1,3	Wren
Yellow-Headed UM2,3	Evening Grosbeak OM1	<u>Crebes</u>	Brown Thrasher CM1	Short-Billed Dowitcher UM2		Bevick's R1
<u>Coots, Rails</u>	Field CN3	Eared UM2	Gray Catbird CN1,3	Solitary Sandpiper CM2		Carolina RPN1,2
Am Coot CM2	Fox CM1	Horned UM2	Mockingbird O1,3,5	Spotted Sandpiper CM2		House CM1,3,5
King Rail RM2	Grasshopper UM3	Pied-Billed CM2	<u>Nuthatches, Creepers</u>	Stilt Sandpiper RM2		Marsh (L&S) UM2
Sora CN2	Harris' UM,RM1,3	Red-Necked A2	Brown Creeper UM1	Upland Sandpiper UM, RM2,3		Sedge (SB) UM2
Virginia Rail Rn2	Henslow's RM2,3	Western RM2	Red-Breasted UM1,5	W. Sandpiper RM2		Winter RM1,2
<u>Cormorants</u>	Indigo Bunting CN1,3	<u>Gulls</u>	White-Breasted CP1	Whimbrel A2		
Double-Crested CM2	Lopland Longspur UM,OM3	Bonaparte's RM2,3	<u>Owls</u>	White-Rumped Sandpiper UM2		
<u>Crow</u>	Lark UN3	Franklin's CM2,3	Barr'd CP1	Willet UM2		
American CP3	LeConte's UM2,3	Herring CM,W2,3	Great Horned CP1,3	Wilson's Phalarope UM2		
<u>Cuckoos</u>	Lincoln's CM1	King-Billed CM,W2,3	Long-Eared UM1	<u>Shrikes</u>		
Black-Billed CM1	N. Cardinal CP1,3,5	<u>Hawks</u>	Saw-Whet RM1	Loggerhead UM, RP3		
Yellow-Billed CM1	N. Junco CW1,3,5	Am. Kestrel CN, UP1,3	Short-Eared UM,RP3	Northern RM3		
<u>Doves</u>	Pine Siskin OW1,3	Bald Eagle UM2	Screech CP1,3	<u>Sparrows</u>		
Mourning CN,UP3,5	Purple Finch OW1	Broad-Winged CM1,3	Snowy RM3	House CP3,5		
Rock CP3,5	Rose-Breasted Grosbeak CM1	Cooper's RM1	<u>Pelicans</u>	<u>Sterlings</u>		
<u>Ducks</u>	Rufous-Sided Towhee CN,RM1	Golden Eagle A2	Am. White CM2	Sterling CP1,3,5		
Am. Black RM2	Savannah CM, UN3	Marsh CM2,3	<u>Pheasants</u>	<u>Swallows</u>		
Am. Widgeon CM2	Snow Bunting RM3	Ringnecked CP1,3	Kingnecked CP1,3	Bank CN3		
Blue-Winged Teal CN,W2	Song CNW1,3	Merlin RM3	<u>Pipits</u>	Barn CM2,3		
Bufflehead CM2	Swamp CN,UM1	Osprey UM2	Water UM2,3	Cliff CM2,3		
Canvasback UM2	White-Crowned UM,RM1,3	Peregrine Falcon A3	<u>Plovers</u>	Purple Martin CM5		
Cinnamon Teal A2	Vesper UM2,3	Red-Tailed CP1,3	Black-Bellied UM2	Rough-Winged CM2,3		
Common Goldeneye UM2	<u>Flycatchers</u>	Rough-Legged CW3	Killdeer N RM2,3	Tree UM2,3		
Common Merganser CM2	Acadian RM1,2	Sharp-Shinned CM1	Lesser Golden CP2,3	<u>Swifts</u>		
Common Pintail CM2	Alder CM2	Swainson's CM1,3	Piping A4	Chimney CM5		
Gedwall CM2	E. Kingbird CN3	<u>Hérons</u>	Semipalmated UM2,4	<u>Tanager</u>		
Green-Winged Teal UM, CM2	E. Pewee CM1	Am. Bittern UM2	Quail	Scarlet UM1		
Hooded Merganser CM2	E. Phoebe CN1,2,3	Black-Crowned Night UN2	Bobwhite CP1,3	Summer RM1		
Lesser Scaup CM2	Great Crested CM1	Cattle Egret O2	<u>Sandpiper, Phalaropes</u>	<u>Terns</u>		
Millard CMW2	Least CM,RM3	Great Blue CM,W2	Am. Woodcock UM1,2	Black CM2		
N. Shoveler CM2	Least CM,RM3	Great Egret UM2	Baird's Sandpiper UM2	Caspian UM2		
Oldsquaw A2	Olive-Sided UM1	Green CM2	Buff-Breasted Sandpiper O2	Common RM2		
Red-Breasted Merganser UM2	W. King Bird R3	Least Bittern UM2	Common Snipe CM, UM2	Forster's CM2		
Redhead CMW	Willow CM2	Little Blue UM2	Dunlin UM2	Least RM2		
	Yellow-Bellied UM1	Yellow-Crowned Night UN2				

KEY

1. Wooded - brushy areas
2. Wet areas - streams, lakes, marsh
3. Open areas - farmland, roadsides
4. Beaches, sandy areas
5. Cities, towns

C - Common W - Winter resident
 U - Uncommon N - Nests (summer)
 E - Rare M - Migrant
 O - Occasional
 A - Accidental
 P - Permanent resident

Mr. Pete Petersen (editor of Iowa Bird Life, a publication of the Iowa Ornithologists' Union, and Curator of Education at the Davenport Public Museum) and Mr. Dean Roosa feel that there are several other species of birds which have not been positively sighted within the Saylorville Lake area, but which could be expected to either nest within or migrate through the area. The following is a list of the anticipated additional species:

Goshawk	Red Crossbill
Red-Shouldered Hawk	White-Winged Crossbill
Swainson's Hawk	Smith's Longspur
Black Rail	Shallow-Tailed Kite
Common Gallinule	Sharp-Tailed Grouse
Barn Owl	Whopping Crane
Burrowing Owl	Sandhill Crane
Sprague's Pipit	Long-Billed Curlew
White-Eyed Vireo	Northern Harrier
Pine Warbler	Least Tern
Pacula Warbler	Say's Phoebe

THREATENED AND ENDANGERED SPECIES

Two federally listed endangered species, the bald eagle and peregrine falcon, occasionally do occur in the Saylorville Lake area. Bald eagles occur in the tailwater area of the reservoir area primarily during the winter months, while peregrine falcons are more likely to occur in the main pool and headwater area during the spring and fall migration seasons. Appendix 1 contains a letter from the U.S. Fish and Wildlife Service, dated 18 April 1984, in reference to the coordination requirements for fish and wildlife concerns, including endangered species.

ENVIRONMENTAL AND SCENIC QUALITIES

A large impoundment such as Saylorville Lake is a striking contrast to the central Iowa landscape. The aesthetic value of the lake area is a function of the lake itself, the shoreline, and the adjacent uplands. Because the water quality in the lake is generally good, it is a pleasing addition to the overall landscape. The surrounding uplands offer a variety of natural habitat, ranging from forested areas to open fields in various early (annual weed, perennial grass, and shrub stage) stages of succession. Only along the shoreline is the appearance of the lake less than optimum. As a result of normal pool fluctuation, the shoreline has eroded and, in places, become stripped of all vegetation. This is being alleviated somewhat as the lake stabilizes. Areas which are infrequently flooded reestablish a vegetative cover during the periods between inundation, and some areas more frequently flooded support water-tolerant species of vegetation.

RECREATION

INTRODUCTION

The project has a 5,950-acre water surface area for supporting water-based activities, such as powerboating, waterskiing, swimming, fishing, and sailing. Corps of Engineers recreational development at Saylorville Lake includes intensively developed recreational areas, satellite areas, and boat-launching areas. Plate 2 shows the location of these developments at the project. Please refer to sections III, IV, V, VI, and IX for additional information.

The Corps recreational areas encompass approximately 1,653 acres of land above flood-pool elevation. While specific activities vary from one area to another, as well as within each area, most age groups and interests are accommodated.

The recreational development at Saylorville Lake is also augmented by existing facilities operated and maintained by other agencies and a private concessioner. These parks include Ledges State Park and Big Creek State Park, which are administered by the Iowa Conservation Commission; Lewis A. Jester County Park, administered by the Polk County Conservation Board; Swede Point Park, administered by the Boone County Conservation Board; a recreation sports complex, administered by Polk City; and a marina, administered by a private concessioner.

DEVELOPED CORPS RECREATION FACILITIES

GENERAL

Existing Corps recreation areas at Saylorville Lake are developed for day use and/or overnight camping. These facilities provide the visiting public with a wide range of recreational opportunities. Recreational facilities to be discussed are zoned for Operations: Recreation - Intensive Use, with the exception of the Dogwood, Laurie Park, and River Bend Boat Launching areas which are zoned for Operations: Recreation - Low-Density Use. The development and management recommendations within this Master Plan are intended to improve the quality of the recreation facilities (i.e., natural and manmade resources, aesthetics, etc.), and to increase the potential thereby for visitors to have a quality recreation experience. Plate 2 displays the existing recreation areas at Saylorville Lake.

EXISTING FACILITIES

The existing recreation areas at Saylorville Lake are classified into five types of categories: picnic grounds, campgrounds, boat launching areas, trails, and a miscellaneous category. Each category displays tables for the natural resources and manmade facilities of each recreation area within the specific category. In addition, each category contains a discussion of

resource use objectives and development and management measures for each area within the category. Plates and photographs for each recreation area within a category are displayed after the general description paragraph for each category of facilities. Aerial photographs for each recreation area are displayed in exhibit 4.

Picnic Grounds

General

There are four existing picnic grounds at Saylorville Lake which are operated by the Rock Island District, U.S. Army Corps of Engineers. These four areas include: The Cherry Glen Picnic Ground, the Cottonwood Picnic Ground, the Oak Grove Picnic Ground, and the Walnut Ridge Picnic Ground. Table 16 displays the locations and facilities of the picnic grounds, and table 17 discloses information concerning the natural resources for each area. A listing of resource use objectives and development and management measures for each picnic area follows table 17. Plate 3 (Cherry Glen), plate 4 (Cottonwood), plate 5 (Oak Grove), and plate 6 (Walnut Ridge) show the facilities and their placement within each picnic ground. Plate 7 (Cherry Glen and Cottonwood) and plate 8 (Oak Grove and Walnut Ridge) display photographs of each picnic area. Aerial photographs of the four picnic grounds have been placed in exhibit 4.

TABLE 16

Existing Picnic Grounds and Facilities

<u>Facilities</u>	<u>Picnic Grounds</u>			
	<u>Cherry Glen</u>	<u>Cottonwood</u>	<u>Oak Grove</u>	<u>Walnut Ridge</u>
Location	Located on the upland area on the east side of the lake, 1/2 mile west of the intersection of NW 94th Ave and Highway 415. 94th Ave provides direct access to the facility (see plates 2 and 3).	Located approximately 3/4 of a mile south of the reservoir dam along the east bank of the Des Moines River. Northwest 37th St and NW Toni Dr provide access to the main access road of the facility (see plates 2 and 4).	Located on the upland area on the east side of the lake approximately 1/2 mile west of the intersection of NW 98th Ave and NW 44th St just off of Highway 415. 98th Ave provides direct access to the facility (see plates 2 and 5).	Located on the upland area on the west side of the lake 2 miles north of the reservoir dam. Northwest Beaver Dr provides access to the facility (see plates 2 and 6).
Tables	150	210	50	90
Shelters	6	9	2	3
Water Supply	Camp Dodge	Camp Dodge	Camp Dodge	City of Johnston
Comfort Station(s)	4	6	1	2
Playground(s)	2 (see plate 3)	1 (see plate 4)	None	1 (see plate 6)
Athletic Field(s)	1 (see plate 3)	Open lawns provide play areas (see plate 4)	None	Open lawns provide play areas (see plate 6)
Parking	9 lots: 164 spaces	14 lots: 210 spaces	10 lots: 65 spaces	8 lots: 86 spaces
Lawns	Open lawns provides additional play	See athletic field(s)	No open lawn	
Fishing Facilities	None		None	None
Fish Cleaning Station		2		
Fishing Pier		1: northwest loop accessible to handicapped		
Parking		2 lots: 35 spaces		
USAGE	Moderate to heavy	Moderate to heavy	Moderate	Open to public May 83

TABLE 17

Natural Resources in the Existing Picnic Ground Areas

Natural Resources						
<u>Picnic Grounds</u>	<u>Setting</u>	<u>Slope</u>	<u>Soils</u>	<u>Vegetation</u>	<u>Views</u>	<u>Zoning</u>
Cherry Glen	Upland forested area (see exhibit 4-A).	2-9 percent upland. 9-40 percent wooded ravines.	Loams 2-9 percent. Lester-Colo Complex 9-40 percent.	Open area: Grass lawns and landscape plantings. Upland Forest: mixed hardwood stands dominated by oak and hickory trees.	Dependent on location: picnic area and supporting facilities in an open or framed view from all directions. West: from west access road lake and west shoreline (see plate 7, photos 1 and 2).	Operations: Recreation - Intensive Use.
Cottonwood	Open bottom land area bordered by bottom land forest (see exhibit 4-J).	0-5 percent flat bottom land	Loams, sandy loams, silt loams, loamy sand, and alluvial land 0-5 percent.	Open area: Grass lawns and landscape plantings. Bottom land forest: Dominated by cottonwood, willow, and silver maple with an understory of box elder and Chinese elm.	Dependent on location: open framed or enclosed views of the area and its facilities from all directions (see plate 7, photos 3 and 4).	Operations: Recreation - Intensive Use.
Oak Grove	Upland forested area (see exhibit 4-B).	5-9 percent upland, 9-40 percent wooded ravines.	Loams and sandy loams, 5-9 percent. Lester-Color Complex 9-40 percent.	Open area: None. Upland forest: mature upland forest dominated by oak and hickory trees with an understory of gray dogwood, chinese elm, and suppressed elm and hickory trees.	Restricted: Due to overstory and understory trees (see plate 8, photos 5 and 6).	Operations: Recreation - Intensive Use.
Walnut Ridge	Open upland area bordered by upland forest (see exhibit 4-G).	2-9 percent upland. 9-14 percent sloping upland. 14-40 percent wooded ravines.	Loams 2-14 percent. Lester-Colo Complex 9-40 percent.	Open area: Grass lawns and landscape plantings framed with hardwood forest. Upland forest: Hardwood forest dominated by oak and hickory trees.	East: Area facilities and open areas framed by trees. West: Area facilities and open areas with landscape plantings. North and South: supporting facilities, open areas, and trees (see plate 8, photos 7 and 8).	Operations: Recreation - Intensive Use.

General Resource Objective

To provide and maintain high quality and various types of picnic opportunities with a complimenting variety of additional day-use activities including power and nonpower boating, swimming, fishing, trails, open play fields, and tot lots.

[Discussion] The Standard Metropolitan Statistical Area of Des Moines is located approximately 11 miles southeast of the project. Numerous small cities and towns are also located throughout the project zone of influence. The quality of the natural resources is suitable for high density day-use activities. As a result, the project is capable of supplying high quality picnic opportunities with a complimenting variety of day-use activities to meet a portion of the recreation day-use needs of the zone of influence in regard to picnic opportunities.

Specific Resource Use Objectives

-- Cherry Glen Picnic Ground

- . To preserve and upgrade the natural and manmade resources found in the picnic ground as well as its aesthetic qualities.

-- Cottonwood

- . To compliment the aesthetic qualities of the facility through additional landscape plantings.

- . To preserve and upgrade the manmade facilities found in the picnic ground as outlined in the Project Resource Management Plan (appendix A to the Master Plan).

-- Oak Grove

- . To maintain the aesthetic attractiveness of the picnic ground through forestry practices described in the Project Forestry, Fish and Wildlife Management Plan (appendixes B and D to the Master Plan).

- . To maintain the manmade resources found in the picnic ground through management practices described in the Project Resource Management Plan (appendix A to the Master Plan).

-- Walnut Ridge

. To provide a safe and high quality picnic ground facility. Practices discussed in the Project Safety Plan (appendix E to the Master Plan) will be implemented to insure user safety.

. To enhance the aesthetic qualities in the open areas of the picnic ground through additional landscape plantings.

. To preserve and upgrade the natural and manmade resources of the area now and when the area is open to the public.

Development and Management Measures

-- Cherry Glen Picnic Ground

. Four foot access trails have been developed by users from the athletic field to facilities near the east access road. These foot access trails will be maintained as described in the Project Resource Management Plan (appendix A to the Master Plan).

. The west access road cuts across a ravine with 40 percent slopes and Lester-Colo Complex soil which is vulnerable to erosion. Therefore, the banks and berm along this road will be kept in grasses and forbs. The area will also be periodically monitored for signs of erosion.

-- Cottonwood Picnic Ground

. Additional landscape plantings will be established in the open areas to enhance the aesthetics and provide needed shade. Selected areas adjacent to picnic shelters should be left open for game fields.

. An additional shelter and 15-car parking lot could be established along the access road to the southeast loop to accommodate existing day use activity. The Huntsville loam soil and the size of the area would support an additional shelter and lot. See Plate 4 for the proposed location.

. Develop a new tile drainage field for the comfort station located off the southeast access loop.

-- Oak Grove Picnic Ground

. None.

-- Walnut Ridge

. A comfort station should be placed near the parking lot (10-car) of the south access area. There are no restroom facilities in this area.

. Additional landscape plantings will be established in the open areas of the picnic ground to enhance the visual quality of the area.

. Establish a sidewalk between the parking lot (35-car) and comfort station of the southeast access area.

. For development purposes, the open lawn areas of the southeast access areas need aeration, fertilizer, and additional seeding to establish a better vegetative cover.

. As an erosion control measure, fill and landscape (with railroad ties) the area between the parking lot and picnic shelter in the southeast access area.

Campgrounds

General

There are five existing campgrounds at Saylorville Lake which are operated by the Rock Island District, U.S. Army Corps of Engineers. These four areas include: The Acorn Valley Campground, the Bob Shetler Class A and B Campgrounds, the Cherry Glen Campground, and the Prairie Flower Campground. Table 18 displays the location and facilities of the campgrounds, and table 19 discloses information concerning the natural resources for each area. A listing of resource use objectives and development and management measures for each campground area follows table 19. Plate 9 (Acorn Valley), plate 10 (Bob Shelter A and B Campgrounds), plate 3 (Cherry Glen), and plate 11 (Prairie Flower) show the facilities and their placement within each picnic ground. Plates 12 (Acorn Valley and Bob Shetler) and plate 13 (Cherry Glen and Prairie Flower) display photographs of each campground area. Aerial photographs of the four picnic grounds have been placed in exhibit 4.

TABLE 18

Existing Campgrounds and Facilities

<u>Facilities</u>	<u>Campgrounds</u>				
	<u>Acorn Valley</u>	<u>Bob Shetler Class A</u>	<u>Bob Shetler Class B</u>	<u>Cherry Glen</u>	<u>Prairie Flower</u>
<u>Location and Access</u>	Located on the northwest side of the lake 1-1/2 miles south of the intersection of NW Beaver Dr and NW 112 Ave. NW Beaver Dr provides access to the area (see plates 2 and 9).	The facility borders the south side of the reservoir dam on the east side of the outlet channel. Access to the area is gained by driving east on NW 78th Ave (see plates 2 and 10).	The facility is on the east and west side of the reservoir outlet channel (8 and 9 spurs, respectively). Access is provided by NW 78th Ave (see plates 2 and 10).	Located on the east side of the lake approximately 1/2 mile west of the intersection of NW 94th Ave and Highway 415. NW 94th Ave provides direct access to the facility (see plates 2 and 3).	Located on the east side of the lake approximately 3/8 of a mile north of the Oak Grove Rec. Area. Highway 415 provides access to the area (see plates 2 and 11).
<u>Campground Class</u>	A	A	B	A	A
<u>Camping Loops</u>	1 (see plate 9)	9 (see plate 10)	2 (see plate 10)	7 (see plate 3)	5 (see plate 11)
<u>Tent Camping Access Roads</u>	2 (see plate 9)	None	None	None	None
<u>Campsites</u>	129	48	17	134	150
<u>Trailer</u>	29	48	17	134	134
<u>Tent</u>	100	None	None	None	16
<u>Comfort Sta.</u>	None	None	1 (see plate 10)	2 (see plate 3)	None
<u>Shower Bldg.</u>	3 (see plate 9)	2 (see plate 10)	None	2 (see plate 3)	5 (see plate 11)
<u>Water Supply</u>	City of Johnston	Camp Dodge	Camp Dodge	Camp Dodge	Camp Dodge
<u>Parking</u>	15 lots: 121 spaces	3 lots: 45 spaces	1 lot: 35 spaces	5 lots: 48 spaces	12 lots: 80 spaces
<u>Playgrounds</u>	1 (see plate 9)	2 (see plate 10)	None	2 (see plate 3)	2 (see plate 11)
<u>Amphitheater</u>	1 proposed (see plate 9)	None	None	1 (see plate 3)	1 proposed (see plate 11)
<u>Fishing Facilities</u>	None	None		None	None
<u>Fish Cleaning Stations</u>					
<u>Walkway</u>			1 (see plate 10) 2: 1 on each side of outlet channel		
<u>Parking</u>			1 lot: 35 spaces		
<u>Fee Collection Station</u>	1 (see plate 9)	1 (see plate 10)	None	1 (see plate 3)	1 (see plate 11)
<u>Dump Station</u>	1 (see plate 9)	1 proposed (see plate 10)	None	1 (see plate 3)	1 (see plate 11)
<u>USAGE</u>	Moderate	Light	Moderate	Heavy	Heavy

Natural Resources in the Existing Campground Areas

Campgrounds	Natural Resources					
	Setting	Slope	Soils	Vegetation	Views	Zoning
Acorn Valley	Open upland area bordered by forested ravines (see exhibit 4-F).	1-9 percent upland. 9-14 percent sloping upland. 14-40 percent ravines.	Loams 1-14 percent. Lester-Colo Complex 14-40 percent.	Open area: Grass lawns and landscape plantings bordered by hardwood forest. Upland forest: Dominated by oak and hickory trees with understory of dogwood, cherry, locust, and suppressed oak and hickory trees.	East: Area facilities and open areas framed by trees. West: Area facilities and open areas. North and South: Supporting facilities open areas, trees (see plate 12, photos 9 and 10).	Operations: Recreation - Intensive Use.
Bob Shetler	Open bottom land bordered to the south and east by bottom land forest (see exhibit 4-I).	0-5 percent bottom land. 5-14 percent sloping forested land.	Loams, silt loams. Alluvial land 1-14 percent.	Open area: Open grass lawns bordered by bottom land forest to the south and east. Bottom land forest: Dominated by silver maple, cottonwood, and willow and an understory dominated by box elder and Chinese elm.	North: Dominated by the vertical and horizontal presence of the dam. South, East and West: Supporting facilities and bottom land (see plate 12, photos 11 and 12).	Operations: Recreation - Intensive Use.
Cherry Glen	Upland forested area (see exhibit 4-A).	2-5 percent upland. 15-40 percent wooded ravines.	Loams 2-15 percent Lester-Colo Complex 15-40 percent.	Open area: Grass lawns and landscape plantings. Upland forested area: Mixed hardwood stands dominated by oak and hickory trees.	Dependent on location: Lake, other recreation areas, or Cherry Glen supporting campground facilities (see plate 13, photos 13 and 14).	Operations: Recreation - Intensive Use.
Prairie Flower	Open upland area, Aster loop bordered by upland forest (see exhibit 4-C).	2-9 percent upland. 9-40 percent wooded ravines.	Loams 2-9 percent. Lester-Colo Complex 9-40 percent.	Open area: Grasses, forbs, weeds, or grass lawns with landscape plantings. Restored Prairie: See table 10 for species. Upland forest: Dominated by oak and hickory trees.	West: Lake, Oak Grove Beach and/or sewage lagoon. East: Supporting facilities, grass lawns, open fields, and restored prairie. North and South: Supporting facilities, grass lawns, open fields (see plate 13, photos 15 and 16).	Operations: Recreation - Intensive Use.

General Resource Objective

To provide and maintain camping opportunities for vacation, weekend, and transient campers with a variety of areas and facilities for trailer, tent, and group camping.

[Discussion] The analysis of the zone of influence, the project natural resources and site factors indicates that project campgrounds receive the majority of their vacation and weekend use from within the zone of influence. Heavily traveled interstate highways within 5 miles of the project attract transient campers to the project campgrounds. Supplement Number 6 to the 1978 Iowa State Comprehensive Outdoor Recreation Plan indicates that within the region, 19.4 percent of the people participated in individual or family trailer camping, 19.1 percent in tent camping, and 2.8 percent in group camping.

Specific Resource Use Objectives

-- Acorn Valley Campground

- . To enhance the quality of the recreation experience by establishing limited interpretive resources in the area.
- . To upgrade the aesthetic quality of the campground.
- . To preserve and upgrade the natural and manmade resources found in the facility as outlined in the Project Resource Management Plan (appendix A to the Master Plan).

-- Bob Shetler

- . To enhance the functional usefulness of the facilities in the area (Class A and B Campgrounds).
- . To enhance the manmade resources found in the facilities (Class B Campground).
- . To upgrade the natural resources found in the area by practices outlined in the Project Resource Management Plan (appendix A to the Master Plan).

-- Cherry Glen

. To improve the quality of the recreation experience by improving the interpretive resources of the campground.

. To preserve and manage the natural and manmade resources found in the campground.

. To establish and promote the safe use of the area and its supporting facilities for campground users.

-- Prairie Flower

. To upgrade the quality of the recreation experience by establishing limited interpretive resources in the facility.

. To manage and preserve the restored prairie areas within the campground area.

. To upgrade the aesthetic qualities of the area through additional landscape plantings, screens, and berms.

. To preserve and upgrade the natural and manmade resources found in the facility as outlined in the Project Resource Management Plan (appendix A to the Master Plan).

Development and Management Measures

-- Acorn Valley Campground

. Establish a vegetative screening between NW Beaver Drive and the campground to serve as a vegetative buffer and to enhance the aesthetics of the area (appendixes B and D to the Master Plan).

. Establish a small and simple amphitheater that blends with the natural and manmade resources of the area. See plate 9 for the proposed location.

-- Bob Shetler Class A and B Campground

. Establish a trailer dump station in the Bob Shetler Class A Campground. See plate 10 for the proposed location.

. A shower building should be established near the Bob Shetler Class B Campground. See plate 10 for the proposed location.

- . Establish a vegetative screening directly north of the sewage lagoon so that in future years the lagoon would not be visible from the road located on top of the reservoir dam.

- . Monitor and protect existing landscape plantings within the Shetler Recreation Area to insure the enhancement of the aesthetic quality of the area in future years.

- . In order to control compaction, prevent erosion, and define the limits of the campground spurs, refurbish each campground spur with additional gravel and place railroad ties around the borders of each spur in the Bob Shelter Class B Campground.

-- Cherry Glen

- . Benches that blend with natural surroundings of the amphitheater will be added to the facility.

- . Over a period of years, campers have developed a foot access trail from the campground to the lake. This trail will be upgraded and maintained in order to control compaction and erosion problems.

- . An extension of the bicycle trail has recently been completed which intersects 94th Avenue. Signs will be placed in appropriate locations to alert motorists, pedestrians, and bicyclists.

-- Prairie Flower

- . Establish a vegetative screening to the east of the sewage lagoon area to enhance the scenic view from the west central and southwest camping loops.

- . Establish a small and simple amphitheater with benches that blends with the natural and manmade resources of the area. See plate 11 for the proposed location.

- . Establish an additional small playground in the southeast loop for safety purposes. See plate 11 for the proposed location.

- . In order to control compaction, prevent erosion, and define the limits of the campground spurs, refurbish each campground spur with additional gravel and place railroad ties around the borders of each spur in the Prairie Flower Campground.

Boat Launches

General

There are six boat launch areas at Saylorville Lake which are operated by the Rock Island District, U.S. Army Corps of Engineers. These six areas include: The Cherry Glen Boat Launch, the Dogwood Boat Launch, the Lakeview Boat Launch, the Laurie Park Boat Launch, the River Bend Boat Launch, and the Saylorville Lake Marina Boat Launch. Table 20 displays the location and facilities of the boat launches, and table 21 discloses information concerning the natural resources for each area. A listing of resource use objectives and development and management measures for each boat launch follows table 21. Plate 3 (Cherry Glen), plate 14 (Dogwood), plate 15 (Lakeview), plate 16 (Laurie Park), plate 17 (River Bend), and plate 18 (saylorville Lake Marina) show the facilities and their placement within each boat launch area. Plate 19 (Cherry Glen and Dogwood), plate 20 (Lakeview and Laurie Park), and plate 21 (River Bend and the Saylorville Lake Marina) display photos of each boat launch.

TABLE 20

Existing Boat Launches and Facilities

Facilities	Boat Launch Areas					
	Cherry Glen	Dogwood	Lakewood	Laurie Park	River Bend	Saylorville Lake Marina
Location and Access	Located along the east shoreline of the lake west of the Cherry Glen Picnic and Campground Area. NW 94th Ave provides direct access to the facility (see plates 2 and 3).	Located directly north of the Highway 57 bridge on the east bank of the Des Moines River (see plates 2 and 14).	Located along west shoreline of the lake approximately 1/2 mile northwest of the dam. NW Beaver Dr and a connecting access road provide access to the area (see plates 2 and 15).	Located directly north of the Highway 210 bridge on the east bank of the Des Moines River (see plates 2 and 16).	Located directly north of the U.S. Route 30 bridge on the west bank of the Des Moines River (see plates 2 and 17).	Located on the south end of a bay on the east side of the reservoir. The facility is approximately 1 mile SE of Polk City and directly SW of a barrier dam. This is part of the Big Creek reservoir. Highway 415 provides access to the area (see plates 2 and 18).
Launching Access	2: 1 upper and 1 lower (see plates 3 and 9). Lower ramp functional to 846, upper ramp functional to 875 NGVD.	1: see plates 14 and 19. Functional to 836 NGVD.	2: 1 upper and 1 lower. Both ramps functional to 855 NGVD	1: see plates 16 and 20. Functional to 836 NGVD.	1: See plates 17 and 21. Functional to 836 NGVD.	1: See plates 18 and 21. Functional to 895 NGVD.
Launching Lanes	6: 2 upper and 4 lower (see plate 3).	1: see plates 14 and 19. Functional to 836 NGVD.	4: 2 upper and 2 lower (see plate 15).	1: see plates 16 and 20. Functional to 836 NGVD.	1: See plates 17 and 21. Functional to 836 NGVD.	1: See plates 18 and 21. Functional to 895 NGVD.
Parking	2 lots: 300 spaces; 80 additional spaces proposed (see plate 3).	2 lots: 23 spaces.	1 lot: 183 spaces.	2 lots: 385 spaces.	2 lots: 36 spaces.	4 lots: approximately 250 spaces.
Breakwater	1: provides protection to water elevation 840 NGVD.	None	1: provides protection to water elevation 840 NGVD.	None	None	None: bay area provides protection from wind and waves.
Courtesy Docks	1: adjacent to upper launching ramp.	None	1: adjacent to lower launching ramp.	None	None	None
Comfort Sta.	None	None	1: see plates 15 and 20.	None	None	1 set of restrooms in concession building.
Shelters	None	None	1: see plates 15 and 20.	None	None	None
Use	Heavy	Light to moderate	Heavy	Light to moderate	Light to moderate	Heavy

TABLE 21

Natural Resources in the Existing Boat Launching Areas

Boat Launching Areas	Natural Resources					
	Setting	Slope	Soils	Vegetation	Views	Zoning
Cherry Glen	Open transition zone (see exhibit 4-A).	0-2 percent lots. 2-30 percent access roads. 15 percent boat ramps.	Sandy loams 2-14 percent. Lester-Colo Complex 14-40 percent.	Open area: grasses, forbs, and weeds in various early stages of succession. Upland forest: oak and hickory trees frame the upper parking lot.	West and South: lake, dam, and west shoreline. North: lake, west shoreline, open field, Oak Grove Beach, and Mile-Long Bridge. East: access road and trees (see plate 19, photos 17 and 18).	Operations: Recreation - Intensive Use.
Lakeview	Open transition zone bordered by mixed stands of upland hardwoods with bottom land tree species southeast of the area (see exhibit 4-H).	1-14 percent shoreline to upland. 14-40 percent ravines.	Loams 1-14 percent. Lester-Colo Complex 14-40 percent.	Open area: grass lawns and fields with grasses, forbs, and weeds. Upland forest: dominated by oak and hickory trees. Bottom land species: silver maple, Chinese elm, and box elder in the pioneer tree stage of succession.	East: lake, east shoreline, rec areas, and uplands. South: lake and dam to the south. West: open lawns, fields, and trees. North: open lawns, fields, trees, access road, and shelter (see plate 20, photos 21 and 22).	Operations: Recreation - Intensive Use.
Dogwood	Open bottom land bordered by sloping forested areas.	0-2 percent open bottom land. 14-40 percent sloping forested areas.	Alluvial land 0-2 percent. Lester-Colo Complex 15-40 percent.	Open area: grass lawns and fields vegetated in grasses, forbs, and weeds in various early stages of succession. Sloping forested area: mixed bottom land and upland species.	East: open lawns and fields bordered by sloping forest. West: river, ramp, county road E-57 bridge, bottom land, forest. North and South: fields, lawn, and trees (see plate 19, photos 19 and 20).	Operations: Recreation - Low Density Use.
Laurie Park	Open bottom land bordered by sloping forested areas.	0-2 percent open bottom land. 14-40 percent sloping forested areas.	Alluvial land 0-2 percent. Lester-Colo Complex 15-40 percent.	Open area: grass lawns and fields vegetated in grasses, forbs, and weeds in various early stages of succession. Sloping forested area: mixed bottom land and upland species.	East: open lawns and fields bordered by sloping forest. West: river, ramp, bottom land forest. North and South: fields, lawns, trees, and supporting facilities. (see plate 20, photos 23 and 24).	Operations: Recreation - Low Density Use.
River Bend	Open bottom land bordered by sloping forested areas.	0-2 percent open bottom land. 14-40 percent sloping forested areas.	Alluvial land 0-2 percent. Lester-Colo Complex 15-40 percent.	Open area: grass lawns and fields vegetated in grasses, forbs, and weeds in various early stages of succession. Sloping forested area: mixed bottom land and upland species.	East: ramp, river, and bottom land forest. West: Access roads, parking lots, grass lawns, open field, and crop fields (see plate 21, photos 25 and 26).	Operations: Recreation - Low Density Use.
Saylorville Lake Marina	Open transition zone at the end of a bay on the east side of the lake, building on the upland area (see exhibit 4-E).	2-5 percent flat upland. 5-14 percent transition zone. 14-40 percent hill between upper and lower parking lots.	Loams 2-9 percent. Sandy loams 9-14 percent. Lester-Colo Complex 14-40 percent.	Open area: grasses, forbs, and weeds in various stages of succession on the west side of the bay. Forested area: east side of bay south of barrier dam mixed stand of upland and bottom species.	South: bay, lake, docks, buoys, trees, and open field. North: barrier dam, supporting facilities, trees, open fields, and building. East and West: open fields and stands of trees (see plate 21, photo 27).	Operations: Recreation - Intensive Use.

General Resource Use Objective

To provide and maintain a high quality and safe level of power and non-power boating opportunities.

[Discussion] The analysis of the zone of influence indicates that there is a lack of water resources with sufficient water surface and depth to satisfy the recreation demand for safe and high quality power and non-power boating opportunities. The surface acreage and water depth at Saylorville Lake provide the opportunity to fulfill a portion of the demand. In the future, a deficiency of good and safe boatable water could possibly place excessive demands on the lake which would reduce the quality and safety of the boating experience. Management measures would need to be taken to prevent this from happening. These management measures could include zoning portions of the lake for various types of boating or establishing time frames for certain types of boating use. These measures would result in creating safer boating conditions and increasing the carrying capacity and/or boating opportunities on the lake.

Specific Resource Use Objectives

-- Cherry Glen Boat Launch

- . To maintain and upgrade the safety of visitors utilizing the area.
- . To maintain and enhance the functional usefulness of the area.
- . To upgrade the aesthetic qualities of the area.
- . To preserve and maintain the manmade resources found in the area.

-- Dogwood Boat Launch

- . To maintain the natural and manmade resources of the area.
- . To provide a safe facility for boat launching.

-- Lakeview Boat Launch

- . To maintain and improve the functional usefulness of the area.
- . To maintain and upgrade the safety of visitors utilizing the area.

- . To preserve and upgrade the natural and manmade resources found in the area.

- . To upgrade the aesthetic resources of the area.

-- Laurie Park Boat Launch

- . To maintain the natural and manmade resources of the area.
- . To provide a safe facility for boat launching.

-- River Bend Boat Launch

- . To maintain the natural and manmade resources of the area.

-- Saylorville Lake Marina Boat Launch

- . To manage and maintain the launch ramp and its supporting facilities.

- . To maintain and upgrade the safety of visitors utilizing the ramp.

Development and Management Measures

-- Cherry Glen Boat Launch

- . Courtesy docks should be placed adjacent to both ramps. Each dock should have a 4-boat capacity.

-- Dogwood Boat Launch

- . The area will be offered to the Iowa Conservation Commission and the Boone County Conservation Board for management purposes. If an agency would agree to manage the area, the agency would be responsible for all maintenance and management cost. At the time of this publication, no agreements have been signed.

-- Lakeview Boat Launch

. Courtesy docks should be placed adjacent to both ramps. Each dock should have a 4-boat capacity.

. Place a light at the end of the breakwater to enhance night safety.

. As an erosion control measure, a terrace should be developed directly east of the combination comfort station and shelter. See plate 15 for the proposed location, and the plate insert for additional information.

-- Laurie Park Boat Launch

. The area will be offered to the Iowa Conservation Commission and the Boone County Conservation Board for management purposes. If an agency would agree to manage the area, the agency would be responsible for all maintenance and management cost. At the time of this publication, no agreements have been signed.

-- River Bend Boat Launch

. The area will be offered to the Iowa Conservation Commission and the Boone County Conservation Board for management purposes. If an agency would agree to manage the area, the agency would be responsible for all maintenance and management cost. At the time of this publication, no agreements have been signed.

-- Saylorville Lake Marina Boat Launch

. None.

Marinas

General

There is one existing marina at Saylorville Lake which is known as the Saylorville Marina. The marina is located on fee-title land which is leased to a private concessionaire. Table 22 displays the location and facilities of the marina. Table 23 provides information concerning the natural resources of the area. A listing of resource use objectives and development and management measures for the marina follow table 23. Plate 22 shows the facilities and their placement within the lease area, and plate 23 displays photographs of the area. A proposal to establish a second marina is discussed in section VI of this report.

TABLE 22

Saylorville Marina Facilities

<u>Recreation Area</u>	<u>Location</u>	<u>Slips and Buoys</u>	<u>Sales Room</u>	<u>Repair Shop</u>	<u>Restrooms</u>	<u>Trailer Storage</u>	<u>Bait Shop</u>	<u>Launching Ramp</u>	<u>Gasoline Pump</u>	<u>Parking Lots</u>	<u>Water Supply</u>	<u>Use</u>
Saylorville Marina	The facility is approximately 1 mile SE of Polk City and directly SW of a barrier dam that is part of the Big Creek Reservoir. Highway 415 provides access to the area (see plate 22).	Total = 590	1: Located in concession bldg.	1: Located in concession bldg.	1 set located in concession bldg.	1 lot: Located behind concession bldg.	1: Located in concession bldg.	1 ramp; 2 lanes.	1: Located behind concession bldg.	4: Granular surface approximately 250 spaces.	Well water.	Heavy

TABLE 23

Natural Resources in the Existing Marina Area

Natural Resources						
<u>Marina Area</u>	<u>Setting</u>	<u>Slope</u>	<u>Soils</u>	<u>Vegetation</u>	<u>Views</u>	<u>Zoning</u>
Saylorville Marina	Open transition zone at the end of a bay on the east side of lake, building on an upland area (see exhibit 4-E).	2-5 percent flat upland. 5-14 percent transition zone. 14-40 percent hill between upper and lower parking lots.	Loams 2-9 percent. Sandy loams 9-14 percent. Lester-Colo Complex 14-40 percent	Open areas: grass, forbs, and weeds in various early stages of succession on the west side of the bay. Forested area: east side of bay south of barrier dam mixed stand of upland and bottom land forest.	South: bay, lake, docks, buoys, trees, and open field. North: barrier dam, supporting facilities, trees, open fields, and building East and West: open fields and stands of trees (see plate 23, photos 28 and 29).	Operations: Recreation - Intensive Use.

General Resource Objective

To provide a marina and supporting facilities through the development, management, and maintenance of a private lessee.

[Discussion] The analysis of the zone of influence and a recent Waterway Experiment Station Report indicate the need for the marina and its supporting facilities. The natural resources in the marina area are capable of supporting this type of facility. This demand and the capabilities of the natural resources provide the lessee with the opportunity for a profitable operation.

Specific Resource Use Objectives

- . Upgrade the function of the facility.
- . Enhance the safety of the recreation users of the area.
- . Preserve and enhance the natural and manmade resources of the area.

Development and Management Measures

- . Some of the dock and buoy facilities are located outside of the existing lease boundaries. Therefore, it is recommended that the existing lease area be extended to include the new facilities (see plate 22).
- . The rewritten lease will contain a clause which states that the lessee will not have any combination of slips and buoys whose total exceeds 590.
- . Safe and secure adjustable access walkways to the docks need to be provided (at conservation pool 836 NGVD) instead of temporary walkways.
- . Changes to be implemented as a result of the pool raise will be implemented as discussed in section IX.
- . If the proposed Second Marina is not developed, the existing marina lease may be considered for expansion. Any expansion would be subject to District approval.

Trails

General

There are seven existing types of trails that are located in part or entirely on fee title land at Saylorville Lake controlled by the Rock Island District, U.S. Army Corps of Engineers. These trails include a foot/ski, ski only, foot/snowmobile, bicycle, equestrian, foot access, and interpretive foot trails. Table 24 displays the types of trails that can be found in the recreation areas at Saylorville Lake. Plate 24 displays the overall existing and proposed trail system at Saylorville Lake. The individual plates for each recreation area show the existing or proposed location of trails in that specific area.

A listing of resource use objectives and development and management measures for the trail system follows table 24. Plate 25 displays photographs of trails at Saylorville Lake.

TABLE 24 ^{3/}Existing Trails in Recreation Areas

Recreation Areas	Types of Trails							
	Foot/Ski	Ski Only	Foot/Snowmobile	Bicycle ^{4/}	Equestrian ^{1/}	Foot Access	Interpretive Foot	Multi-Purpose Foot ^{2/}
Campgrounds Acorn Valley Bob Shetler Class A Bob Shetler Class B Cherry Glen Prairie Flower	(see plate 9)			(see plate 10) (see plate 3)		(see plate 3) (see plate 11)		
Boat Launching Areas Cherry Glen Lakeview Dogwood Laurie Park River Bend Saylorville Lake Marina	(see plate 15) (see plate 17)	(see plate 15)	(see plate 15)					
Picnic Grounds Cherry Glen Cottonwood Oak Grove Walnut Ridge	(see plate 6)			(see plate 3) (see plate 4)		(see plate 5)		
Miscellaneous Oak Grove Beach Visitors Center			(see plate 26)	(see plate 26)			(see plate 26)	

^{1/} See Jester County Park, plate 32.

^{2/} See Saylorville Lake Downstream Corridor, plate 45.

^{3/} See plate 24 for the location of trail systems at Saylorville Lake.

^{4/} The bicycle trail is also used as a snowmobile trail.

General Resource Use Objective

To provide and expand a safe and high quality diversified network trail system which would provide various types of trail users access to Corps, State, county, and local Government recreation areas in the Saylorville Lake area.

[Discussion] The analysis of the zone of influence and site specific factors indicates that there is a large demand for various types of trails in the project area. Through the cooperation of the various Government agencies, a network providing a variety of trails between and within the various recreation areas (managed by various Government agencies) is being developed. The network system will provide an assortment of long-quality trails with access to Corps, State, county, and local Government operated recreation areas. The natural resources within the area are capable of supporting foot, bicycle, snowmobile, equestrian, and cross-country ski trails.

Specific Resource Use Objectives

-- All Trails

- . To preserve and maintain the natural and manmade resources of each trail through trail management practices described in the Project Resource Management Plan (appendix A to the Master Plan).

- . To maintain and upgrade the safety of visitors utilizing the various trails.

Development and Management Measures

-- All Trails

- . Where it is appropriate and feasible, establish vandal resistant support facilities such as benches, trash receptacles, water fountains, etc., to enhance the recreation experience of the trail users.

- . In order to reduce the potential for compaction and erosion, materials such as wood chips and drainage bars will be periodically applied to the various trails at Saylorville Lake.

- . Establish a paved handicapped access trail (approximately 1/4 mile long) to the northwest of the Visitors Center. See plate 26 for additional information.

Miscellaneous Recreation Areas

General

There are three existing miscellaneous recreation areas at Saylorville Lake which are operated by the Rock Island District, U.S. Army Corps of Engineers. These three areas include: the Oak Grove Beach, Visitor Center and Visitor Center Annex, and Lakeview Winter Sports Area. These areas are classified in the miscellaneous category because they are currently one of a kind type facilities at Saylorville Lake. Table 25 displays the location and facilities of the miscellaneous recreation areas and table 26 provides information concerning the natural resources of each area. A listing of resource use objectives and development and management measures for each recreation area follows table 26. Plate 5 (Oak Grove Beach), plate 26 (Visitor Center), plate 26A (Visitor Center Annex), and plate 15 (Lakeview Winter Sports Area) show the facilities and their placement within each miscellaneous recreation area. Plate 27 displays photographs of Oak Grove Beach, the Lakeview Winter Sports Area, and Visitor Center.

TABLE 25

Miscellaneous Recreation Areas and Facilities

Recreation Area	Location	Facilities									
		Change House	Vault Toilets	Beach	Zoning Buoy	Water Supply	Trash Receptacles	Lawn	Parking	Use	
Oak Grove Beach	Located on bottom land on the east side of the lake. 98th Ave provides direct access to the facility (see plate 5).	1 existing, and 1 proposed (see plate 5).	1 set existing, and 1 set proposed (see plate 5).	Fine grain sand.	Provides safety zone for swimmers.	Camp Dodge	2 sets, galvanized steel.	None	2 lots: 500 spaces.	Heavy	
Visitors Center	Located approximately 1/4 mile northeast of the east end of the reservoir dam, NW. 37th provides access to the facility (see plate 26).	2 display areas: 27' x 26', and 15' x 11'	1 room: 11' x 11'	Reception Area: 14' x 15'	1 set	Theater: 1 area: for slide and film shows, seats 40 people.	Projection Room: 1 area: also used as a work room.	Mechanical Room: 1 area: houses furnace, etc.	Utility Room: 1 area: used for storage of interpretive equipment.	2 lots: 50 spaces	Moderate
Visitor Center Annex	Located in the building of the disbanded Saylorville Lake Construction office. The building is approximately 1/4 mile south-east of the project administration and maintenance building (see plate 26-A).	1 room 11' 28" x 21' 2" (approximately) (see plate 26-A). Emphasis on natural history topics.	1 room 11' 8" x 11' 8" (see plate 26-A).	Museum: 1 room 34' 6" x 24' x 2" (see plate 26-A). Museum will focus on natural history topics.	1 existing set (see plate 26-A).	1 room 15' 4" x 24' 2" (see plate 26-A).	1 existing lot; 15 spaces (see plate 26-A).	1 room 11' 8" x 10' 4" (approximately) (see plate 26-A).			
Lakeview Winter Sports Area	Approximately 1/2 mile NW of the reservoir dam. NW Beaver Dr and a connecting access road provide access to the area (see plate 15).	(see plate 15)	(see plate 15).	Winter Trail Access: Main access area to cross-country skiing, snowmobile, and foot trails (see plates 15 and 24).		Shelter/Comfort Station: 1 combined shelter and comfort station (see plates 15 and 20).			2 lots: 198 spaces.	Moderate	

TABLE 26

Natural Resources in the Existing Miscellaneous Recreation Areas

Miscellaneous Recreation Areas	Natural Resources					
	Setting	Slope	Soils	Vegetation	Views	Zoning
Oak Grove Beach	Open transition zone (see exhibit 4-B).	1-5 percent beach and parking lots. 14-30 percent sloping area to upland.	Loams over deep deposits of sand and gravel 1-5 percent. Lester-Colo Complex 14-30 percent.	Open areas: grasses, forbs, and weeds in various early stages of succession.	West: lake, shoreline, bluff line, and other recreation areas. South: lake and dam. North: lake, Mile-Long Bridge, bay, and marina. East: open fields, upland forest, and other recreation areas (see plate 27, photo 33).	Operations: Recreation - Intensive Use.
Visitor Center	Upland forested area (see exhibit 4-K).	2-9 percent upland area. 14-40 percent on land south of the building and ravine to its north.	Loams 2-9 percent. Lester-Colo Complex 14-40 percent.	Open area: grass lawn and landscape plantings. Upland forest: dominated by oak and hickory trees with an understory of dogwood, cherry, locust, and suppressed oak and hickory trees.	West: dam, lake, west shoreline, and other recreation areas. North, South, and East: views restricted by trees (see plate 27, photo 34).	Operations: Recreation - Intensive Use.
Visitor Center Annex	Upland forest of mature oak and hickory trees.	5-12 percent upland.	Loams 5-12 percent.	Upland forest: mature hardwood forest dominated by oak and hickory trees.	North, East, and South: mature forest with a suppressed understory. West: open fields of grasses, forbs, and weeds with upland forest in the background.	Operations: Recreation - Low Density.
Lakeview Winter Sports Area	Open transition zone bordered by mixed stands of upland hardwoods with bottom land tree species south-east of the area (see exhibit 4-R).	1-14 percent shoreline to upland. 14-40 percent ravines.	Loams 1-14 percent. Lester-Colo Complex 14-40 percent.	Open area: grass lawns and fields with grasses, forbs, and weeds. Upland forest: dominated by oak and hickory trees. Bottom land species: silver maple, Chinese elm, and box alder in the pioneer tree stage of succession.	East: lake, east shoreline, recreation areas, and upland. South: lake and dam to the south. West: open lawns, fields, and trees. North: open lawns, fields, and trees (see plate 27, photo 35).	Operations: Recreation - Intensive Use.

General Resource Objectives

-- Oak Grove Beach

To provide and maintain a high quality swimming beach with good supporting facilities and convenient access to picnic and camping areas at Saylorville Lake.

[Discussion] The analysis of the zone of influence and site specific factors indicates that the water-land form and water quality characteristics of the lake provide an excellent swimming beach opportunity. With the project being close to a metropolitan area and a deficiency of swimming beaches in the area, the existing beach receives a high amount of use. The natural resources of the area are capable of supporting the high use.

-- Visitor Center

To provide and maintain a visitor center to promote an understanding and appreciation of the regional and local responsibilities of the Corps of Engineers throughout history and today. These responsibilities include: flood control, water supply, water quality, fish and wildlife enhancement, and recreation.

[Discussion] The analysis of pertinent factors indicates that there is a need to inform the general public of the project purposes, management goals and objectives, and the missions of the Corps. The program instills an awareness and respect for the natural, cultural, and manmade resources of Saylorville Lake. This is accomplished through the use of hikes, lectures, demonstrations, displays, and slide shows offered at the Visitor Center.

-- Visitor Center Annex

To provide and maintain a Nature Center at Saylorville Lake that will encourage visitors to participate in experiments and activities designed to give visitors direct exposure to natural and manmade resources within the project area.

[Discussion] The analysis of pertinent factors indicates that local school systems, environmental groups, and project visitors utilize the existing Visitor Center to a great extent. Unfortunately, the Visitor Center does not have the area nor the facilities to provide visitors with opportunities to participate in experiments and activities which provide them with direct exposure to the natural and manmade resources within the project area. The facility strengthens the interpretive program at Saylorville Lake by providing an area for experiments and activities, and enhances the objectives of the program.

-- Lakeview Winter Sports Area

To provide and maintain a high quality central access area in which a variety of winter recreation activities is offered.

[Discussion] The analysis of the Lakeview site factors indicates that this area is suitable for supporting ice skating and sledding opportunities and serves as an access point to hiking, cross-country skiing, and snowmobile trails located in the recreation area. The analysis of the zone of influence indicates a need for these types of facilities. A central access area provides additional control over these winter activities, increases safety, and reduces maintenance and administrative cost.

Specific Resource Use Objectives

-- Oak Grove Beach

- . To maintain and upgrade the safety of visitors utilizing the facility through practices described in the Project Resource Management Plan (appendix A to the Master Plan).

- . To enhance the aesthetic qualities of the area.

-- Visitor Center

- . To preserve and enhance the aesthetic views of the area and the center.

- . To preserve and enhance the natural and manmade resources found in the facility.

-- Visitor Center Annex

- . To utilize the area and structure for nature study and interpretative purposes.

-- Lakeview Winter Sports Area

- . To inform visitors of the winter recreation opportunities at Saylorville Lake through the interpretive program and local news media.

- . To maintain and upgrade the winter recreation facilities.

. To maintain and upgrade the safety of visitors using the winter trails, skating, and sledding area.

Development and Management Measures

-- Oak Grove Beach

. Add an additional set of vault toilets and a change house at elevation 846 NGVD when the pool is raised to 836/838 NGVD (see plate 5 and section IX).

-- Visitor Center

. Upgrade and update the displays in accordance with the guidelines and regulations for a Class B visitor center.

. Preparation of an Interpretive Prospectus to guide interpretive program needs for the project.

-- Visitor Center Annex

. Provide and maintain a library (natural history), meeting room, restrooms, lab, exhibit, and storage area within the existing structure.

. Develop a program that encourages people to participate in experiments and activities designed to expose visitors to natural resources within the project area that the Corps manages.

-- Lakeview Winter Sports Area.

. None.

Other Supporting Facilities

Administration and Maintenance Buildings

The administration building houses the offices and supporting facilities for the administrative personnel at Saylorville Lake. A maintenance building located to the north of the administration building houses storage, work shops, and office space for the maintenance personnel at the project. These buildings are located approximately 1/4 of a mile northwest of the reservoir dam. Access to the buildings is provided by an access road off of R6F and the reservoir dam access road. Plate 28 shows the floor plans of both buildings, and plate 2 shows the location of these buildings in relation to the project recreation areas.

Developed Recreation Facilities Managed by Other Agencies

In addition to the existing Corps recreation areas at Saylorville Lake, the Iowa Conservation Commission, Boone and Polk County Conservation Board, Boone County Historical Society, and Polk City also maintain and operate facilities at Saylorville Lake. A brief description of each area is provided in the following paragraphs.

A. Iowa Conservation Commission.

1. State Ranger Residence and Headquarters (plates 2 and 29). This 25.3-acre ICC lease area contains a residence and service building for the Chief Ranger of Big Creek State Park. In addition, the lease includes the S&V Bridge Boat Launch area which contains three parking lots and two launch ramps (with two lanes). The ICC currently subleases the launch area to the Polk County Conservation Board.

2. Big Creek State Park (plates 2 and 30). Parts of the Big Creek Valley and Polk City were below the full flood pool level (890 NGVD) of the Saylorville Reservoir. In order to protect these areas from reservoir flooding, flood protection works for the Big Creek Valley were constructed. These protection works consist of a barrier dam, diversion dam, and a diversion channel. As a result, an 885-acre lake in Big Creek Valley with a relatively stable pool elevation of 920 NGVD was created.

The lake and adjacent land were leased to the ICC under a cooperative agreement to be developed as a State recreation area. The 1,142.68-acre lease area is now known as Big Creek State Park. The facilities at the park include boat ramps, picnic areas, playgrounds, a swimming beach, bicycle-hiking and snowmobile trails, shooting range, and support facilities such as restrooms and an information center.

3. Fish and Wildlife Areas (plates 46 and 47). Under a lease agreement with the Corps, the Iowa Conservation Commission manages 11,787 acres of land for fish and wildlife purposes. At the discretion of the ICC, various portions of the lease area are open for low-density recreation activities, such as hunting, nature study, hiking, and fishing.

B. Boone County Conservation Board.

1. Swede Point Park (plates 2 and 31). This county park is located along the east bank of the Des Moines River in the headwater area of the reservoir (as shown on plate 2). The 105.3 acres of land in the park are leased to the Boone County Conservation Board from the Corps of Engineers. Facilities include a trailer and tent camping area, picnic area, playground, and support facilities.

C. Polk County Conservation Board.

1. Jester County Park (plates 2 and 32). Jester County Park, operated by the Polk County Conservation Board, is in the lower portion of the Saylorville Reservoir on the lake's west side (see plate 14). The Corps leases 897.17 acres of the park to the Polk County Conservation Board. The facilities of the park include picnic areas, boat ramps, trailer and tent camping areas, an amphitheater, playgrounds, swimming, golf course, horse stable and riding trails, bicycle-nature and hiking trails, as well as cross-country skiing, snowmobiling, sledding, and ice-skating facilities during the winter months.

D. Polk City.

1. Recreation Sports Complex (plates 2 and 33). This 13.89-acre area has been leased to Polk City by the Corps of Engineers. Under a recreation cost-sharing agreement, two Little League baseball fields, a softball field, and two soccer fields have been developed. Support facilities include an all purpose building, four parking lots, and three concession buildings.

E. Boone County Historical Society.

1. Kate Shelley Memorial Park. This 2-acre tract (plate 2) was leased to the Boone County Historical Society in October 1979 for historical and interpretive purposes, and to preserve and enhance the bridge site.

SECTION V
FACTORS INFLUENCING
AND
CONSTRAINING RESOURCE DEVELOPMENT
AND
MANAGEMENT

SECTION V - FACTORS INFLUENCING AND CONSTRAINING
RESOURCE DEVELOPMENT AND MANAGEMENT

NATURAL RESOURCES CONSTRAINTS IN EXISTING CORPS RECREATION AREAS

SOILS

Tables 4, 5, and 6 and exhibit 5 display information concerning the soils of the project in regard to their slope, erosion, and capability classification. Due to the nature of the project and its topography, the majority of the natural resources (terrestrial) and recreation facilities are located on the project upland areas. Because of various geological aspects, preproject land uses and slope, numerous soils of the project uplands are limited in supporting recreational activities and/or facilities, various vegetative species, and certain types of wildlife and/or ornamental plantings.

In order to locate facilities, activities, and plantings in the best possible upland areas, the Soil Conservation Service and County Soil Survey Reports (Polk and Boone Counties) will continue to be consulted. Table 4 identifies the soils (and soil limitations) of existing and proposed recreation facilities and exhibits 5-A through 5-K show the location of these soils.

PREPROJECT EXPLORATORY MINERAL, TIMBER, AND CULTURAL RESOURCES
CONSTRAINTS

MINERAL RESOURCES

Prior to the acquisition of the project lands, there were numerous private and county (Boone) gravel operations in the northeast area of the project. Before project completion, the extraction of gravel was significant, but at present the amount of gravel extracted from these areas is moderate. Table 27 lists the existing active and potentially active sand and gravel removal right areas on Saylorville Lake project lands. These 11 areas occupy 415.78 acres of project land.

TABLE 27

Outstanding Mineral Rights - Saylorville Lake
As of September 1982

Listed below are active or potentially active sand and gravel removal rights on Government-owned land in the Saylorville Lake project. For additional information concerning the location of each lease area, contact the North Central Division - Rock Island Real Estate Field office located at the Rock Island District office building, Rock Island, Illinois.

1. Tract No. 723 - Boone County has the right to remove gravel from existing pits and the adjacent area until 30 April 1992, 120 acres.
2. Tract No. 808 - Boone County has the perpetual right to remove sand and gravel from 36.2 acres.
3. Tract No. 823 - Former owner has the right to remove sand and gravel from 5.9 acres until 1 January 1988.
4. Tract No. 837 - Former owner has the right to remove sand and gravel from 9.1 acres until 30 April 1992.
5. Tract No. 921 - Former owner has the right to remove sand and gravel from 17.6 acres until 1 January 1995.
6. Tract No. 1032 - Boone County has the right to remove sand and gravel from 23.2 acres until 1 March 1991.
7. Tract No. 1200 - Former owner has the right to remove sand and gravel from 5.0 acres until 1 January 1989.
8. Tract No. 1210-3 - Former owner has the right to remove sand and gravel from 5.21 acres until 1 March 1994.
9. Tracts No. 1211-1 and 1211-2 - Former owner has the right to remove sand and gravel from 134.7 acres until 15 December 1997.
10. Tract No. 1214 - Boone County has the right to remove sand and gravel from 48.47 acres until 31 January 1993.
11. Tract No. 1404-2 - Former owner has the right to remove sand and gravel from 10.4 acres until 1 January 2003.

No mineral rights have or will be issued for sand and/or gravel operations on lands required for recreation or when such lands are clearly visible from major Corps recreation areas. This practice has insured that adequate land is reserved for future recreation areas. The practice also protects the aesthetic qualities of the existing and proposed recreation areas as well as lands adjacent to these facilities. In certain cases, the privilege

of controlling the sand and/or gravel mineral rights may not be exercised. As a result, no detrimental effects would occur. Where this would happen, recreation, aesthetics, and wildlife would not be adversely affected by having lands disturbed by excavation and despoilment.

Table 28 lists information concerning the current status of each lease, its location, and the current condition of the habitat in each lease area. Within the sand and/or gravel removal right areas, no conditions were established for the reclamation of the areas by the mineral right owner(s) once these rights expire. As the lease for each area expires, the Corps will make a determination on whether or not the area requires habitat restoration measures. The Rock Island District will negotiate with the State of Iowa concerning the restoration of these mineral leases on land leased to the Iowa Conservation Commission to determine the need and funding of restoration practices. These measures are similar in nature to those forestry and wildlife habitat enhancement practices described in the Forestry, Fish and Wildlife Management Plan (appendix B and D to the Master Plan - see section XII of this report).

TABLE 28

Mineral Lease Areas - Conditions

<u>Tract No.</u>	<u>Status of Lease Area</u>	<u>Location of Area</u> ^{1/}	<u>Habitat</u>
723	Historic (inactive 15 years).	Upland	Densely vegetated with a mixed stand of upland and bottom land species dominated by Chinese elm, small pure stands of willow, cottonwood, and sumac. Abandoned pits hold water.
808	Historic (inactive 20 years)	Bottom land/ transition zone ^{2/}	Bottom land area densely vegetated with Chinese elm, eastern red cedar, gooseberry, blackberry, etc. Transition zone is highly eroded.
823	Historic (inactive 10 years) ^{3/}	Upland	Vegetated in brome and switch grass with a small number of scattered Chinese elm and box elder trees.
837	Historic (inactive 4 years)	Bottom land	Previously used for row crops. Currently vegetated in a variety of grass and weed species.

TABLE 28 (Cont'd)

<u>Tract No.</u>	<u>Status of Lease Area</u>	<u>Location of Area</u> <u>1/</u>	<u>Habitat</u>
921	Active <u>4/</u>	Bottom land	Previously used for row crops; currently unvegetated.
1032	Active	Bottom land	Vegetated with a small amount of rank and weedy vegetation.
1200	Historic (inactive 5 years)	Upland	Upland forested area of oak, hickory, Chinese elm, etc. Less than 1 acre of the area has been disturbed.
1210-3	Undisturbed <u>5/</u>	Bottom land/ transition zone.	Transition zone is vegetated with brome, switch, and other grasses. Bottom land vegetated in Chinese elm, cottonwood, box elder, and willow trees.
1211-1	Undisturbed	Bottom land	Currently used for cropland.
1211-2	Active	Bottom land	Sparcely vegetated with various field grasses and weedy species.
1214	Historic (25 years)	Upland/ transition zone	Upland forested with oak and hickory trees. Transition zone forested with Chinese elm and box elder
1215	Historic (inactive 15 years)	Bottom land	Densely vegetated with Chinese elm, box elder, eastern red cedar, and cottonwood in early succession.
1404-2	Active	Bottom land	Void of vegetation.

1/ For additional information concerning the location of each lease area, contact the North Central Division - Rock Island Real Estate Field office, located at the Rock Island District office building, Rock Island, Illinois.

2/ Sloping land located between upland and bottom land area.

3/ Areas mined in the past.

4/ Lease areas with current mineral extraction operations.

5/ Lease areas not previously or currently used for mineral lease but reserved with an option to extract minerals at a future time.

Timber Resources

Approximately 43 percent of the project land was forested prior to acquisition. Approximately 75 percent of the quality sawlog-size stands were harvested from the then privately-owned tracts, just prior to Government acquisition. As a result, many residual stands of low quality timber and/or immature trees were left. Fortunately, numerous oak-hickory stands were left on the steeper upland slopes.

The remaining forest stands are located on project lands that had less desirable preproject farmland soils and slopes (9 percent and greater). In addition, the majority of the stands are located above elevation 870 NGVD due to Corps clearing operations prior to the filling of the lake. These existing stands are managed for aesthetic and wildlife purposes. Plate 34 illustrates the various cutting practices employed during the Corps clearing operation prior to the filling of the lake and plate 48 displays woodland areas adjacent to the lake.

Reservoir Regulation

The pool is normally maintained at elevation 836 NGVD and is raised to elevation 838 NGVD on 1 October, at the request of the Iowa Conservation Commission. The 2-foot raise is implemented for the benefit of wildlife, and held at that level until 1 March. An average water supply release of 75 ft³/s is made throughout the year, but the monthly release is varied according to requirement. The normal minimum release at Saylorville is 200 ft³/s plus water supply demand. More than 200 ft³/s will be released if necessary to keep a flow of 270 ft³/s at SE 14th Street in Des Moines and maintain a flow of 300 ft³/s at Ottumwa, Iowa. These minimum releases will be met until the pool falls to elevation 827 NGVD, at which time rationing will begin for water quality releases.

During low-flow periods, an attempt is made to maintain flows for water quality and water supply in accordance with a regulation schedule. This regulation schedule was developed using a computer model to simulate reservoir operation between 1921 and 1980. Although the regulation plan proved to be effective for historic droughts, it does not guarantee that it will be the most effective plan of operation for future droughts. The plan of operation will be followed unless some unforeseen circumstance indicates that a different regulation procedure would serve the region better.

Techniques pertaining to the regulation of storage allocated to flood control in Saylorville Lake may be classified as method C as defined in EM 1110-2-3600. This provides for maximum damage reduction during ordinary flood events until the lower part of the storage is filled and then providing a fixed schedule of releases to assure greater control of larger

flood volumes of approximate design magnitude. The emergency flood pool level is 875 NGVD and forecast to exceed elevation 884 feet. Above this level an emergency regulation schedule (described in Appendix B - Master Reservoir Regulation Manual - Saylorville lake - 30 September 1983 (exhibit C, paragraph e)) will be followed, and all other constraints will be disregarded.

The fluctuations of the reservoir water level influence and limit the development and management of the natural and manmade resources found in the project area. Intensive use recreation facilities adjacent to the reservoir (except beaches and launching ramps) are placed at elevation 890 NGVD or higher so they will not be inundated by water stored for flood control. In the tailwater, recreation facilities are located where they would not be affected by a flood release of 16,000 ft³/s. At 846 NGVD the Oak Grove Beach becomes inoperable and at 856 NGVD only the upper ramp of Cherry Glen and the Saylorville Marina ramp are functional. During periods of higher water, the park manager will determine what recreation areas can safely remain open.

Flood storage pools have an effect on vegetation and its management in the reservoir area. Flood storage pools periodically inundate vegetation between 838 NGVD to 870 NGVD. When the water recedes, scars are developed which are devoid of vegetation. In order to prevent these scars and potential erosion problems, an intensive water tolerant grass and forb planting program is being implemented in these areas. Due to the fluctuating water levels, trees are planted above elevation 870 NGVD. In the tailwater area only water tolerant tree species are planted in the recreation areas for shade and aesthetic purposes.

Fluctuating pool levels have offsetting properties in regard to various fish and wildlife species. Water held on a temporary basis for flood control benefits fish because of a temporary increase in aquatic habitat. The fish population could be adversely affected if spawning activities coincide with receding high water. Furbearers such as muskrats and raccoons benefit from the expanded shoreline during high water. Terrestrial habitat which is of benefit to rabbits and other species is periodically impacted due to inundation. In order to alleviate this problem, habitat improvements have and continue to be implemented in project areas less vulnerable to periodic inundation. These actions provide improved food and cover which attract the affected species to these areas.

Plans of action to be implemented during periods of high or low water are listed in the Master Plan Appendixes (Appendixes A-E). The actions address areas such as boater safety, the protection of operation structures, and erosion control.

Many of the actions referenced above are efforts to resolve potential problems during periods of the high or low water levels. In these instances, the regulation plan cannot be modified to enhance resource management. However, during conservation pool levels (836 NGVD) the plan can be modified to enhance management activities and values. An example of a modification is the raising of the conservation pool from 836 NGVD to 838 NGVD between 1 October and 1 March each year for waterfowl habitat enhancement. This

is made possible by the fact that the amount of runoff and the possibility of flooding are lower during this timeframe, making it possible to store more water at a more consistent level. Conservation pool levels could also be changed on a permanent basis in order to replace conservation pool storage capacity lost to siltation, provide a deeper pool for recreational boating, or to expand aquatic habitat. However, these actions reduce the capacity of the reservoir for flood storage.

Water Quality

The water quality at Saylorville Lake is generally good except for brief periods of degraded quality. Periods of high runoff due to snow melt or precipitation from the many agricultural lands carry large amounts of silt, organic material, inorganic fertilizers, pesticides, and bacteria into the river. Water quality in the river basin also is affected by the physical characteristics of the basin, seasonal changes, hydrologic considerations, and diurnal changes. As a result, high turbidity, ammonia, orthophosphate, biological oxygen demand and low dissolved oxygen values are occasionally observed. Also, during periods of increased runoff, the nitrate plus nitrite drinking standard of 10 mg/l is frequently exceeded. Fecal coliform levels occasionally exceed the DAWWM standard of 200 organisms per 100 mg/l for primary contact water use. On numerous occasions, dissolved oxygen (DO) concentrations fall below the 4.0 mg/l standard for the protection of wildlife, fish, and aquatic and semiaquatic life. However, no fish kills resulted from the occasional low DO levels at the reservoir.

The results of parameters which may be affected for long periods of time are discussed below. Large amounts of silt (turbidity) inhibit light penetration which reduces the photosynthetic capacity of aquatic vegetation. The oxidation of high levels of ammonia to nitrite and nitrate exert an oxygen demand, thereby increasing BOD and eventually decreasing dissolved oxygen concentrations. High concentrations of ammonia can be toxic to aquatic life when enough exist in the un-ionized form at high pH values. Orthophosphates are plant nutrients which stimulate growth. Excessive phosphate levels can result in plant growth to nuisance levels. Coliform bacteria in high levels can pose health problems for aquatic species, wildlife and humans. This type of bacteria includes a wide variety of organisms that are usually associated with warm blooded animals including humans. Dissolved oxygen is a measure of how much oxygen is readily available in water. Concentrations are influenced by the water temperature which affects the solubility of oxygen, photosynthetic activity, bacterial and invertebrate respiration and reaction rates. Low concentrations of dissolved oxygen for extended periods of time can result in fish kills.

The quality of the surface water in the project area is generally suitable for all recreational purposes and meets the Class A State standards for swimming. The chief water quality problems of concern are high sediment load, periodic fecal contamination from distant municipal sewage sources and feed lots, and the contribution of the above mentioned nutrients from agricultural runoff.

The authorization of the U.S. Army Corps of Engineers in operating the reservoir is for water supply and flood control. These responsibilities are not always conducive to resolving problems in order to enhance water quality. As stated previously, problems with various water quality parameters occur during periods of high runoff due to snow melt or precipitation. This problem is further compounded because the source of the pollution is often a non-point source over which the Corps has no control. These problems become extended in the reservoir during periods of high runoff in the watershed because a portion of the runoff is being held in the reservoir to prevent flooding downstream. As a result, the levels of certain parameters increase.

Under a contract with the Corps, a contractor is responsible to operate and maintain a surface water quality monitoring program in the vicinity of the Saylorville Reservoir on the Des Moines River. The objective is to monitor the quality of water within and downstream of Saylorville Reservoir. The contractor is responsible for collecting weekly samples during the summer and bi-weekly samples during the winter, the analysis of all samples for various parameters and the performance of special studies as problems arise.

If any parameters are discovered to exceed established State and/or Federal water quality standards, the proper State and Federal agencies would be contacted. If the problem would pose a danger to certain types of recreation users (i.e., swimmers, boaters, fishermen, etc.) those facilities and activities would be closed to the public and the public would be notified through the local media. Fluctuating the pool levels to correct problems is limited by operation concerns such as flood control, water supply, existing pool levels, runoff, and downstream conditions. If these concerns would not be affected by fluctuating the pool level, it could be possible to adjust the pool level to correct certain water quality problems.

It is generally felt that the future water quality of Saylorville will remain good. This is based on the results of water quality tests conducted over the past 3 to 4 years and the fact that the agricultural chemicals being used are more biodegradable than chemicals used in the past, and that there is increased enforcement of stronger State and Federal laws concerning environmental quality.

Cultural Resources

Constraints related to cultural resources are not easily addressed for several reasons. While investigations conducted to date have provided a substantial body of site-specific locational data for 450 sites, it is likely that many sites have not yet been found. Many of these are likely buried sites not identified by earlier surface surveys or sites masked by heavy vegetation. For this reason, many future development actions will require at least reconnaissance level investigations designed to overcome problems with alluviation and vegetation. Previous survey, testing, and mitigation efforts with or near existing facility areas should preclude significant additional investigations for new and upgraded development in these areas.

Because the District is responsible for protecting cultural resources from unauthorized adverse effects (i.e., vandalism), site-specific locational data are not released in documents available to the public. Therefore, tables 29 through 32 present summaries of known sites in relation to project facilities indicating potential constraints for development due to the presence of cultural deposits. The site-specific locational data can be obtained by authorized personnel from the Environmental Analysis Branch of Planning Division at the Rock Island District office.

Sites are defined by four classes in the tables as follows: Class 1 - sites directly affected by existing or proposed facilities; Class 2 - sites within designated facility areas but not affected by construction; Class 3 - sites within 100 meters of designated facilities (potential vandalism zone); and Class 4 (tables 29 and 30) - sites between designated facility areas. All Class 1 sites were handled prior to construction through appropriate investigations; proposed facilities are either currently being evaluated or will be evaluated prior to construction. Class 4 sites in tables 29 and 30 (by footnote) are not endangered by current development plans; effects are limited to erosion for sites along the Des Moines River.

TABLE 29

Distribution of Archaeological Sites by Facility

<u>Location</u>	<u>Class</u> <u>1</u>	<u>Class</u> <u>2</u>	<u>Class</u> <u>3</u>	<u>Comments</u>
	(Number of Sites)			
Visitor Center	1	1	4	
Cherry Glen Campground	1	0	0	
Cherry Glen Boat Launch	1	2	1	
Cherry Glen Picnic Ground	2	1	0	
Oak Grove Picnic Ground	0	2	0	
Oak Grove Beach	1	1	0	
Prairie Flower Campground	0	0	0	
Prairie Flower Group Campground (proposed)	0	1	0	
Saylorville Marina	0	1	0	
Marina Expansion	1	0	0	
Prairie Flower Proposed Second Marina	0	0	0	
Sandpiper Beach (proposed)	1	0	0	
Sandpiper Sailboat Launch (proposed)	0	0	3	
Polk City Recreation Sports Complex	0	0	1	
Laurie Park Boat Launch	1	0	0	

TABLE 29 (Cont'd)

<u>Location</u>	<u>Class</u>	<u>Class</u>	<u>Class</u>	<u>Comments</u>
	<u>1</u>	<u>2</u>	<u>3</u>	
	(Number of Sites)			
Swede Point Park - Boone County Cons. Bd	0	0	0	
Dogwood Picnic Ground	0	0	1	
Ledges State Park	0	3	0	
Polecat Hill Picnic Ground	0	1	0	
Bob Shetler Campground (48 Units)	0	0	0	
Bob Shetler Campground (21 Units)	0	0	0	
Bob Shetler Picnic Ground (proposed)	0	0	0	
Administration Area	1	0	0	
Lakeview Winter Sports Area	0	0	0	
Lakeview Boat Launch	0	0	2	
Lakeview Proposed Second Marina	0	0	2	
Walnut Ridge Recreation Area	1	4	0	
Acorn Valley Recreation Area	0	1	1	
S&V Bridge Boat Launch/ L.A.J. County Park	0	0	7	
River Bend Picnic Ground	1	0	0	

TABLE 30

Distribution of Archaeological Sites Between Facilities

<u>Location - Area Between</u>	<u>Class 4</u> (Number of Sites)
Visitor Center and Cherry Glen Recreation Area	17
Oak Grove Recreation Area and Sandpiper Recreation Area	1
Saylorville Marina and the Polk City Recreation Sports Complex	9
Polk City Recreational Sports Complex and Laurie Park Boat Launch	55
Laurie Park Boat Launch and Swede Point Park	1
Swede Point Park and Sportsmens Boat Launch	18
Sportsman's Boat Launch and Dogwood Boat Launch	5
Ledges State Park and Old Bridge (proposed)	11
Visitor Center and the Bob Shetler Recreation Area	1
Administration Area and Lakeview Recreation Area	2
Lakeview Recreation Area and Walnut Ridge Recreation Area	11
Walnut Ridge Recreation Area and Acorn Valley Recreation Area	4
Acorn Valley Recreation Area and S&V Bridge Boat Launch/ L.A.J. County Park	10
Lewis A. Jester County Park and Riverbend Picnic Ground	61
Area North of River Bend Boat Launch to the Survey Boundary	5

TABLE 31

Distribution of Archaeological Sites by Facility
Downstream Corridor

<u>Location</u>	<u>Class</u> <u>1</u>	<u>Class</u> <u>2</u>	<u>Class</u> <u>3</u>
Sports Complex	0	0	2
Bicycle Trail (staging area)	0	0	0
Bicycle Trail	4	0	12
Cottonwood Picnic Area	0	0	2
Parking Lot	2	0	1
Sycamore Park	0	0	0

* 15 sites are farther than 100 meters from these facilities.

TABLE 32

Distribution of Archaeological Sites Along Recreational Trails
Upstream From the Saylorville Dam

<u>Trail Type</u>	<u>Potentially Affected Archaeological Sites</u>
Foot and Ski (backpack to campgrounds available)	13BN107 13BN105 13BN226 13BN7 13BN257 13BN14 13BN16 13BN22 13BN166 13BN167 13BN232 13BN170 13BN106 13BN40 13BN230 13BN30 13BN29 13PK25 13PK233
Foot and Ski - Proposed	13PK30 13PK182 13PK184 13PK185 13PK191 13PK189 13PK110 13PK248 13PK132 13PK133 13PK134 13PK198 13PK172 13PK289 13PK201 13PK202
Ski Only - Maintained During the Winter Only	13PK120

TABLE 32 (Cont'd)

<u>Trail Type</u>	<u>Potentially Affected Archaeological Sites</u>
Foot/Snowmobile - Existing	13PK107
	13PK242
	13PK155
	13PK112
	13PK111
	13PK137
	13PK131
	13PK162
	13PK173
	13PK116
	13PK268
	13PK119
	Foot/Snowmobile - Proposed
13PK249	
13PK28	
13PK177	
Equestrian/Foot	13BN143
	13BN24
	13BN21
Bicycle - Existing <u>1/</u>	13PK144
	13PK239
	13PK163
	13PK223
	13PK165
	13PK236
	13PK194
	13PK206
	13PK297
	13PK147
	13PK229
	13PK142
	13PK145
	13PK197
	13PK280
13PK296	

* The number of sites which may actually be affected is expected to be considerably smaller than the potential. Exact field checks would be needed to establish the actual impacts.

1/ Used during the winter as a snowmobile trail.

ADAPTABILITY OF PROJECT STRUCTURES FOR PUBLIC USE

Four scenic overview areas have been constructed on top of the dam adjacent to the roadway. The overviews provide visitors an opportunity to view the project from a safe area. The Bob Shetler Class A fee campground was established on the earth berm of the dam in the tailwater area. An additional Class B free campground and fishing facilities are located on both sides of the outlet channel (see plate 10 and exhibit 4-I).

The original project office building has now been converted to the Saylorville Lake Visitor Center. The first floor is utilized for interpretive displays and the basement is used for interpretive programs and audio-visual presentations.

The building shown in plates 26A and 28 was used for the disbanded Saylorville Lake Area Construction office of the Rock Island District. Section IV of this report contains a discussion of converting the building to a small laboratory and Visitor Center Annex for interpretive purposes.

SOCIAL AND INSTITUTIONAL CONSTRAINTS

Social and Resource Carrying Capacity

Optimum carrying capacity is that level of use of a recreation resource or facility which maximizes social capacity while protecting resource capacity. In other words, optimum carrying capacity provides the desired participant satisfaction while protecting the natural resource. The characteristics of both the site and the participants must be known to determine optimum carrying capacity. It is necessary to avoid attempting to serve all potential user groups at a single location.

Social capacity is more difficult to determine than physical capacity because different factors such as weather, choice of companions, age groups, and pleasant or unpleasant events of the day influence participant satisfaction. However, participant density is one of the most important factors in predicting social capacity. Frustration increases with density because people have to wait too long or recreation activities conflict; litter and vandalism increase, noise levels rise, and accidents may occur more often.

A study of recreation carrying capacity conducted for the Corps of Engineers outlines the determinants of recreation social and resource capacity relating to spacing requirements. ^{1/}

^{1/} U.S. Army Corps of Engineers, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, Recreation Carrying Capacity Handbook: Methods and Techniques for Planning, Design, and Management, by Urban Research and Development Corporation, Contract No. DACW39-78-C-0096 (Washington, D.C.: Government Printing Office, July 1980).

Participant Characteristics

The characteristics of participants in the recreation activity and in the recreation area as a whole are major determinants of social capacity. Such determinants include socioeconomic and ethnic background, age, type and density of housing, living environment, similarities with other participants, and the participant level of skill or accomplishment in the activity.

Site Characteristics

Slope topography and vegetation affect perceived closeness because of their ability to separate visually one participant group from another. For example, picnic tables located in wooded areas where trees form privacy screens appear more distant from each other than equally spaced picnic tables located in lawn areas.

Site Amenities and Relationship to Other Desirable Activities

The attractiveness of the site and the presence of other nearby compatible activity areas are other variables which affect capacity. Where sites are attractive and offer more than one desired recreational activity, participants are more likely to tolerate crowded conditions. A campground located close to a boating area is likely to attract and satisfy users regardless of the distance between campsites.

Site Size

Overall size of the area devoted to each activity affects optimum capacity because there seems to be a cumulative effect with crowding. One hundred acres of campsites spaced 30 feet apart would likely generate a greater feeling of crowding than 1 acre developed with the same spacing.

Shape

The configuration or shape of the area affects its social capacity. For example, a lineal band of picnic sites which allows users more space with an open area on both sides would likely have a greater social capacity than a wider parcel of the same acreage where more tables would be physically and visually removed from the open space.

Major determinants of recreation physical capacity are related to the site's capacity to regenerate itself after use. Factors which influence physical capacity include:

- . Vegetative cover,
- . Depth, fertility, and erodibility of soils,
- . Slope,
- . Drainage patterns, and
- . Climate.

The effect of these factors on physical capacity varies and is somewhat unpredictable.

For Corps sites at the Saylorville Lake, carrying capacity relates closely to the physical constraint of a limited land base. Given this relatively limited land base and the differing social determinants relating to local and nonlocal users, carrying capacity can be increased only by increasing the level of development.

Noise

The existing recreation facilities at Saylorville Lake operated by the Corps, receive noise from two main sources. The most obvious is from nearby highways, and the second is from the recreational activities of the users. In the case of noise from nearby highways, the problem could be solved by planting vegetative buffers and/or establishing berms adjacent to the highways. To reduce the noise from recreation activities within individual recreation areas, zoning incompatible activities into separate areas with distance between them could reduce noise. In order to increase the effectiveness of zoning, physical sound barriers such as berms and plantings could be established to create physical and psychological noise buffers.

Tools for control and enforcement include signing, courteous reminders to offenders, and if necessary, citations.

Visual Quality

Visual quality is a subjective term used in measuring the visual aspects of a viewed object. Although many factors influence visual quality, visual quality results from the perception of unity among visual elements or from the lack of inharmonious visual elements. Because of the importance of unity in determining high visual quality, and because the Corps recreation sites at Saylorville Lake are typical of a Central Iowa Flood Plain bordered by small plots of upland forest and numerous agricultural fields, visual quality has increased by preserving and enhancing native landscape character as much as possible.

Safety

A safe recreation area depends on both its design and a public safety program.

The design of a safe recreation area depends on common sense plus reference to relevant industry design standards and Corps of Engineers regulations. As in the past, designers will continue to keep in mind the kinds of use and the type of recreationalist the site will support and the special requirements of handicapped people when designing future facilities.

Agencies involved in public safety at the project include the Rock Island District, U.S. Army Corps of Engineers, the Iowa Conservation Commission, local and county law enforcement agencies, State and county health organizations, and local fire and rescue organizations.

Institutions

Zoning Ordinances at Saylorville Lake

Existing facilities and future development (relating to building size, shape, location, and setback) have been and will continue to be coordinated with the Central Iowa Regional Association of Local Governments, the Polk, Boone, and Dallas Board of Supervisors, and the Office for Planning and Programming (Des Moines). Although the Corps of Engineers traditionally has complied with local zoning and land use laws, Corps lands are a Federal resource and are not necessarily subject to local zoning requirements.

Health Department Regulations

The design and installation of water systems and sewage treatment systems, including alterations and modifications to these systems, has and will continue to be in accordance with applicable Federal and State of Iowa and U.S. Army Corps of Engineers regulations.

Transportation

Transportation corridors through the project area will remain essentially unchanged in the foreseeable future. Communication and coordination with the Iowa Department of Transportation and county highway departments will be maintained.

Local, State, and Federal Laws and Guidelines

Planning, development, and management of project resources must comply with Federal statutes and executive orders and with Corps of Engineers regulations and policies. A listing of Federal statutes and executive orders which are pertinent to resource development and management is presented in exhibit 2.

Compliance with certain local ordinances and State laws and a determination of any such requirements made prior to implementation of any development or management measures may be required.

Vandalism

Vandalism dictates that designers of facilities consider protection from physical damage and/or theft. Cultural resource features will be safeguarded against unauthorized excavation and removal. Efforts will also be made to protect vegetation on project lands from vandal-related damage or destruction.

Market Area Socioeconomic Characteristics

Population

There has been a 6.2 percent increase in the population growth of the primary market area (see table 33 and plate 35) from 474,488 in 1975 to 504,100 in 1980. Approximately 40 percent of the market population is located in the Des Moines metropolitan area with the majority of the remaining population in small rural towns located throughout the market area. The population for the primary market area is projected to increase by 4.8 percent between 1980 and 1985 and by 4.0 percent between 1985 and 1990.

Economy

The foundation of the economy in the market area of Saylorville Lake is agriculture, primarily grain and livestock production. Other economic sectors of this economy include coal and gravel mining, food products, as well as the manufacture of agricultural equipment, clothing, tools, industrial machinery, chemicals and pharmaceutical supplies and equipment. The major employment sectors are agriculture, manufacturing, retail trade and service industries. Advance reports of the 1980 census projections for the next 10-year period, show a slight decrease in manufacturing and retail trade, agricultural employment holding steady, and a slight increase in the service industries. However, these projections may be considered less accurate because of differences between projected and actual population growth and changing economic conditions.

Market Indicators

The future projections for the market area of Saylorville Lake indicate higher unemployment levels, lower incomes, slightly increasing population figures and increasing amounts of leisure time. These factors are expected to result in increased visitation for day use and camping activities by primary market residents. The increased visitations are expected to occur in day use activities such as swimming, picnicking, trail use, and fishing. The increase in camping is expected to occur due to people located in the primary market utilizing the camping facilities at Saylorville rather than other recreation markets (i.e., South Central Minnesota, etc.).

Project Market Area/Zone of Influence

General Discussion

Accessibility determined by distance and time is the critical factor in delineating the market area (zone of influence) of a recreation resource. Another important factor is the location of recreation resources in regard to populated areas within the zone. Taking these factors into account, the market area for Saylorville Lake is considered to be the area in a 50-mile radius of the lake and/or accessible to the lake by automobile within a 1-hour drive (see plate 37). With further analysis the market area can be divided into primary, secondary, and tertiary market areas. These divisions are described in the following paragraphs.

Primary Market

Persons living in the primary market area are close enough to be within 1/2-to-3/4-hour travel time from the lake or within a 30-mile radius. The primary market accounts for approximately 70 percent of the visits to Saylorville Lake. For purposes of subsequent analysis, the primary market is defined as all of Polk, Dallas, and Boone Counties, a large area of Story County and smaller portions of Greene, Warren, and Madison Counties (see plate 37). Within this primary market area are the cities of Des Moines, Ames, Boone, and Ankeny, and numerous small towns (see plate 36).

Secondary Market

The secondary market is comprised of the area outside the primary market within an approximate 50-mile radius and 1-hour travel distance of the Saylorville Lake project. The secondary market accounts for approximately 20 percent of the visits to Saylorville Lake. The counties that are

included in the secondary market (all or part) are as follows: Clark, Lucas, Union, Adair, Madison, Warren, Marion, Jasper, Guthrie, Audubon, Carrol, Greene, Story, Marshall, Calhoun, Webster, Hamilton, and Hardin Counties (see plate 37).

Tertiary Market

The tertiary market area includes those areas that are located outside of the foregoing secondary market designations (see plate 37). The tertiary market segment has in the past accounted for approximately 10 percent of the visits to Saylorville Lake. Due to inflation, competing recreational markets, and the expense of gasoline, it is expected that the tertiary market will decrease in proportional importance relative to the primary and secondary markets.

Accessibility

The project is located approximately 5 miles northwest of the intersection of Interstate Highways 80 (east-west) and 35 (north-south) (see plate 38). These highways provide convenient accessibility to a large region. In addition, recreation sites provide a convenient overnight stop for cross-country travelers. U.S. Highways 30, 69, and 169 and State Highway 17 all pass within a few miles of Saylorville Lake and provide access from within a 50-mile radius. State Highway 415 is the primary access road on the east side of the reservoir. This road serves both major Corps recreation areas and the Big Creek State Recreation Area.

Iowa Highway 17 provides access to both sides of the reservoir and the northern end of the lake. The Mile Long Bridge connects State Highways 17 and 415 and links recreational developments on both sides of the lake and the Big Creek development. Two other highways which cross the reservoir are Iowa Highway 210 and U.S. Highway 30. River access sites are located at the point where these two highways cross the river.

Many of the roads leading from the State highways into various parts of the project are county-maintained and paved or gravel-surfaced. While most of those roads on Corps property have been abandoned or converted to trails, some are maintained for access to specific sites. Internal access roads through Corps areas are shown on the plates in this report.

Application of Public Law 89-72

The construction of recreation facilities at Saylorville Lake was initially implemented under the authorization of Section 4 of the Flood Control Act of 1944 (as amended). Under the special authorization of Section 111 of the Water Resource Development Act of 1976, facilities continued to be constructed. In addition, access roads to the Cherry Glen and Oak Grove

Recreation Areas (94th and 98th Avenues, respectively) were constructed by the Corps under section 111. Access improvements have also been undertaken for State Highway 415 under this authority, as appropriated under P.L. 98-50 (July 1983). The maintenance of these roads outside the Government property line is the responsibility of Polk County or the State.

Additional recreation facility improvements may also be pursued under cost-sharing provisions of P.L. 89-72 if non-Federal sponsors express such interests in participation. Cost sharing opportunities are applicable to only new facility development. Although Section 111 authority does not apply to areas presently under lease to State or local agencies for recreation purposes, such leased areas remain subject to cost-sharing principles.

In the Saylorville Lake Corridor area (plate 47-A), the city of Des Moines, Iowa Conservation Commission and the U.S. Army Corps of Engineers have signed a cost-sharing agreement for new recreation development within the Saylorville Corridor. These contracts were approved by the Secretary of the Army on 16 June 1983.

There are no lease agreements with government entities to maintain and manage facilities constructed and managed by the Corps. These Corps recreation facilities can be leased to State, county, or local Government entities at some future date if suitable agreements can be reached concerning operation and maintenance. To date no government entity has been interested in leasing any of the existing Corps managed recreation facilities at Saylorville Lake.

The Corps proposes to construct various recreation trails that will be used by the general public on lands outgranted to the State for fish and wildlife management purposes. Throughout the summer season the proposed trails will provide access for those who desire an extended trail system as well as providing access for hunting and fishing. Horseback riding and snowmobiling may be permitted on designated trails as long as they remain compatible with the objectives of fish and wildlife management (see plate 24). All terrain vehicle use will not be permitted. Trails constructed by the Corps on lands leased to the State would be maintained and managed by the State of Iowa.

Anticipated Attendance

The first facet of information needed to calculate the future attendance and activity rates of Saylorville Lake is the increase in the size of the population that will use the project. To calculate the percent increase in the size of user population, projections were used for those Iowa counties within the 30-mile zone of influence (primary marketing area).

Future populations of these counties were extracted from Official Iowa Population Projections 1975-2020, by the Office of Planning and Programming, July 1976. These counties do not represent the entire user population of this project, but are the core of the yearly recreational visits at this project. Table 33 displays the project population increase for these counties from 1975 to 1990. These projections indicate an average annual increase of 0.88 percent between 1980 and 1990.

TABLE 33

County Population - Primary Market Area

	<u>1975</u> <u>1/</u>	<u>1980</u> <u>2/</u>	<u>1985</u> <u>2/</u>	<u>1990</u> <u>2/</u>
Boone	26,260	25,900	25,700	25,600
Dallas	27,271	27,600	28,600	29,500
Greene	12,202	12,100	12,100	12,100
Madison	12,190	13,100	13,900	14,500
Polk	296,881	314,900	328,800	341,100
Story	68,174	73,500	77,600	80,800
Warren	<u>31,510</u>	<u>37,000</u>	<u>41,700</u>	<u>46,000</u>
Total	474,488	504,100	528,400	549,600
	6.2 <u>3/</u>	4.8 <u>3/</u>	4.0 <u>3/</u>	

1/ "County-City Data Book (1977)."

2/ "Official Iowa Population Projections, 1975-2020" by Office of Planning and Programming.

3/ Population Growth Rate for Each 5-Year Period.

The second step in projecting the future anticipated attendance figures for Saylorville Lake calculations will utilize, as a basis, recorded attendance figures from past years. Recreation attendance figures have been recorded at the project since 1977. A summary of past annual visitation is shown in table 34. Figure 3 is a graph showing an adjusted weighted average attendance for the actual (1977-1983) and projected (1984-1990) annual recreation visitation for Saylorville Lake. The 1977 and 1978 figures were not used in determining the future attendance figures for two reasons:

1. In the 1977 and 1978 recreation seasons, new recreation facilities as well as support facilities were being established at the project. It is felt that the true effects (attendance) of these facilities was not and could not be fully measured over the entire 1977 and 1978 recreation seasons.

2. The methodology used to calculate yearly recreation attendance (visitor days) was changed in January 1979. The new methodology is felt to be more accurate in computing recreation attendance. Mixing 1977 and 1978 data with the data of 1979, 1980 and 1981 could result in distortion of the projections in this report.

TABLE 34

Total Annual Visitations ^{1/}

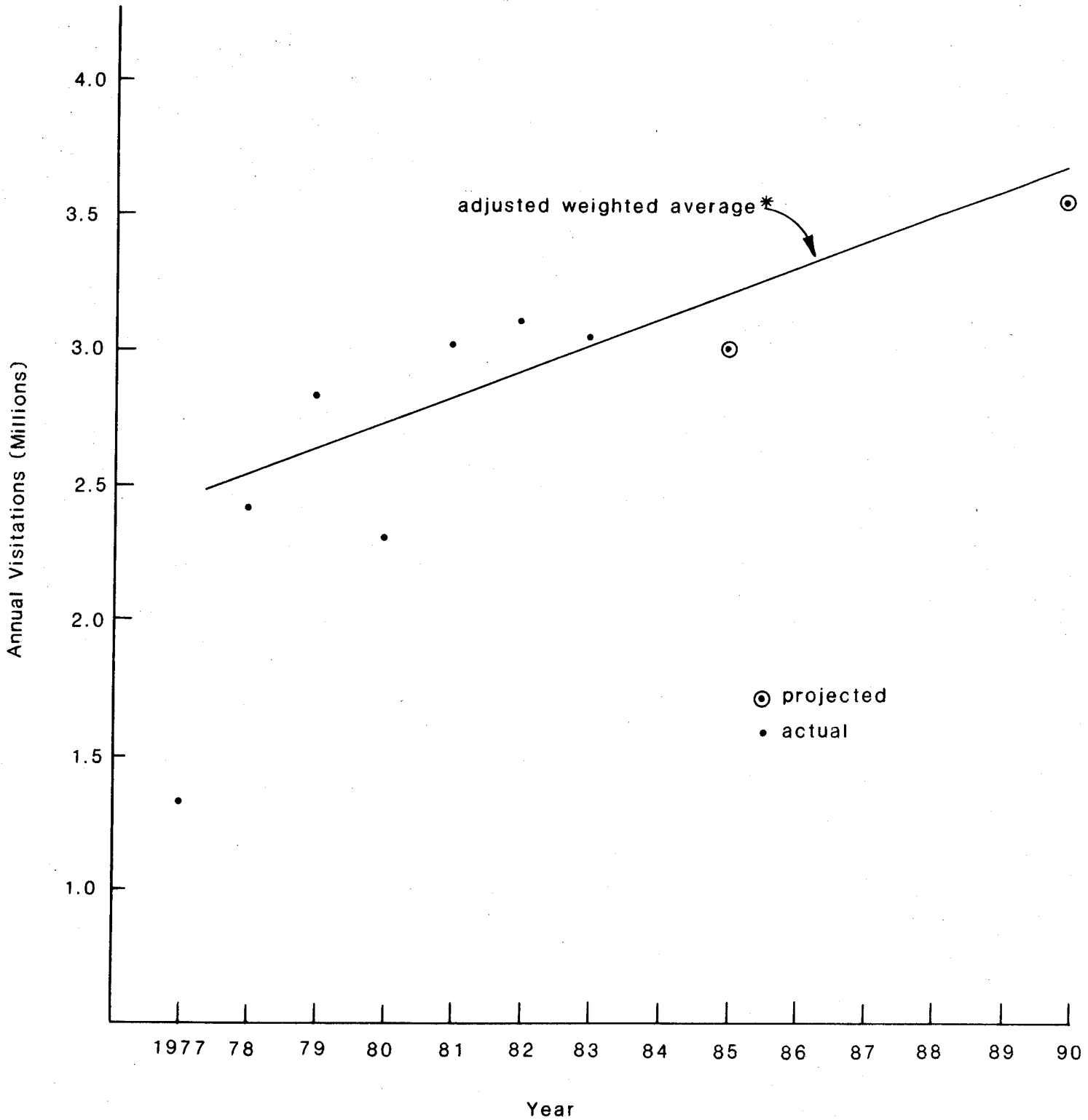
<u>Calendar Year</u>	<u>Visitations</u>	<u>Percent Change</u>
1979	2,819,050	+ 18 (1978-1979)
1980	2,390,900	- 11 (1979-1980)
1981	3,027,300	+ 27 (1980-1981)

^{1/} Recreation Resource Management System. The 1979-1981 data were the most recent available at the time of initial calculation. Subsequent data do not significantly change projected results to warrant recalculation.

The third step in projecting the future attendance figures is to calculate the percentage of attendance for each activity. By calculating these percentages, the types and quantities of facilities that will be needed in the future can be determined. The Recreation Resource Management System provides insight into the percent of total use by activity for 1979, 1980, and 1981. The percentage use by activity for 1979, 1980, 1981, and the 3-year average is contained in table 35. These percentages and the projected increase in annual participation rates per capita by activity (refer to table 36), will also be utilized in projecting future attendance at Saylorville Lake. This table typifies the participation rates of the primary market area population for each activity available at the project.

FIGURE 3

RECREATION VISITATIONS



* Weighted Average Graphically Determined

TABLE 35

Percent of Total Use by Activity ^{1/}

<u>Activity</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>Average</u>
Picnicking	13	15	15	14
Camping	03	03	03	03
Swimming	08	14	14	12
Water Skiing	03	03	03	03
Boating	15	15	15	15
Sightseeing	46	46	46	46
Fishing	19	19	19	19
Hunting	03	03	03	03
Other	20	20	20	20

^{1/} Recreation Resource Management System

TABLE 36

Recreation Participation Rates By Activity ^{1/}

<u>Activity</u>	<u>Total Days</u>		<u>Percent Change</u>	<u>5-year Average</u>
	<u>1970</u> (1,000)	<u>1985</u> (1,000)		
Picnicking				
Family	1,614	1,826	13.1	4.4
Group	291	308	5.8	1.9
Camping				
Trailers	605	726	20.0	6.7
Tent	287	289	0.7	.2
Group	55	55	0	0
Swimming	1,177	1,327	12.7	4.2
Sightseeing	6,700	7,876	17.6	5.8
Fishing (shoreline)	1,916	2,146	12.0	4.0
Hunting				
Small game	796	874	9.8	3.3
Big game	81	86	6.2	2.0
Boating				
Powerboating/ Waterskiing	830	994	19.8	6.6
Other (Fishing/ Non-Powerboating)	349	399	14.3	4.7
Other ^{2/}	-	-	11.0	3.6

^{1/} Iowa State University, Outdoor Recreation in Central Iowa: 1970-1985, Pm-640f, November 1975.

^{2/} The overall total days of participation for the 43 recreation activities in the referenced report was expected to increase 11 percent by 1985; which was used for this unclassified project use.

In reading tables 35 and 36, it must be noted that: 1) The population of the primary market area does not represent, in exact terms, the user population of the project; and 2) The participation rates are not specifically indicative of per capita use at Saylorville Lake. Instead, these figures give indications of how use at the project can be expected to increase given the present visitation data. The factors which affect increases in visitation (e.g., economic and demographic growth, increased mobility, more leisure time, available facilities, etc.) have been incorporated into this Master Plan. Projected visitation is further discussed in this section.

The fourth step in calculating the anticipated attendance is to apply the information of the first three steps to a formula to determine future attendance, number of activity occasions (demand) and the number of facilities that will be needed. The formula is as follows:

$$\begin{array}{rclcl}
 \text{Number of} & & (1+ \text{the Percent}) & & (1+ \text{the Percent}) & & \text{Projected} \\
 \text{Occasions} & & \text{Increase in the} & & \text{Increase in Per} & & \text{Number of} \\
 \text{for Each} & \times & \text{User Population} & \times & \text{Capita Use Rates} & = & \text{Occasions} \\
 \text{Activity} & & \text{from 1980 to 1985} & & \text{from 1980 to 1990} & & \text{for Each} \\
 & & \text{and 1985 to 1990} & & & & \text{Activity} \\
 & & & & & & \text{in the} \\
 & & & & & & \text{Projection} \\
 & & & & & & \text{Year}
 \end{array}$$

This formula along with the data of the other steps has been calculated in table 37 to project the annual participation rates by activity for 1985 and 1990 at Saylorville Lake.

TABLE 37

Saylorville Lake - Projected Annual Participation By
Activity for 1985 and 1990

<u>Activity</u>	<u>1979/80/81 Use</u>	<u>1/</u>	<u>Change Factor 2/</u> <u>From 1980-1985</u>	<u>1985</u> <u>Demand</u>	<u>Change Factor 3/</u> <u>From 1985-1990</u>	<u>1990</u> <u>Demand</u>
Picnicking	384,405	x	1.048 x 1.063 =	428,236	x 1.040 x 1.063 =	473,423
Camping	82,373	x	1.048 x 1.067 =	92,111	x 1.040 x 1.067 =	102,214
Swimming	329,490	x	1.048 x 1.042 =	359,808	x 1.040 x 1.042 =	389,917
Sightseeing	1,263,045	x	1.048 x 1.058 =	1,400,444	x 1.040 x 1.058 =	1,540,937
Shoreline Fishing	521,693	x	1.048 x 1.040 =	568,604	x 1.040 x 1.040 =	615,002
Hunting	82,373	x	1.048 x 1.053 =	90,902	x 1.040 x 1.053 =	99,549
Boating ^{4/}	494,235			547,633		602,216
Other	549,150	x	1.048 x 1.036 =	596,228	x 1.040 x 1.036 =	642,400
Total	3,706,764			4,083,996		4,465,658

^{1/} Numbers calculated as follows: 1979+1980+1981 visitations ÷ 3 = 2,745,750 x the percentage of participation per activity shown in table 35.

^{2/} 1 + the percent increase in population from 1980 to 1985 = 1.048 x the 5-year average of the projected participation rates by activity - table 36.

^{3/} 1 + the percent increase in population from 1985 to 1990 = 1.040 x the 5-year average of the projected participation rates by activity - table 36.

^{4/} Types of boating

<u>Types of Boating</u>	<u>1979/80/81 Use</u>	<u>Change Factor</u> <u>From 1980-1985</u>	<u>1985</u> <u>Demand</u>	<u>Change Factor</u> <u>From 1985-1990</u>	<u>1990</u> <u>Demand</u>
Water-skiing	82,373	x 1.048 x 1.066 =	92,024	1.040 x 1.066 =	102,021
Powerboating	185,338	x 1.048 x 1.066 =	207,054	1.040 x 1.066 =	229,548
Fishing	41,186	x 1.048 x 1.047 =	45,192	1.040 x 1.047 =	49,209
Non Powerboating,	185,338	x 1.048 x 1.047 =	203,363	1.040 x 1.047 =	221,438
Total	494,235		547,633		602,216

The fact that the summation of all 1979/80/81 recreation use (activity days) is greater than the visitation 2,745,750, indicates that a visitor will participate in more than one activity per recreation day. The ratio of those two figures is 2,745,750 divided by 3,706,764 = .74. The projected annual visitation can be derived by applying that portion to the summation of 1985 and 1990 activities demand, as shown below, to project annual visitations in 1985 and 1990.

<u>Year</u>	<u>Summation of Annual Demand</u>	<u>Projected Annual Visitation</u>
1985	4,083,996 x .74	3,022,157
1990	4,465,658 x .74	3,304,586

To determine the number of facilities that will be needed in the years 1985 and 1990, the projected annual participation rates (activity days) must be divided into a smaller unit. In order to do this, the recreational days of use from the months of July 1979 (479,900), July 1980 (565,800) and July 1981 (606,600) were chosen. These figures were summed and then divided by 3 to obtain 550,766. This number was then multiplied by .50 to obtain 275,383. Approximately 50 percent of the recreational use of activities that takes place occurs on weekend days; therefore, the largest demand for facilities would occur on weekends. Facility needs are based on this demand.

To obtain the visitation on the average July weekend day in 1979/1980/1981, the figure 275,383 was divided by 8 to obtain an average weekend day figure of 34,423. The formula and information that were used to calculate table 32 were then utilized to calculate demand on a weekend day basis for 1985 and 1990. Design criteria from EM 1110-2-400 and other sources were then utilized to determine how many facilities would be needed. The results are displayed in table 39. Table 40 displays a summary of existing and proposed Corps recreation facilities.

In reviewing the methodology to obtain the results in table 38, a concern may arise in regard to using the peak use months of July 1979, 1980, and 1981 to project the average weekend day use attendance of these respective years. In comparing the figure of 34,423 with the Recreation Resource Management System's average attendance for day use and camping of 32,927 (average of 1979, 1980, and 1981 RRMS figures), there is a difference of only 1,496. Therefore, the difference in utilizing either set of numbers for an average weekend day of attendance is only .0434 percent.

TABLE 38

Projected Demand - Average Day Use and Camping

Activity	1979/80/81 Use <u>1/</u> Attendance Day		Change Factor <u>2/</u> From 1980-1985		1985 Demand		Change Factor <u>3/</u> From 1985-1990		1990 Demand
Picnicking	4,814	x	1.048 x 1.063	=	5,363	x	1.040 x 1.063	=	5,929
Camping ^{6/}	1,281	x			1,396				1,544
Swimming ^{4/}	6,131	x	1.048 x 1.042	=	6,695	x	1.040 x 1.042	=	7,255
Sightseeing Shoreline	15,835	x	1.048 x 1.058	=	17,558	x	1.040 x 1.058	=	19,319
Fishing	6,540	x	1.048 x 1.040	=	7,128	x	1.040 x 1.040	=	7,710
Hunting	1,033	x	1.048 x 1.053	=	1,140	x	1.040 x 1.053	=	1,248
Boating ^{5/}	6,196				6,865				7,548
Other	6,885	x	1.048 x 1.036	=	7,475	x	1.040 x 1.036	=	8,054

1/ Number calculated as follows: 34,423 x the percentage of participation per activity shown in table 35.

2/ 1 + the percent increase in population from 1980 to 1985 = 1.048 x the 5-year average of the projected participation rates by activity - table 36.

3/ 1 + the percent increase in population from 1985 to 1990 = 1.040 x the 5-year average of the projected participation rates by activity - table 36.

4/ An estimated 500 cars are turned away daily from the existing beach during the months of June, July, and August. 500 cars x 4 people per car = 2,000 + existing demand of 4,131 (refer to 1/) = 6,131.

5/ Types of boating

Types of Boating	1979/80/81 Use		Change Factor From 1980-1985		1985 Demand		Change Factor From 1985-1990		1990 Demand
Water-skiing	1,033	x	1.048 x 1.066	=	1,154		1.040 x 1.066	=	1,279
Powerboating	2,323	x	1.048 x 1.066	=	2,595		1.040 x 1.066	=	2,877
Fishing	517	x	1.048 x 1.047	=	567		1.040 x 1.047	=	617
Non Powerboating,	<u>2,323</u>	x	1.048 x 1.047	=	<u>2,549</u>		1.040 x 1.047	=	<u>2,775</u>
Total	6,196				6,865				7,548

6/ Camping should not be calculated on a day use basis. According to EM 1110-2-400, Page A-12, there should be 1 spur for each 7,500 annual recreation days of use. Therefore, 2,745,700 (Yearly Visitation 1979/80/81) - 7,500 = 366. 366 x 3.5 people per spur = 1,281. Same method used for 1985 and 1990 camping projections.

TABLE 39

Projected Facilities Needed - Average Day Use and Camping

<u>Activity</u>	<u>Average 1979/80/81</u>	<u>1985</u>	<u>1990</u>
Picnicking ^{1/}	459 Tables 21 Shelters	506 24	553 26
Camping ^{2/}	366 Sites	403	441
Swimming ^{3/}	306,550 Feet ^{2/}	334,750	362,750
Sightseeing ^{4/}	14.05 Miles	15.6	17.1
Shoreline Fishing ^{5/}	12.3 Miles	13.5	14.6
Hunting ^{6/}	2,583 Acres	2,850	3,120
Boating ^{7/}	15 Ramps	16	18

^{1/} 1 picnic table for each 75 normal summer weekend day visitor (1979/81 - 34,423; 1985 - 37,926; and 1990 - 41,470); 1 group shelter for each 225 picnickers per normal summer weekend day.

^{2/} 1 site for each 7,500 annual visitations (1979/81 - 2,745, 750; 1985 - 3,022,157; and 1990 - 3,304,586).

^{3/} 100 square feet per swimmer, turnover rate of 2.

^{4/} Turnover rate of 12, 4 people per car, spacing of 225 feet.

^{5/} Spacing of 20 feet, turnover rate of 2.

^{6/} Five acres per hunter, turnover rate of 2.

^{7/} Three people per boat, 140 launches per ramp a day.

TABLE 40

Existing and Proposed Corps Recreation Facilities

	<u>Existing</u>	<u>Proposed</u>	<u>Total</u>
<u>Camping</u>			
Cherry Glen	135		
Prairie Flower	148		
Bob Shetler	69		
Acorn Valley	128		
Prairie Flower Group Camping		103	
Totals	480	+ 103	= 583 (Sites)
<u>Picnicking</u>			
Cherry Glen	150 + 6		
Oak Grove	50 + 2		
Lakeview	1		
Walnut Ridge	90 + 3		
Cottonwood	210 + 9		
Bob Shetler		85 + 5	
Totals	500 + 21	85 + 5	= 585 (Tables) + 26 (Shelters)
<u>Boating</u>			
Cherry Glen	6		
Lakeview	4		
Saylorville Marina	2		
Satellite Areas	3		
Sandpiper		2	
Second Marina			
Totals	15	+ 2	= 17 (Lanes)
<u>Beaches (ft²)</u>			
Oak Grove	120,000 ft ²		
Sandpiper		200,000	
Totals	120,000	+ 200,000	= 320,000 ft ²
<u>Trails</u>			
Foot Trails	23.25	16.25	
Equestrian Trails	11.75		
Cross County			
Ski Trail	3.72	10	
Bicycle Trail <u>1/</u>	2.30	7	
Snowmobile Trail <u>2/</u>	10.00	6.5	
Totals	41.02	+ 33.25	= 74.27 Miles

1/ Used during the winter months for snowmobiling.

2/ Ten miles of seasonal flagged trails.

Additional Anticipated Attendance - Yearly Trail Use And Winter Activities

In addition to those recreation activities listed on table 37, recreational trail use and winter recreation activities also take place at Saylorville Lake. In order to define the future need for trail and winter facilities, activity participation rates (demand) and the projected growth within these activities was determined.

Table 41 displays projected day use participation rates for various types of trail use in 1980, 1985, and 1990 for the primary market area. In order to determine 1980 participation rates, the 1980 primary market area population figure of 504,100 (see table 33) was multiplied by participation percentage rates for various trail activities: Hiking/walking for pleasure - 48.6 percent; Nature walks - 16.5 percent; Bicycling - 10.7 percent; Nature photography - 11.2 percent; and Horseback riding - 10.2 percent.^{1/} These yearly demand rates were then multiplied by 60 percent to determine the primary market area demand for each type of trail use during the summer months. Approximately 50 percent of the summer use at the project occurs on weekend days, and the average summer recreation season consists of 32 weekend days. Therefore, in order to obtain a summer weekend day of use (design day) the summer demand was multiplied by 50 percent to obtain a summer weekend demand, which in turn was divided by 32 to obtain 1 summer weekend day of use (design day). In order to update the 1980 design day demand to 1985, the 1980 figures were multiplied by the projected increases in population for the primary market area (1980-1985 = 1.048). These figures were then multiplied by the projected increases in participation for each activity^{1/} (see table 42). The last two steps were repeated to obtain 1990 design day demand.

The Iowa State University (ISU) study and primary market population were utilized to determine average trail day use (design day demand) because there are no other sources of central Iowa population participation rates for various types of trail use. In addition, the ISU study results are based upon recreation use within the primary market area for Saylorville Lake.

^{1/} Iowa State University, Outdoor Recreation in Central Iowa: 1970-1985, Pm-640f, November 1975.

Table 41 also displays projected day use participation rates for various winter recreation activities in 1980, 1985, and 1990 on a primary market basis. These projections were calculated in the same manner as the projected demand for trail use with the following minor exceptions. Population participation percentage rates for winter recreation activities from the 1978 Iowa State Comprehensive Outdoor Recreation Plan (SCORP) were used because of available distinction between winter and yearly recreation activity population participation percentage rates. These rates are based upon recreation use related to the primary market area for Saylorville Lake. Neither the SCORP or ISU study listed projected increases or decreases in population participation rates for the various winter activities shown on table 41. However, the ISU study projected an 11 percent increase in overall population participation rates for recreation activities within the primary market area over a 15-year time frame (1970-1985). Therefore, a population participation rate of 3.6 (11 percent increase in overall recreation activities for a 15-year time frame $\div 3 = 3.6$ percent) for each 5-year time frame (1980-1985, 1985-1990) was used.

Table 42 utilizes the projected design day demands to determine the quantity of facilities needed to support the demand within the primary market area.

TABLE 41

Projected Demand - Additional Day Use Activities

<u>Average Trail Day Use</u>						
<u>Activity</u>	<u>1980 Attendance Day</u>		<u>Change Factor From 1980-1985</u>	<u>1985 Demand</u>	<u>Change Factor From 1985-1990</u>	<u>1990 Demand</u>
Hiking/Walking for Pleasure	2,296	x	1.048 x 1.064 =	2,560	x 1.040 x 1.064 =	2,833
Nature Walk	780	x	1.048 x 1.087 =	888	x 1.040 x 1.087 =	1,004
Bicycling Nature	506	x	1.048 x 1.054 =	559	x 1.040 x 1.054 =	613
Photography	529	x	1.048 x 1.080 =	599	x 1.040 x 1.080 =	673
Horseback Riding	482	x	1.048 x 1.067 =	471	x 1.040 x 1.067 =	457

<u>Average Winter Day Use</u>						
<u>Activity</u>	<u>1980 Attendance Day</u>		<u>Change Factor From 1980-1985</u>	<u>1985 Demand</u>	<u>Change Factor From 1985-1990</u>	<u>1990 Demand</u>
Snowmobiling	1,229	x	1.048 x 1.036 =	1,332	x 1.040 x 1.036 =	1,438
Cross Country Skiing	189	x	1.048 x 1.036 =	205	x 1.040 x 1.036 =	221
Sledding	2,194	x	1.048 x 1.036 =	2,382	x 1.040 x 1.036 =	2,566
Ice Skating	1,670	x	1.048 x 1.036 =	1,813	x 1.040 x 1.036 =	1,953
Ice Fishing	336	x	1.048 x 1.036 =	364	x 1.040 x 1.036 =	393
Winter Camping	407	x	1.048 x 1.036 =	441	x 1.040 x 1.036 =	476
Trail Hiking	350	x	1.048 x 1.036 =	380	x 1.040 x 1.036 =	409
Other Hiking	746	x	1.048 x 1.036 =	809	x 1.040 x 1.036 =	873

TABLE 42

Projected Facilities - Additional Day Use Activities

<u>Trail Activities</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>
Hiking/Walking ^{1/} for Pleasure	11 miles of trail	12	13
Nature Walks ^{2/}	4 miles of trail	4	5
Bicycling ^{3/}	7 miles of trail	8	9
Nature Photography ^{4/}	3 miles of trail	3	3
Horseback Riding ^{5/}	10 Miles of trail	10	10
<u>Winter Activities</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>
Snowmobiling ^{6/}	27 miles of trail	30	32
Cross Country Skiing ^{7/}	8 miles of trail	9	9
Sledding ^{8/}	11 acres	12	13
Ice Skating ^{9/}	3 acres	3	3
Ice Fishing ^{10/}	45 acres	49	52
Winter Camping ^{11/}	116 spurs	126	136
Trail Hiking ^{12/}	9 miles of trail	10	10
Other Hiking ^{13/}	19 acres	20	22

^{1/} Turnover rate of 8; 200 feet per person.

^{2/} Turnover rate of 8; 200 feet per person.

^{3/} Turnover rate of 4; 300 feet per person.

^{4/} Turnover rate of 8; 200 feet per person.

^{5/} Turnover rate of 4; 12 riders per mile.

^{6/} Turnover rate of 3; 1.5 people per vehicle, 10 vehicles per mile of trail.

^{7/} Turnover rate of 3; 8 people per mile of trail.

^{8/} Turnover rate of 4; 900 square feet per person.

^{9/} Turnover rate of 3; 200 square feet per person.

^{10/} Turnover rate of 1.5; 5 people per acre.

^{11/} Turnover rate of 1; 3.5 people per spur.

^{12/} Turnover rate of 4; 10 people per mile.

^{13/} Hiking taking place in open space areas. Turnover rate of 4; 10 people per acre.

Projected Facilities Needed Vs. Existing and Proposed Facilities

In comparing tables 39 and 42 (Projected Facilities Needed 1985-1990) with table 40 (Existing and Proposed Facilities), some conflicts are evident in the projected number of facilities needed in comparison with existing and proposed facilities at Saylorville. Demand analysis differences discovered between the preparation of this master plan and the basic master plan in 1973 accounts for the full development presently existing.

The operating status of the project has provided more specific and accurate data to determine existing and future demand. Present use patterns indicate that the basic plan over estimated demand for picnicking and camping facilities, which were projected to be 40 and 15 percent, respectively, of the total project visitation. Actual attendance for these activities has averaged only 15 and 3 percent, respectively. This is considered a result of the basic plan not fully recognizing non-project related recreation supply within the region.

Although present use demand for family camping units are satisfied, the need for special group use camping facilities as originally identified in the basic plan remain unfulfilled. The total annual days of participation (see table 36) for this activity in the primary market area is indicated to be 55,000. Therefore, the demand for group camping units in 1985 (55,000 times 60 percent as summer use; times 50 percent for weekend use; divided by 32 for weekend day use; divided by 3.5 people per unit) is estimated to be 147 for total regional needs. Transient use from outside the primary market area would provide additional support for this facility demand. Group use preferences are traditionally provided by either designating individual units or open space areas. However, such accommodations do not provide the proper support facilities for these special use interests. The Prairie Flower Group Campground is specifically designed for group purposes. Although the total number of camp units would exceed current individual demand estimates with this development, the additional units are proposed to specifically accommodate group use interests and demands at the project.

The current supply of picnic sites and shelters is presently adequate at Corps administered areas, and is well supplemented with non-Federal facilities available in adjoining State and County parks at the project. The apparent excess in future supply is due to the provisions of needed picnic sites (i.e. day use access) within the tailwater area. A need to provide adequate day use facilities and access along both the shorelines of the tailwater embankments is required to satisfy the high popularity of the area for fishing purposes. The proposed Bob Shetler Picnic Grounds is intended to provide proper day use access opportunities which are not presently available along the west embankment and stilling basin area in the tailwater. Justification for this minor surplus of picnic sites (30) is considered to be a project locational need in support of existing day use activity.

There are 6 existing boat launching areas (15 lanes) managed or maintained by the Corps of Engineers in the main pool area of the reservoir. The three ramps in the satellite areas are well above the main pool in the headwaters and have little, if any, influence on boating activity in the main pool. The County also maintains a double boat ramp facility that has direct access to the main lake. From a safety standpoint, two new ramps should be established at the proposed Sandpiper area specifically for non-powerboat launching. This would result in a safer environment around the other launching areas in the main pool, and was strongly supported by general public interests.

The existing sand beach at Oak Grove receives a great deal of use on a daily basis in the months of June, July, and the first two weeks of August. The demand for another beach exists and could be fulfilled by the construction of the proposed Sandpiper Beach Area. Together, the Oak Grove Beach (120,000 square feet after pool raise to 836 NGVD) and the proposed Sandpiper Beach (200,000 square feet) have a carrying capacity of 6,400 swimmers a day (100 square feet per swimmer, turnover rate of 2). The 1985 projected demand is 6,695 swimmers a day.

With the nature preserve, farm fields, and designated hunting areas of the Iowa Conservation Commission and U.S. Army Corps of Engineers, the ratio of the number of hunters to the acres of hunting areas (both land and water) will be adequate to handle the existing and small future increase in demand.

In viewing the miles of various types of trails needed in 1985 and 1990, the existing number of equestrian and foot trails is adequate. The demand for cross-country skiing, bicycle, and snowmobile trails in 1985 and 1990 can be fulfilled by establishing additional miles of trails as shown in table 40. The proposed additional foot trails are requirements to support access to interconnecting recreation areas and sites, and outdoor interpretive educational needs at the project.

Within the Lakeview Winter Sports Area, there is an adequate number of land acres to support sledding demands and an adequate number of protected water surface acres to support ice skating.

Competing Water Resources Projects and Public Use Development

Existing and planned public recreation sites within the project area managed by agencies other than the Corps of Engineers influence the development of Corps project lands. Recreation areas and facilities managed by other agencies should not be considered as competing with Corps recreation sites but as complementing efforts to provide recreation needs of the market area. Planning for expansion of all recreation facilities relating to the lake will continue to be carried out in a coordinated manner to avoid duplication of effort, misuse of valuable recreation resources, and waste of the public recreation dollar.

Projected Economic Value

The projected economic value of a recreation visit at Saylorville Lake, as follows, was done by using the unit day value method in Water Resources Council, Economic and Environmental Principles and Guidelines for Water and Related Land Resource Implementation Studies, ER 1105-2-40, Appendix A, March 10, 1983. The projected economic values shown in table 43 are based on prices contained in revised Table VIII-3-1 (FY 1984), EC 1105-2-128.

The unit day value method relies on informed opinion and judgment to estimate the average willingness to pay of recreation users. By applying a thought-out and adjusted unit day value to estimated use, an approximation is obtained that may be used as an estimate of project recreation benefits. The method contains five specific criteria and associated measurements standards (point values) designed to reflect quality, relative scarcity, ease of access, and aesthetic features. In order to determine the value per visit, appropriate point values are selected from the range provided for each one of the specific criteria. The sum of the values is then correlated to a conversion table of points to dollar values. The assigned point values for the five criteria are discussed in the following paragraph.

The recreation experience criteria of the project was rated at 15 points. This rating is based on the project providing several opportunities for general recreation activities (picnicking, camping, etc.) and one high quality value activity - boating (attributed to the lake's size and depth which is uncommon to the region). Numerous recreation opportunities are available within a 1-hour drive from the reservoir and others within a 30-minute drive from the facility. As a result, the availability of opportunity criteria for the reservoir was rated at 3 points. The carrying capacity criteria was given a point rating of 9. This rating is based on the quality of recreational sites in regard to their ability to support the designed physical and social carrying capacity of the facility and the quality of the primary and secondary facilities to support recreation activities. The accessibility criteria for the reservoir was rated at 14 points. This rating was based upon the good quality of roads to the general area of the project, fair access adjacent to the recreational areas, and good access roads to and within the recreational areas. The reservoir has an average aesthetic quality which is lowered by siltation and erosion of the reservoir shoreline due to fluctuating water tables. As a result, the environmental quality criteria for the project was rated at 6 points.

The sum of the criteria point values is 47, which converts to a dollar value of \$3.50 per general recreation visit and \$3.80 per general hunting and fishing visit.

TABLE 43

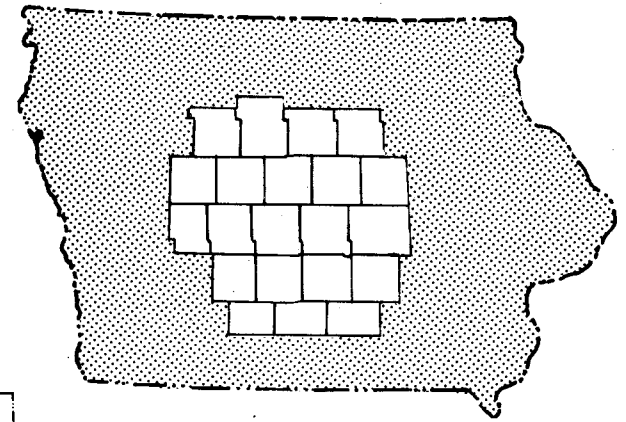
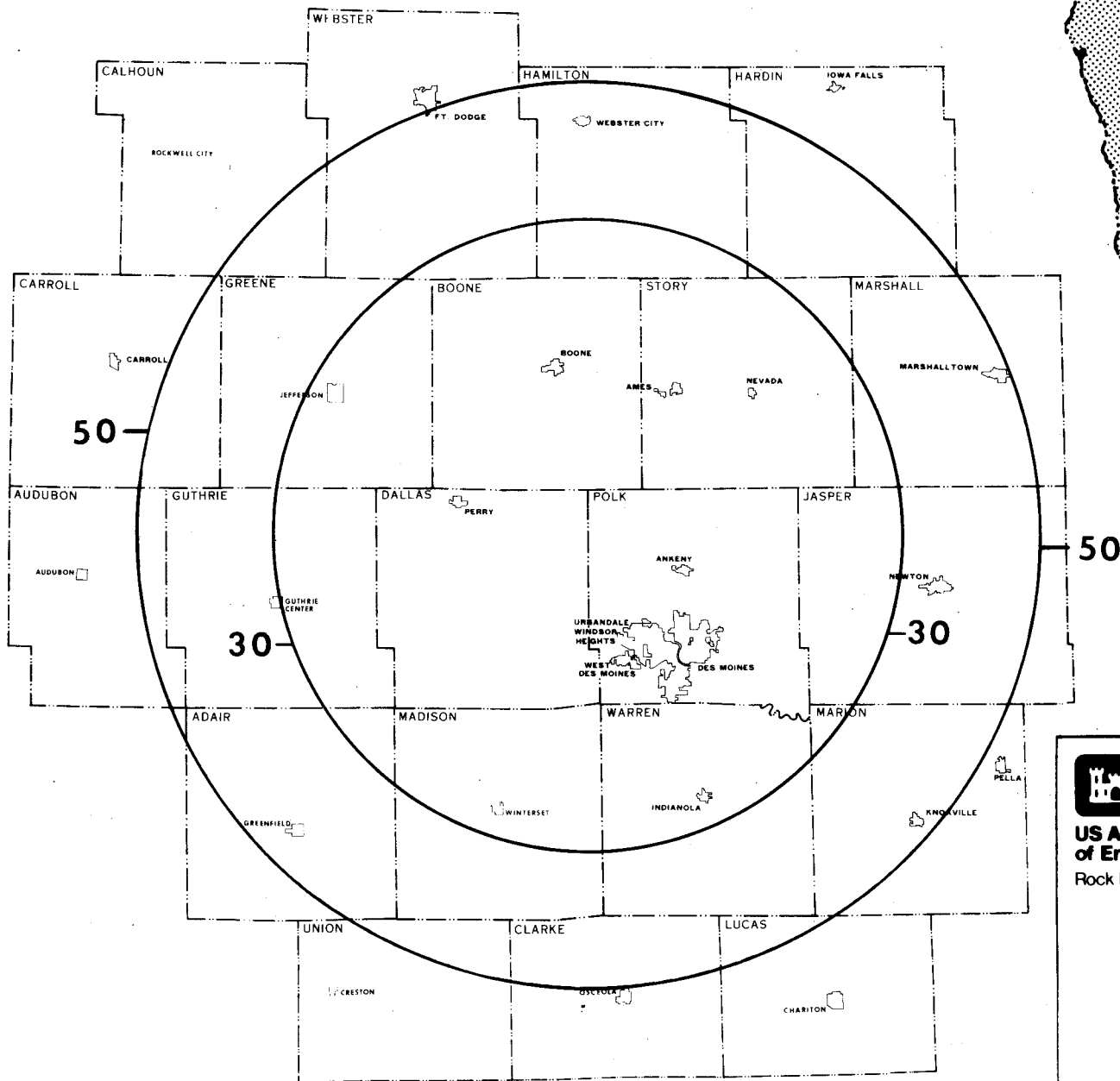
Economic Value of Recreation Visits


		<u>1979/1980/1981</u>		
1979/1980/1981 Activity Days ^{1/}	=		3,706,764	
1979/1980/1981 Fishing and Hunting Activity Days ^{1/}	-	645,252		
Activity Days		<u>3,061,512</u>		
Summation of Annual Demand ^{2/}	x	.74		
Yearly Visits		<u>2,265,519</u>		
Value Per Visit	x	\$ 3.50		
Value Per Year				\$ 7,929,000
1979/1980/1981 General Fishing and Hunting Activity Days		645,252		
Value Per Visit	x	\$ 3.80		
Value Per Year				\$ 2,452,000
All Recreation Benefits 1979/1980/1981 ^{3/}				\$10,381,000
<u>1985</u>				
1985 Activity Days	=		4,083,996	
1985 Fishing and Hunting Activity Days	-	722,698		
Activity Days		<u>3,361,298</u>		
Summation of Annual Demand ^{2/}	x	.74		
Yearly Visits		<u>2,487,360</u>		
Value Per Visit	x	\$ 3.50		
Value Per Year				\$ 8,705,000
1985 General Fishing and Hunting Activity Days		722,698		
Value Per Visit	x	\$ 3.80		
Value Per Year				\$ 2,746,000
All Recreation Benefits 1985 ^{3/}				\$11,451,000
<u>1990</u>				
1990 Activity Days	=		4,465,653	
1990 Fishing and Hunting Activity Days	-	763,760		
Activity Days		<u>3,701,893</u>		
Summation of Annual Demand ^{2/}	x	.74		
Yearly Visits		<u>2,739,401</u>		
Value Per Visit	x	\$ 3.50		
Value Per Year				\$ 9,588,000
1990 General Fishing and Hunting Activity Days		763,760		
Value Per Visit	x	\$ 3.80		
Value Per Year				\$ 2,902,000
All Recreation Benefits 1990 ^{3/}				\$12,490,000

^{1/} Average of the 1979, 1980, and 1981 activity day attendance figures. Refer to 1979, 1980, and 1981 RRMS data for Saylorville Lake.

^{2/} A factor to convert activity days into visitor days. See section V, page 106.

^{3/} These calculations do not take operation and maintenance cost into account.






**US Army Corps
of Engineers**
Rock Island District

Saylorville Lake
Master Plan

**30-50 MILE ZONE OF
INFLUENCE / MARKET AREA**

Scale 5 10 15 20

 MILES

SECTION VI

POTENTIALLY DEVELOPABLE RECREATION AREAS

SECTION VI - POTENTIALLY DEVELOPABLE RECREATION AREAS

GENERAL

This section describes the physical development and resource use concerns of future potentially developable recreation areas on Corps administered lands at the project. Such facilities are needed to fulfill existing or projected demand. These facilities include the Prairie Flower Group Camping Area, the Sandpiper Beach, Sandpiper Sailboat Launch, a second marina, the Bob Shetler Picnic Ground, and trails. A discussion on the Saylorville Corridor has also been included.

POTENTIALLY DEVELOPABLE RECREATION AREAS

PRAIRIE FLOWER GROUP CAMPGROUND

General

The purpose of the proposed Prairie Flower Group Campground will be to establish and maintain group camping opportunities for vacation, weekend, and transient campers. The recreational experience obtained from the area will be complemented by functional supporting facilities and day use activities. These activities include swimming, boating, picnicking, and fishing within close access to the proposed group campground area.

The proposed site plan for the Prairie Flower Group Campground is shown on plate 43. An aerial photograph of the proposed area is shown in exhibit 4-C. The site plan includes camping loops which encourage group activities, a large area reserved for group tent camping, a playfield, and two playgrounds, picnic shelters located in the center of the loops, and an amphitheater. The roads, loops, parking lots, and supporting facilities will be placed so that cut and fill requirements are reduced to a minimum. The proposed southeast loop (37 trailer sites) will be carefully placed so that the restored prairie area will not be disturbed. Grass lawn areas will be established inside and/or around the loops, playfield, playgrounds, shower buildings, and adjacent to the access roads and parking lots. Tables 44 and 45 list the proposed natural resources and the facilities of the area, respectively.

TABLE 44

Prairie Flower Group Campground (Proposed) Facilities

<u>Proposed Area</u>	<u>Location</u>	<u>Campground Class</u>	<u>Loops</u>	<u>Campsites</u>	<u>Comfort Stations</u>	<u>Shower Bldg</u>	<u>Water Supply</u>	<u>Parking</u>	<u>Playground</u>	<u>Amphitheater</u>	<u>Fee Collection Station</u>	<u>Dump Station</u>
Prairie Flower Group Campground	Proposed site is located to the northeast of the existing Prairie Flower Campground. Access would be provided by highway and an extension off the access road between the existing facility and Highway 415 (see plate 43).	A	7 (see plate 43)	103 trailer campsites. Open field area provided for tent camping (see plate 43).	None	4 (see plate 43).	Well water	10 lots: 235 spaces (see plate 43).	2 playgrounds and 1 playfield (see plate 43).	1 (see plate 43)	1 (see plate 43)	1 (see plate 43)

TABLE 45

Natural Resources in the Proposed Prairie Flower Group Campground Area

<u>Natural Resources</u>						
<u>Proposed Area</u>	<u>Setting</u>	<u>Slope</u>	<u>Soils</u>	<u>Vegetation</u>	<u>Views</u>	<u>Zoning</u>
Prairie Flower Group Campground Area	Open upland bordered to the west, south, and north by trees (see exhibit 4-C).	1-9 percent upland.	Loams 1-9 percent.	Open area: grasses, forbs, and weeds.	Open area framed by trees to the south, west, and north.	Most of the proposed area is currently zoned for intensive recreation use with a small portion being zoned for low density recreation (see plate 46).
		9-40 percent wooded ravines.	Lester-Colo Complex 9-40 percent.	Restored prairie: see table 10 for species listing.		
				Upland forest: dominated by oak and hickory trees (see exhibit 4-C).		

General Resource Objective

To establish and provide a group campground for vacation, weekend, and transient group campers.

[Discussion] State and regional studies for the zone of influence indicates that there is a small demand for group camping. The location of the project near a Standard Metropolitan Statistical Area and two major interstate highways provides a good location for a group campground. The soil conditions of the proposed campground are suitable for high density public use.

Specific Resource Use Objective

. To develop, protect, and enhance the natural and manmade resources of the facility for group camping purposes.

Development and Management Measures

. To develop a safe, functional and attractive group camping facility if it is needed in the future.

SANDPIPER BEACH

General

The purpose of the proposed Sandpiper Beach will be to fulfill the demand for additional swimming opportunities. This beach would provide a safe and high quality opportunity which would be complemented by functional supporting facilities. The existing and future demand for an additional beach and swimming area exceeds the carrying capacity of the existing Oak Grove Beach (see Section V - Projected Facilities Needed Vs. Existing and Proposed Facilities). When the pool was raised from 833 NGVD to 836 NGVD, approximately 70,000 square feet of the existing beach will be lost (19,000 square feet to 120,000 square feet). In order to fulfill the additional demand and the demand created by the loss of 70,000 square feet of the existing beach, the new beach should be established as soon as possible. Tables 38 and 39 of section V demonstrate the need for and additional beach area. The proposed Sandpiper Beach would be capable of fulfilling this need.

The site plan for the proposed beach is shown on plate 44. Exhibit 4-D displays an aerial photograph of the proposed site. The site plan includes a proposed peninsula that will create a small protected cove, parking for 500 cars, two sets of vault toilets, and a change house and showers. The beach area will be approximately 200,000 square feet. The created cove will provide a swimming area that would be protected from wind and wave action, thus providing a safer opportunity for swimming. The parking lots, access roads, vault toilets, and change house and showers will be placed above 840 NGVD so that the facility could remain operable during periods of minor pool fluctuations above 836 NGVD.

A minor amount of grading work would be required in the swimming area to provide a gradual and consistent downgrade in the water to enhance the safety of the area. The majority of the beach area has a 1-5 percent grade and would require a minimal amount of grading, with the 5-9 percent requiring a moderate amount of grading.

Table 47 displays the natural resources of the proposed Sandpiper Beach area and table 46 lists the facilities to be placed in the proposed area.

TABLE 46

Sandpiper Beach Proposed Facilities

<u>Proposed Area</u>	<u>Location</u>	<u>Change House</u>	<u>Vault Toilets</u>	<u>Beach Zoning Buoys</u>	<u>Water Supply</u>	<u>Trash Receptacles</u>	<u>Lawn</u>	<u>Parking</u>
Sandpiper Beach	Located on the southwest end of a peninsula on the east shoreline of the reservoir approximately 1/2 mile southwest of the existing marina. Access to the area would be provided by Highway 415 and McBride Drive (see plates 2 and 44).	1: (see plate 44).	2 sets: (see plate 44).	Will provide a safety zone for swimmers.	Well water	2 sets: galvanized steel.	None	3 lots: 500 spaces (see plate 44).

TABLE 47

Natural Resources in the Proposed Sandpiper Beach Area

Natural Resources						
<u>Proposed Area</u>	<u>Setting</u>	<u>Slope</u>	<u>Soils</u>	<u>Vegetation</u>	<u>Views</u>	<u>Zoning</u>
Sandpiper Beach Area	Open area located along the southwest end of a peninsula along the east shoreline of the reservoir (see exhibit 4-D).	1-9 percent proposed area. 9-20 percent to the northeast and northwest of the proposed area.	Loams 1-5 percent. Sandy loams 5-9 percent. Lester-Colo Complex 9-20 percent.	Open field area vegetated with grasses, forbs, and weeds in various early stages of succession due to periodic inundation from fluctuating pool levels.	West: lake, west shoreline, and upland areas. South: lake, sailboat launch, both shorelines and other recreation areas, and reservoir dam. East: supporting facilities, trees, open areas. North: lake, west shoreline, and Mile-Long Bridge (see exhibit 4-D).	Operations: Recreation - Intensive Use.

General Resource Objective

To establish an additional beach to fulfill the demand for additional swimming opportunities at Saylorville Lake.

[Discussion] The analysis of the zone of influence and the site factors indicates that the current demand for swimming opportunities greatly exceeds the carrying capacity of the existing beach. This demand will be increased by the loss of 70,000 square feet of the existing beach when the pool is raised to 836 NGVD. The soils and natural resources of the proposed beach are suitable for high density swimming use and are capable of satisfying the additional demand. The design of the proposed recreation area will provide a safe and pleasant recreation experience.

Specific Resource Use Objective

. To develop, protect, and enhance the natural and future manmade facilities of the proposed site for swimming purposes.

Development and Management Measures

. To develop a safe, functional, and aesthetically pleasing facility in order to meet the demand for an additional beach.

. A user analysis needs to be undertaken to study the impacts of free versus fee beach facilities for the project.

SANDPIPER SAILBOAT LAUNCH

General

The purpose of the proposed Sandpiper Sailboat Launch will be to provide nonmotorized craft (i.e., sailboats, etc.) with a safe and high quality launching area which would be complemented by functional supporting facilities. Nonmotorized craft often require larger amounts of water surface acreage for launching and docking procedures in addition to more time to complete these procedures than motorized craft. As a result of the large number of nonmotorized craft using the lake and their special requirements, conflicts between the two types of craft can occur in launch ramp areas. Therefore, the safety of all boaters and the quality of the boating recreation experience would be enhanced by providing the nonmotorized boats with a launching area.

Tables 38 and 39 of section V and table T 1-8 of appendix 2 demonstrate that an additional launching ramp is needed and that the physical carrying capacity of the lake can support an additional ramp. Developing the ramp and supporting facilities for nonmotorized craft would result in the reduction of conflicts between motorized and nonmotorized craft at the other boat launching ramps at Saylorville Lake.

The proposed site plan for the Sandpiper Launch is shown on plate 44. Exhibit 4-D displays an aerial photograph of the proposed site. The site plan includes a proposed peninsula that will create a small harbor, two ramps each having one lane, a 140-car/trailer lot, rigging lanes, and mooring docks in the harbor area.

The placement of the peninsula would provide a protected area from which nonmotorized craft could be launched, beached, or temporarily moored. To be constructed, the peninsula would require approximately 12,000 cubic yards of impervious material. The length of peninsula would be 750 feet, average width would be 100 feet, and the average height of the fill would be 5 feet. The west side of the peninsula would require 850 tons of riprap to protect it from wave action and wind. The top of the peninsula and its east side would be given a layer of topsoil and seeded with water-tolerant grass species. The grass bank and three docks would make it possible for nonmotorized craft to temporarily moor along the bank or docks dependent on the type and size of the craft.

Table 49 displays the natural resources of the proposed Sandpiper Sailboat Launch, and table 48 lists the facilities to be placed in the proposed area.

TABLE 48

Natural Resources in the Proposed Sandpiper Sailboat Launching Area

<u>Natural Resources</u>						
<u>Proposed Area</u>	<u>Setting</u>	<u>Slope</u>	<u>Soils</u>	<u>Vegetation</u>	<u>Views</u>	<u>Zoning</u>
Sandpiper Sailboat Launching Area	Open area located at the southwest end of a peninsula along the east shoreline of the reservoir (see exhibit 4-D).	1-9 percent proposed area. 9-20 percent to the north-east and northwest of the facility.	Loams 1-5 percent. Sandy loams 5-9 percent. Lester-Colo Complex 9-20 percent.	Open field area vegetated with grasses, forbs, and weeds in various early stages of succession due to periodic inundation from fluctuating pool levels.	West: lake, west shoreline, and upland areas. South: lake, both shorelines, and the reservoir dam. North: open field supporting facilities, marina, lake, mile long bridge, and west shoreline. East: bay, forest, upland, and other recreation areas.	Operations: Recreation - Intensive Use.

TABLE 49

Sandpiper Sailboat Launch Proposed Facilities

<u>Proposed Area</u>	<u>Location</u>	<u>Launching Lanes</u>	<u>Parking</u>	<u>Breakwater</u>	<u>Rigging Lanes</u>	<u>Courtesy Docks</u>	<u>Shelters</u>	<u>Comfort Stations</u>
Sandpiper Sailboat Launching Area	The proposed site is located at the southwest end of a peninsula along the east shoreline of the reservoir. Access to the area would be provided by Highway 415 and McBride Drive (see plates 2 and 44).	2 ramps: functional to 840 NGVD (see plate 44)	1 lot: 140 spaces (see plate 44)	One (see plate 44)	15 lanes (see plate 44)	2	3 picnic shelters (see plate 44)	None. Vault toilets within walking distance (see plate 44).

General Resource Objective

To establish a high quality nonmotorized launching area in order to enhance nonmotorized and motorized boater safety by providing a launch area for nonmotorized craft.

[Discussion] The analysis of the projected demand for boating and site factors indicate that there is a demand for an additional boat launching ramp (with two lanes) area. The physical carrying capacity of the lake is capable of supporting an additional ramp, and approximately 45 percent of the boating use at Saylorville is from nonmotorized craft. Nonmotorized craft often require larger amounts of water surface acreage for launching and docking procedures and additional time to complete these procedures than motorized craft. By establishing a nonmotorized boat launch area, the safety between motorized and nonmotorized craft would be increased by separating the two types of boating into separate launching areas. In addition, the proposed ramp would permit additional motorized boat launchings at the existing ramps by encouraging nonmotorized boat launches in one specific area.

Specific Resource Use Objectives

. To develop a boat launching area to enhance the safety and recreation experience of the nonmotorized boat users at Saylorville Lake.

. To provide supporting facilities which will complement the area (e.g. rigging lanes, vault toilets, mooring docks, and a small protected bay area).

Development and Management Measures

. To maintain the proposed area as a nonmotorized boat launching area in order to reduce boating hazards between motorized and nonmotorized craft.

SECOND MARINA

General

The purpose of establishing a second marina at Saylorville Lake would be to meet the existing unfulfilled demand for additional dock slips and

supporting marina facilities. The marina would be developed, managed, and maintained by a private lessee on Corps fee title land at Saylorville Lake. The Corps would provide basic support facilities to include parking, access, and utilities.

Appendix 2 - Economic Analysis, investigates the potential for a second marina at Saylorville Lake. This analysis contains the following discussions in regard to a second marina: An analysis of the study area (i.e., recreation resources, potential recreation use, value of use, recreation use diminished, value of use diminished, and unaddressed demand), net project benefit, evaluation of alternatives, sensitivity analysis, benefit-to-cost ratio, and the financial effects on the existing marina. The analysis reflects a need for an additional 251 slips and 62 dry storage spaces (appendix 2, tables T1-5). Table T1-8 of appendix 2 displays the existing physical and projected facility carrying capacity of the lake. The table indicates that the lake can support an additional marina of 251 slips and 62 dry storage spaces without exceeding the physical carrying capacity of the lake.

Two proposed sites have been chosen for the development of a second marina. The first site is located to the northwest of the Prairie Flower Campground and southeast of the existing marina (see plates 2 and 11, and exhibit 4-C). The second proposed site is located in the southeast portion of the Lakeview Boat Launch Area (see plates 2 and 15, and exhibit 4-H). The benefit-to-cost ratios for the Federal portion of a 251-slip marina and the 251-slip marina with 62 dry storage spaces are 1.02 and 1.09, respectively. (See appendix 2, tables T1-6 and T1-7.)

The benefit-to-cost ratios referenced above are based on a level of a marginally profitable marina operation. Therefore, it would be more important for a potential developer to determine financial feasibility or return on investment rather than benefit-to-cost ratios. The final mix of goods and services offered at the second marina could be such that slip rental is a relatively small portion of total income. As a result, it would be irrational to base total financial feasibility on slip rentals. Since there are so many options available in starting a marina (goods and services offered), only a brief financial analysis could be performed for this study.

The Federal Government should enter into an agreement for the construction of the facility only if the available information indicates that the facility would be profitable. Available information indicates that it is possible that a developer could incorporate additional goods and/or services (e.g., restaurant) into his development plan to make the proposed marina profitable.

The Corps will advertise for development proposals from prospective developers for the second marina. The developers would be supplied with a demand analysis for the second marina, Corps engineering requirements and standards, and a list of required facilities and services. Proposals submitted will be required to include site plans, engineering drawings, cost estimates, a listing of fees for goods and services, and an analysis of the financial feasibility for the proposed development and operation of the facility.

The District will establish a committee to review the proposals and determine which offeror is most qualified to provide the facilities and services required and if that offeror's development proposal will utilize the site most effectively to provide the facilities and services required to meet the public's needs. The lease will be awarded to the offeror furnishing the best overall proposal.

Table 50 displays the natural resources of the proposed Prairie Flower and Lakeview marina sites, and table 51 briefly lists the advantages and disadvantages of both sites. An unpublished General Design Memorandum (dated February 1982) on file at the District office, contains detailed information concerning wind, waves, fluctuations in pool elevation, traffic and access, and the natural resources of both sites.

TABLE 50

Natural Resources in the Proposed Second Marina Areas

<u>Natural Resources</u>						
<u>Proposed Area</u>	<u>Setting</u>	<u>Slope</u>	<u>Soils</u>	<u>Vegetation</u>	<u>Views</u>	<u>Zoning</u>
Proposed Second Marina - Prairie Flower Recreation Area	Open upland area bordered to the west by a sloping transition zone vegetated with mixed stands of upland and bottom land tree species (see Plate 43 and exhibit 4-c).	2-9 percent upland. 19-40 percent ravines and sloping transition zone.	Loams and silt loams 2-14 percent. Lester-Colo Complex 14-40 percent.	Open area: grasses, forbs, and weeds in early stage of succession. Restored prairie: see table 10 for species listing. Mixed forest stands: mixed upland species dominated by oak and hickory trees and bottom land species of silver maple, box elder, and Chinese elm.	East: open field area. West: open field bordered by trees. South: open area framed by trees. North: open field bordered by trees. Marina bay north: peninsula, existing marina, barrier dam. Marina bay west: peninsula, lake, and its west shoreline.	Proposed area is currently zoned for operations: Recreation - Intensive and Low Density Use.
Proposed Second Marina - Lakeview Recreation Area	Transition zone with pioneer bottom land tree species bordered by open transition zone and upland forest (see Plate 15 and exhibit 4-H).	1-14 percent shoreline to upland. 14-40 percent ravines.	Disturbed soils - area previously used for borrow material for dam construction.	Bottom land tree species: silver maple, Chinese elm, and box elder in the pioneer tree stage of succession. Open area: grass lawns and fields with grasses, forbs, and weeds. Upland forest: dominated by oak and hickory trees.	North: open fields and trees. South: bottom land tree species in the pioneer tree stage of succession. East: lake, east shoreline, recreation areas, and uplands. West: open lawns, fields, upland forest, access road, and shelter.	Operations: Recreation - Intensive Use.

TABLE 51

Advantages and Disadvantages of the
Proposed Second Marina Sites

ADVANTAGES

Lakeview

1. Parking close to docks.
2. Located on the west side of lake.
3. Offshore winds.

Prairie Flower

1. Easily accessible to campers.
2. Size of site would permit functional layout and additional market opportunities
3. Docks accessible at 5-year elevation.

DISADVANTAGES

Lakeview

1. Size of site would limit functional layout.
2. No harbor protection.
3. Four-foot waves.
4. No storage room at flood pool.
5. Area vulnerable to flooding.
6. Shallow soil over layers of shale and bedrock.

Prairie Flower

1. Entrance access to the area requires alteration.
2. Three-foot waves.
3. Existing marina boat wakes.

General Resource Objective

To establish an additional marina through a concessionnaire in order to meet the unfulfilled demand for additional dock slips and supporting marina facilities.

[Discussion] The analysis of pertinent factors indicates that there is an unfulfilled demand for an additional marina facility and that the physical carrying capacity of the lake is capable of supporting this additional marina. Within the zone of influence, there is a lack of water resources with sufficient water surface and depth to satisfy the unfulfilled demand for safe and high quality boating opportunities. The proposed second marina would fulfill a portion of the demand for an additional marina on a body of water with high quality boating opportunities.

Specific Resource Use Objectives

. To develop an additional marina to fulfill the present high level of demand for additional marina slips.

. To provide a safe and attractive marina that can be economically profitable to the owner.

Development and Management Measures

. If a developer cannot be found to establish the second marina after a reasonable time, the existing marina may be considered for expansion. Any expansion would be subject to District approval.

. If a developer is found, all of his proposed plans, designs, etc., must be approved by the Rock Island District before construction can take place.

BOB SHETLER PICNIC GROUND

(WILLOW WOOD)

General

The purpose of the proposed Bob Shetler Picnic Ground will be to provide additional high quality picnic opportunities with a complement of additional day use activities. The recreational experience obtained from the area would be complemented by the adjacent tailrace (outlet channel) and ponds. These water resources would lend themselves to fishing within close access to the proposed picnic area.

The proposed site plan for the Bob Shetler Picnic Ground is shown on plate 10. An aerial photograph of the proposed area is shown in exhibit 4-I. The site plan includes picnic shelters and separate tables with grills and trash recepticals in order to provide picnic opportunities for large or small groups of people. The road and parking lots will be placed to reduce cut and fill requirements to a minimum. The supporting facilities will be carefully placed in order to keep the removal of trees and understory to a minimum. Grass lawns will be provided near the shelter areas and adjacent to the roads. Foot trails will be established to provide access between the parking lots and shelters to the tailrace and ponds for fishing purposes. Tables 52 and 53 list the proposed facilities and the natural resources of the area (respectively). Exhibits 4-I and 5-I display the proposed site and the soil series found in the area.

TABLE 52

Bob Shetler Picnic Ground Proposed Facilities

<u>Proposed Area</u>	<u>Location</u>	<u>Tables</u>	<u>Shelters</u>	<u>Water Supply</u>	<u>Comfort Stations</u>	<u>Playground</u>	<u>Parking</u>	<u>Lawns</u>
Bob Shetler Picnic Ground	The area would be located in the tailwater area south of the existing Bob Shetler Campgrounds. Access to the area is provided by NW 78th Avenue (see plates 2 and 10).	85 proposed (see plate 10).	5 proposed (see plate 10).	Well water (see plate 10).	4 proposed (see plate 10).	1 proposed (see plate 10).	5 lots: 85 spaces (see plate 10).	Open lawns will provide additional play areas (see plate 10).

TABLE 53

Natural Resources in the Proposed Bob Shetler Picnic Ground

<u>Natural Resources</u>						
<u>Proposed Area</u>	<u>Setting</u>	<u>Slope</u>	<u>Soils</u>	<u>Vegetation</u>	<u>Views</u>	<u>Zoning</u>
Bob Shetler Picnic Ground	Bottom land forest adjacent to the east bank of the tailrace (see exhibit 4-I).	0-5 percent bottom land.	Loams, silt loams, and alluvial land 0-5 percent.	Bottom land forest: dominated by silver maple, cottonwood, and willow with an understory of box elder and Chinese elm.	Open grass lawns and fields framed by bottom land forest.	Operations: Recreation - Low Density.

General Resource Objective

To establish additional picnicking opportunities which are complemented by an opportunity to fish in the nearby tailrace and ponds and other supporting day use activities.

[Discussion] There is a need for additional picnic facilities which would complement existing tailwater day use activities. The proposed Bob Shetler Picnic Area provides for this need. The soils and other natural resources in the area are suitable for high density picnic use and the supporting day use activities.

Specific Resource Use Objectives

. To provide an additional picnic ground to complement day use activities and access in the tailwater area.

. To provide a safe and attractive picnic ground which is complemented by opportunities to fish and participate in other day-use activities.

Development and Management Measures

. To develop a safe, functional and attractive picnic ground to complement day use activities in this tailwater area.

. To remove a minimal amount of trees when constructing the campground in order to enhance the attractiveness of the area and maintain shaded areas.

TRAIL SYSTEM

General

The purpose of the existing and proposed trail system (see plate 24) is to provide a spectrum of trail opportunities for various types of trail users. The various types of trails are designed to link developed and proposed Corps recreation areas with nearby State, county, and local recreation areas.

An additional important design feature in the trail system is the separation of incompatible types of trail use (e.g. snowmobiling and cross-country skiing on the same trail). This separation accomplishes two purposes. A separation of mechanical/nonmechanical types of trail use enhances the safety of each type of trail user. Secondly, the physical separation of different types of trail use by providing separate trails increases the quality of the recreational experience for each type of trail user.

The bicycle trail when completed will be one of the most prominent trails on the project. It will provide access to proposed and developed Corps recreation areas on the east side of the lake, Big Creek State Park, and the city of Des Moines, and the towns of Ankeny, and Polk City. Des Moines, Ankeny, and Polk City are developing bicycle trails that will connect with the project bike trail directly or a facility which leads to the bike trail (see plate 24).

Foot trails are and will continue to be developed at the project for interpretive purposes, as access trails from one recreation area to another or as hiking trails. The interpretive and access trails are generally short. The foot hiking trails are being developed as long distance trails for hikers and back-packers to gain access to the project campground areas.

An extensive equestrian trail system has been developed by the Polk County Conservation Commission (see plate 32). The system provides opportunities for short trail rides or a long trail ride with an overnight stop with the use of a corral and stable.

During the winter months, certain foot trails are utilized for cross-country skiing in addition to seasonal cross-country skiing trails. Certain foot trails on the east side of the lake and the bicycle trail are available for snowmobiling.

Map 24
65

The proposed ~~Pole Cat Hill~~ Area and off road vehicle (ORV) trails designated in the original Saylorville Lake Master Plan have been deleted from this plan. Unfortunately, the terrain and soil types in the Des Moines River Basin do not lend themselves to this type of trail use. The Pole Cat Hill Area is now one of the last mature forest areas in Boone County. If ORV use was allowed in this area, the vegetation would become damaged and could not hold the soil and protect the steep slopes from water erosion. As a result, these extremely steep slopes would rapidly deteriorate and continual erosion would result. This is evident in areas where ORV use took place prior to inundation. In addition, this type of trail use requires larger plots of land which are not available along the steep valley area in which Saylorville lies or the flat river bottom land which is inundated in the southern portion of the lake. This use in the northern bottom land reaches is incompatible with the wildlife management uses of the Iowa Conservation Commission which currently leases this land.

least to be done

Trails will be developed on soils and slopes that will reduce the potential for future erosion problems to a minimum. All trails will be maintained as outlined in Appendix A - Project Resource Management Plan to this Master Plan.

Section IV provides additional information concerning the trail system at Saylorville Lake.

SAYLORVILLE LAKE DOWNSTREAM CORRIDOR

The Saylorville Lake Downstream Corridor is located between the downstream side of the Saylorville Dam and the Sixth Avenue bridge in Des Moines, Iowa. The land adjacent to the Des Moines River within this area was acquired for the purpose of conveying larger water release rates from the Saylorville Dam. The lands within the corridor will be leased to the State of Iowa and the city of Des Moines under a cost-sharing agreement (PL 89-72) for the development of recreation facilities and wildlife management purposes (see plate 45).

The cost-sharing agreement between the city of Des Moines and the Rock Island District was signed and approved by the District Engineer in September 1982. The agreement with the State of Iowa was signed and approved by the District Engineer in August 1982. These contracts were approved by the Secretary of the Army on 16 June 1983.

One new facility will be built and two others will be enhanced. The new facility will be a trail system which will include a bicycle trail on the east side of the corridor and a multipurpose foot trail on the west side of the corridor. The boat ramp and parking facility at Prospect Park will be upgraded as well as a parking lot at Sycamore Access and Sycamore Park area. A site plan for a sports complex has also been incorporated into the plan. This facility is not part of the cost sharing agreement and would require 100 percent funding by a non-Federal Government in order to be constructed and maintained.

Detailed design, economic, and environmental data concerning the proposed corridor project can be found in Des Moines River, Iowa, Saylorville Lake Downstream Corridor Recreation Master Plan - Supplement No. 2 to Design Memorandum No. 6B. This document was approved by the North Central Division - US Army Corps of Engineers, on 13 August 1981.

THE EFFECTS OF NEW FACILITIES

As previously stated in the Projected Facilities Needed Vs. Existing and Proposed Facilities segment of this report (section V), it is recommended that a new beach be established by the Corps of Engineers. The intent of the beach would be to fulfill the excess demand which the existing beach cannot support. A study is recommended to determine the impacts of fee or free Corps beaches, particularly with relation to the existing fee beach at Big Creek State Park.

In future years, the boating demand interests may exceed the lake's carrying capacity. As a result, intensive management options may need to be undertaken by the Corps or State water patrol interests. Typical measures include water zoning for uses, horsepower limitations, and time periods for specific boating activities. Any implementation of such management actions would be coordinated with and/or enforced by applicable State interests.

It must be remembered that the local, county, State, and Federal Government managed recreation facilities of the market area are intended to fulfill the recreational needs of the people within the area. Therefore, when there is a demand for additional facilities to fulfill recreational needs that presently cannot be met in the market area, then additional facilities should be established. The lead to establish needed facilities should be taken by the Corps when possible and in accordance with current Corps regulations and policies. When facilities are established only to compete with other agencies for recreation use, then tax dollars, manpower, and existing facilities within the zone are misused and wasted. In order to prevent this situation, the planning of new or expanded Corps recreation facilities at Saylorville Lake are and will continue to be coordinated with State, county, and local recreation agencies within the market area.

LATENT DEMAND

At the present time, there is a small need for various types of recreation areas at Saylorville Lake which will become more pronounced as time progresses. These types of recreation areas can be classified as having a latent demand. The Bob Shetler Picnic Ground and the Prairie Flower Group Campground are traditional types of recreation facilities provided by the Corps which can be placed into this classification.

In addition to the traditional types of recreation areas provided by the Corps at Saylorville Lake, there is a small but growing need for recreation areas and services not customarily provided by the Corps. These areas and services are discussed in the following paragraphs.

There is a potential for the development of an outdoor recreation skill area which would provide a practice and instructional area for such activities as cross-country skiing, hang gliding, rock climbing, etc. This area would be a concession site and the concessionaire would be permitted to provide instructions and rent equipment. An area for this type of facility has been designated on plate 2. The designated area is open and contains adequate room for instruction and facility purposes. Since it is projected that the area would be fully funded by a concessionaire (who would determine what facilities would be needed), a site plan for the area has not been developed.

Recently, the Iowa Conservation Commission developed a shooting range on land adjacent to Saylorville Lake project land (see plates 2 and 30). This range offers an opportunity for target practice, firearm safety courses, and eliminates unauthorized target shooting. In the future, this facility could be complemented by establishing an archery field and a skeet and/or trap range on Corps land adjacent to the ICC facility. The area is suited for such expansion and could be tied in with the existing concession which operates the shooting range (Big Creek Shoot). The proposed facility would be fully funded by a concessionaire who would determine what facilities would be needed. As a result, a site plan for the area has not been developed.

The designated area is removed from other recreation areas, residential and farm buildings, and is open and contains adequate room for a skeet and/or trap range and an archery field. Development plans for the area will continue to be coordinated with the Iowa Conservation Commission.

In the Des Moines Metropolitan Area, there has recently been a renewed interest in concerts, plays, etc. It is possible that in future years there will be a shortage of facilities for these types of activities if the interest continues to grow. A revetment near the Saylorville Lake Barrier Dam (see plate 2) could be easily developed into a large outdoor amphitheater (Greek Theater) which would be utilized during the summer months for various types of performances. This renewed interest will continue to be monitored to determine if there would be a need for this type of facility in future years. At that point a site plan would be developed that would fulfill the need for this type of facility. Limiting factors would include high water which would affect stage development, parking if the Prairie Flower Group Campground is developed, and the clay till soil of the revetment which would require the travel lanes (aisles) of the facility to have a hardened surface.

HISTORIC PROPERTIES WITH INTERPRETIVE POTENTIAL

GENERAL

While there are many sites in the project area, few are amenable to interpretation of past lifeways for the general public without unnecessary and destructive excavation. At this time, the bulk of the collections from these sites are curated with Iowa State University under Dr. David Gradwohl. Access to these collections for interpretive or research purposes may be granted to qualified individuals or institutions by contacting the U.S. Army Corps of Engineers - Rock Island District. The best candidates for in-place interpretation are the Kate Shelley site and the Saylorville 5-Mound Group.

KATE SHELLEY

The Kate Shelley Memorial Park and Museum is on land leased until 1999 to the Boone County Historical Society which is responsible for the historic work there. This would serve as a suitable focus for further interpretation of the vicinity by focusing on 19th century railroading and local ceramic industries.

SAYLORVILLE 5-MOUND GROUP

The Saylorville 5-Mound Group has high potential as a focal point in interpretive programs at the lake. The group consists of five conical mounds that exemplify one tradition in the Woodland period cultural complex in the eastern and central United States. The mounds are located at the east end of the dam and are comparatively close to the road. The mounds are within easy reach of the Visitor Center and the area is easy to monitor. The mounds have been vandalized and should be cleared and cleaned by professional archaeologists to restore them to their original contours. The site then could serve as an illustration in a setting approximating its original condition. Restoration and use of the mounds for interpretation should not conflict with other uses or with the Native American Religious Freedom Act.

SECTION VII

COORDINATION WITH OTHER AGENCIES

SECTION VII - COORDINATION WITH OTHER AGENCIES

GENERAL

Throughout the development of the master plan, coordination meetings, conferences, and field trips have been held with outside agencies. The purpose of these activities was twofold; to inform the agencies of our progress and to provide an avenue of input during the planning process. Coordination and cooperation between the Corps and other agencies to insure harmony and compatibility with regional interests have been continuing practices. Coordination efforts have included the following agencies: US Fish and Wildlife Service, Iowa Conservation Commission, Polk County Conservation Board, Dallas County Conservation Board, Boone County Conservation Board, US Soil Conservation Commission, Iowa State University, and the Iowa Division of Historic Preservation. Letters of coordination have been included in Appendix 1 of this report.

Additional meetings were held and correspondence exchanged between the Corps and the following organizations: Central Iowa Regional Association of Local Governments, Drake University, Iowa Natural Resources Council, Iowa State University, Environmental Studies Commission, Boone County Engineering Office, Salvation Army - Camp Laurie, Iowa 4-H Club Foundation, Camp Hantessa Camp Fire Girls, Moingona Girl Scout Council, Des Moines YWCA, and the Des Moines YMCA.

PUBLIC WORKSHOP/MEETING

On 20 February 1980, a public workshop/meeting was held in Urbandale, Iowa. The purpose of this meeting was to gather public suggestions and comments as to how effectively Saylorville Lake land and water resources are being managed, how the public wishes to utilize the available resources, and what future improvements or developments should be implemented. Representatives from private, local, county, State, business, recreational, and environmental interests, a total of 152 people, participated in the workshop.

A summary of the major recreation topics and the percentages of public interest in these topics follows:

Trails	26.7 Percent
Motorized trail vehicles	22.1
Boating	15.7
Marina operation	12.2
Miscellaneous services	8.4
Lake operations	8.3
Camping	3.6
Fishing	1.5
Miscellaneous recreation	1.5
	<u>100.0</u> Percent

Workshop Suggestions

Poll Results

BOATING (15.7 percent of the input)

Provide buoy markers and improve navigational aids	24
Provide courtesy docks equipped for the handicapped at boat ramps	18
Post "no wake zone" at "Commodore Cove" and boating channel leading out of marina	5
Increase water patrol	4
Corps sponsored annual meeting with boaters	4
Provide more than one courtesy dock at each boat ramp	3
Build more boat ramps	3
Toilets more accessible by boaters	3
More waste dump stations	2
Provide lighting at boat ramps	1
Keep upriver boat ramps clear of junk and sand	1

CAMPING (3.6 percent of the input)

Provide courtesy docks and ramps for boaters who use campground	4
Campground for only bikers or snowmobile uses	2
Reduce camping fees during slack season	1
Provide campgrounds for group camping (trailer clubs)	1
Spray for bugs at campground	1
Provide more dumping stations	1
Install telephones in the campgrounds	3

FISHING (1. percent of the input)

Establish fishery at gravel pit in tailwater area	4
Adjust reservoir outflow to benefit fishing below the dam	4

LAKE OPERATIONS (8.3 percent of the input)

Raise lake level	32
Monitor Citizen's band Channel 9	2

MARINAS (12.2 percent of the input)

Build another marina	22
Accelerate extensive improvements to existing marina	10
More docks for mooring boats	3

MISCELLANEOUS RECREATION (1.5 percent of the input)

Provide additional beaches	2
Establish a wilderness/backpacking area	2
Establish dog training area	1
Purchase Fisher's Pond for public recreation site	1
Prohibit animals at the beach	1

MISCELLANEOUS SERVICES (8.4 percent of the input)

Develop a better historical and archaeological program	14
Build roads to connect recreation areas	8
Reduce abuses of alcohol and drug use	6
Make downed timber available for firewood	4
Additional Corps beaches should be free	2
Provide recreation cabin for rent	1
Increase prevention of waste dumping on Federal property	1
Stricter law enforcement	1
Remove floating debris from lake	1

MOTORIZED TRAIL VEHICLES (22.1 percent of the input)

Establish motorcycle riding area	41
Establish 4 wheel drive area	27
Expand ORV areas and trails	14
Develop 4 wheel drive trail in areas subject to flooding	8
Motorcycle area on ice	5
Develop ATV use area in Saylorville Corridor	4
Establish motorcycle riding area from the Mile Long Bridge to Highway 89 on either side of the river	1

TRAILS (26.7 percent of the input)

Provide multi-use trail from Des Moines to Fraser, Iowa	46
Complete 20-foot-wide bike-hike trail (8 feet paved) from Des Moines to Big Creek Lake	21
Expand snowmobile trail development	18
Construct bike trail on west side of lake	17
Develop cross country ski/hiking trail	8
Provide nature trails of various lengths	5
Establish horse trails	3
Connect bike trail with urban areas	2
Remove horse trails from Jester Park lease lands to a more suitable site	2
Mark snowmobile trails permanently	1
Utilize trails for snowmobiling trails in the winter	1

The Rock Island District held a public meeting on 29 April 1981 at the Howard Johnson Motel in Urbandale, Iowa. The purpose of the meeting was to explain the revised Saylorville Master Plan and gather public input for this planning effort. One hundred and twenty people attended the meeting and represented State, business, and private interests. Following the Corps presentation, a question-and-answer session allowed attendees to express opinions and offer comments. The meeting announcement letter summarizes comments received and is included in Appendix 1 - Pertinent Correspondence.

In response to the input at these meetings, the following actions have been taken:

- . Additional trails and a trail network system have been planned for development (see Trails - Sections IV and VI).

- . All terrain vehicle trails will not be developed (see Trails - Section VI).

- . Additional navigation aids and courtesy docks for boating will be provided at boat launch areas (see section IV).

- . A proposal to develop an additional marina is addressed in section VI of this report.

- . A proposal to develop a second beach is addressed in section VI of this report.

SECTION VIII

FACILITY LOAD AND OTHER DESIGN CRITERIA

SECTION VIII - FACILITY LOAD AND OTHER DESIGN CRITERIA

SITING

Permanent facilities that would be damaged by inundation are located above elevation 890 NGVD, which is the full flood pool. Portable or flood-proofed facilities at beaches or boat ramps are and will continue to be located on lower ground. Elevations of water-borne facilities allow for gravity sewers to prevent costly operation of sewage pumps. Only the most adaptable topography has and will continue to be used for the siting of facilities. Forced siting has been avoided unless the efficient use of land requires minor deviation from existing land forms. Cuts or fills have been used only when a satisfactory alternative site is unavailable, and then only for the siting of a specific needed facility. The control of erosion continues to be given a high priority when consideration is given to the siting of new facilities.

WATER SUPPLY

Water for public consumption is currently supplied to recreation areas from Johnston and Camp Dodge water systems. Individual wells in the Des Moines River Valley will produce approximately 50-100 gal/min of water. The pressure system for developed facilities will insure a minimum pressure of 30 psi to all flush-valve fixtures; thus, storage is needed only to carry the short-term peak demand (table 54).

New water supplies will be obtained from local public agencies or water districts when it is legally and economically justifiable. If not, water will be obtained from drilled wells which will be screened, cased, grouted, and which have the Iowa State Department of Health approval to serve as public water supply wells. Water treatment will be considered if the water quality produced by a well is insufficient to meet health criteria.

Newly developed water distribution systems will consist of the well or water source, storage tank, hydropneumatic tank, chlorinator or other treatment equipment if needed, water mains, and water drinking fountains. The storage tank will contain enough water to meet the peak day demand. The hydropneumatic tank will allow for the maintenance of a water pressure of 30 psi at flush valves.

TABLE 54

Estimates of Demand on Water Supply

<u>Type of Area</u>	<u>With Waterborne Toilets (Gallons/User/Day)</u>	<u>Without Waterborne Toilets Drinking Water Only (Gallons/User/Day)</u>
Camp Area	30	5
Group Camp Area	30	5
Primitive Camp Area	5	2
Picnic Area	5	2
Group Picnic Area	5	2
Beach Area	5	2
Fishing Area	5	2
Boat Launch Areas	5	0
Amphitheater	5	2
Interpretive Center	5	0
Marina	5	2

WASTE COLLECTION AND TREATMENT

The collection and treatment of sanitary sewer wastes at Saylorville Lake are currently handled through such various items as holding tanks, gravity sewers, lift stations and force mains, septic tanks and tile fields, and multi-cell lagoons.

Two methods of sanitary waste treatment, lagoons and septic systems, are employed in the recreation areas. Cherry Glen, Prairie Flower, the existing marina, and the Bob Shetler Recreation Area utilize a collection system discharging into a total containment sewage lagoon. Septic tanks with tile fields are used in the Cottonwood and Oak Grove Recreation Areas. The septic tank system was selected because of the lack of suitable lagoon sites (topographical reasons), the need for several sewage lift stations, and the necessity for an excessive amount of piping if a remote treatment location were used. Mound systems are used at Acorn Valley, Walnut Ridge, and Lakeview Areas. Mound systems are an alternative to conventional septic tile field systems. Because they can be used where soil infiltration rates are low, the systems were built above natural ground and blend into the surrounding landscape of the area.

Locations below flood pool will have portable chemical toilets. The septic tank effluent is distributed and disposed of in the tile fields by infiltration. Wastewater drains not connected to the sewer system are provided for camping use.

Expansion of existing collection systems and development of new systems will employ similar items. Sealed holding vaults will be provided at areas where waterborne collection systems are not utilized. The wastes from these vaults will be collected by truck and will be brought to lagoons for disposal. The concentration of wastes from the vaults will need to be diluted prior to their introduction into the sewage lagoon. In areas providing waterborne collection systems, these systems will consist of gravity sewers sized to carry peak flow from contributing facilities with a minimum size of 8 inches. Manholes on the gravity sewer lines will be spaced not more than 350 feet apart. Force mains will be utilized where necessary with a minimum size of 3 inches, and equipped with air release valves at high points and cleanouts at low points. Lift stations will be a package type mounted on top of a wet well with duplex pump units provided and one pump capable of handling peak flows.

Sewage wastes at the project are treated in multi-cell sewage lagoons. These lagoons have been sized to provide complete containment of wastes. Effluent is disposed of through the use of sprinkler irrigation fields during the early spring or late fall. Lagoons are located above the full-pool elevation and, to insure watertight installation, they have been sealed with bentonite or lined with plastic membranes.

Trailer dumping stations are provided at the campgrounds for the convenience of the campers visiting Saylorville Lake. A marine dumping station is located at the Saylorville Marina and is currently able to handle the demand for its services. Fish cleaning stations are provided in areas where heavy fishing creates a demand for this type of facility. Campsite wastewater drains which are not connected to the sanitary sewer system are provided for campers.

ROADS

The design of the roads within the recreation use areas complies with the principles stated in EM 1110-2-400 and ER 1110-2-400 (table 55). Recreation planners established the overall network including road location, lanes of traffic and circulating patterns. Profiles were drawn from existing topographic maps to fit "grass roots" grades for the most part. Stereographic photos were studied during the layout process for the main areas. Access roads and two-way circulation roads have a definite natural or constructed drainage system and a 22-foot-wide bituminous surface on an 8-inch-thick granular base with 4-foot-wide shoulders. One-way circulation roads, in general, have no constructed drainage system but have been subjected to natural drainage along or across their route. These roads have a 12-foot-wide bituminous surface on an 8-inch-thick granular base with 4-foot-wide shoulders. The maximum grade for all roads is 9 percent except on a high-level boat-launching ramp where the grade is 12 to 15 percent.

TABLE 55

Design Standards ^{1/}

<u>Road Type</u>	<u>Width (ft.) & Material</u>	<u>Maximum Grade (%)</u>	<u>Maximum Design Speed (MPH)</u>	<u>Shoulder Width (ft.) & Material</u>
Main Access	24 Bituminous	10	35	4 Stabilized
Access	20 Bituminous	10	30	4 Seeded
Two-Way Circulation	20 Bituminous	12	20	2 Seeded
One-Way Circulation	10 Bituminous	12	20	2 Seeded
Gravel	20 or 10 Crushed Stone	12	20	2 Seeded
Service	8 Crushed Stone	12	20	None

^{1/} EC 1110-2-209.

Bituminous roadways consist of an asphaltic concrete wearing surface placed on a granular base. Gravel roadways have the same template as a bituminous roadway. The difference is that the wearing surface is granular material rather than asphaltic concrete. The roadbed has been cleared only to the outer limits of cut, fill, or structures. Two-way roads have a center stripe, and guardrail with guardcable has been installed along roads at places where public safety requires such protection. The amount of roadside ditching has been held to a minimum with emphasis being placed on utilizing sheet flow and natural drainage ways. Roadside ditches have a minimum slope of .5 percent and are shaped in a broad 'U' rather than 'V' shaped. Culverts have a minimum slope of .5 percent and both ditches and culverts have been designed to standards contained in TM 5-820-4 Drainage for Areas Other Than Airfields.

Traffic control and directional signs are in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways in Iowa. Guardrails are in accordance with the requirements of the State of Iowa, but are constructed of uncoated corrosion resistant steel. Drive-through areas are limited to one-way traffic. Individual parking stalls are equipped with a precast wheel stop. Guard posts are used at all spaces where the slope is steep enough that gravity could cause a free-rolling vehicle to endanger the visiting public in a planned recreation site or where the grade beyond the parking area is such that if the vehicle traveled off the parking area the vehicle's occupants would be endangered.

PARKING AREAS

Parking areas have been provided as an integral part of the traffic circulation system. They have been sited so that their intrusion into the natural and recreational environment is minimized to the greatest possible extent. Techniques for achieving this goal utilized screening and buffering through the use of trees and shrubs, berms, and elevation differentials. The parking lots have a crushed stone or a bituminous wearing surface, depending upon usage and maintenance needs. Striping has been used to delineate stalls and aisles on bituminous lots and all parking lots will utilize wheel stops. Pull-through stalls have been provided for car/trailer combinations. Storm water drainage has been intercepted through the use of swales and ditches before reaching parking areas; however, the use of culverts has been minimized. Curbing has been utilized only where necessary to control drainage or vehicular movements.

BOAT-LAUNCHING RAMPS

Size and location of the launching ramps were established by recreation planners. Individual ramps have a 12 to 15 percent slope and are surfaced with a 12-foot-wide rough-finished 6-inch-thick concrete slab with 6-inch curbs on each side. Single-lane ramps are used in the satellite areas to allow fishermen to launch boats.

Boat-launching ramps have grades of 12 percent with the lower end elevation at 827.0 NGVD. Lanes are 12 feet wide with 6-inch integral curbs. A 4-foot-wide concrete walk is provided between the curbs on multi-lane ramps. The launching lanes consist of a 6-inch reinforced concrete slab over 6 inches of crushed stone. Side slopes of the ramps are riprapped to protect against wind and wave erosion. Minimum facilities in support of a boat ramp are one trash container per lane, 10 car/trailer parking spaces per lane, and security lighting.

DOCKS, PIERS, AND MARINA FACILITIES

At each boat ramp one movable, floating courtesy dock capable of accommodating two boats has been provided.

A fishing pier has been built in the Cottonwood Recreation Area where a high demand for this type of fishing occurs. The pier has been designed for use by the handicapped.

The marinas will continue to be provided on a concession basis. The construction of a second marina is planned at Saylorville Lake. The Corps will provide the land and road access to the site. In addition, the Corps may also construct interior roads and a parking area. The planned capacity of this marina is 251 slips and 62 dry storage spaces. Services should be provided for fuel and oil, fresh water, sanitary disposal, repairs, sales of new equipment, supplies, and food; however, operator discretion may limit the facilities.

PICNIC AREAS

Picnic areas are located to provide a variety of individual outdoor picnicking needs. The typical picnic unit consists of a wood table and a pedestal-type charcoal grill. Trash containers are placed near paths and parking lots for convenient use.

Picnic units are located on gentle grades in heavily wooded areas, open areas, or under shelters. A few extra tables are provided for families wishing to double-up for social purposes. The size and weight of tables allow some movement but discourage users from moving them great distances. Picnic units have not been located more than 250 feet from parking lots. Parking areas have been located for user convenience and to provide an even distribution of use to all units. Picnic tables for handicapped use have also been provided.

Picnic areas have been comprised of at least 10 separate units with 1 table per unit, 1 grill per 2 units, and 1 trash container per 4 units. Each area is served by one parking space per unit, sanitary facilities and drinking water. Picnic shelters, playgrounds, and game fields have been provided where demand warrants and suitable space is available. In order to protect the integrity of the site, no more than 10 units are located on 1 acre.

CAMPING AREAS

ER 1130-2-404 was used as a general guideline, along with EM 1110-2-400, to establish the facilities of the various classes of camping. From the above references, table 56 was developed. This table indicates the per-unit facilities for all camp area classifications.

TABLE 56

Camp Unit Facilities

<u>Camp Unit Facilities</u>	<u>Class A</u>	<u>Class B</u>	<u>Walk-In</u>
Camp Spur	Designated	Designated	None
Tent Pad	1/Unit	1/Unit	1/Unit
Grills	1 Grill/Unit	1 Grill/2 Units	1 Grill/2 Units
Picnic Table	1/Unit	1/Unit	None
Trash Container	1/2 Units	1/2 Units	1/10 Units
Camp Circle	Min. 1/Per Group Area	Min. 1/Per Group Area	None
Waste Water Drain	1/4 Units	1/4 Units	None
Drinking Fountain	1/8 Units	1/8 Units	1/Area
Clearing & Seeding	750 ft ² /Unit	750 ft ² /Unit	350 ft ² /Unit
Roads	Dust-Proofed	Dust-Proofed	None
Vault Toilets	As Required	1/15 Units	1/30 Units
Shower Buildings	1/75 Units	None	None
Campsite Receptacle	20-30 amp	None	None

Typical camp units include a parking spur, table, fireplace, and garbage can. Individual units are spaced and screened to give privacy and a natural setting for campers. Campgrounds are built to give users a variety of activity opportunities within a short walking distance. Playgrounds are equipped to provide safe play areas for children.

Sites designed for group campers at the proposed Prairie Flower Group Campground will accommodate both trailer and tent users. Camping clubs and other organized groups will find these facilities useful for weekends or extended visits.

In order to protect the area from overuse, no more than five camping units per acre should be constructed. The camping areas are served by various support facilities (as shown in table 56) in addition to playgrounds and gamefields where suitable land is available. Electrical hookups are provided at appropriate, highly developed camping areas as the demand for such facilities becomes apparent. These hookups will consist of underground lines from central distribution panels to individual campsite service connections.

SWIMMING BEACHES

In general, beach areas should have a maximum grade of 4 to 5 percent, a minimum shoreline of 350 feet, a minimum width of 125 feet, and a minimum water area of 125 feet from shoreline to marker buoys. Facilities include a sand beach with 12 inches of sand over 6 inches of gravel, 1 bath/change shelter with outdoor shower, a water source, vault toilets, trash containers, and parking spaces. Beach and water areas are sized relative to project demand, site limitations, and design capacity of major facilities on each site, and are categorized as day use beaches. Each beach area includes safety buoys, signs, and markers.

Oak Grove Beach has a controlled capacity of 1,000 visitors due to the beach parking lots having a combined capacity of 500 spaces. This site is graded to a sand beach, and a sand bottom extends into the defined swimming waters. Standard reservoir markers, diamond with cross (boats keep out), delineate the swimming waters and keep the area restricted to swimmers. The swimming area has a changehouse which includes an exterior shower. This building will be subject to frequent flooding, and has been built to withstand flooding.

No picnic tables or other facilities have been developed in this area. All glass containers are prohibited in the swimming area. The sand beach extends 50 feet from the shoreline and parallels the edge of the water.

SHELTERS, COMFORT STATIONS, WASHHOUSES, BATH/CHANGE SHELTERS, AND OTHER BUILDINGS

The items described in table 57 include the structure, all items within, and utilities within 5 feet of the building. These structures are provided throughout the project to enhance recreation uses and provide users with sanitary facilities.

TABLE 57

Building Facilities

<u>Building</u>	<u>Size</u>	<u>Facilities</u>
Shower Building	1224 ft ²	Women: 4 showers, 5 toilets, 4 lavatories; Men: 4 showers, 3 toilets, 2 urinals, 4 lavatories
Comfort Station	355 ft ²	Women: 2 toilets, 2 lavatories Men: 1 toilet, 1 urinal, 2 lavatories
Bath/Change Shelter	320 ft ²	Women: 2 outdoor showers, Men: 2 outdoor showers

There are six basic building types built for the recreation areas at Saylorville. Except for the main administration building and work center, the others are all to be associated with campgrounds and picnic areas. One basic theme has been followed which represents a combination of aesthetics, maintenance, security, and function. Uniformity of roof style and materials makes the buildings compatible with each other. Each building has been designed and constructed to meet the requirements of ER 1110-2-102, which establishes criteria for facilities to accommodate handicapped persons.

The exterior treatment reflects the natural character of the area by use of rough-sawn lumber and cedar or simulated shake roofs. Where stone is used, it will reflect the characteristics of the native stone in color and texture. In profile, the structures are relatively low, consonant with the flat openness of the region. Because of the lack of trees in some areas, the buildings are in full view from all sides and, therefore, are designed to carry the architectural style through all external surfaces.

The interiors are intended to reduce vandalism as much as possible and to facilitate maintenance and cleanliness. Lighting is both natural and fluorescent, with light interior colors to induce optimum reflectance. Floors are quarry tile or concrete finished to the lightest color possible. Variations in interior arrangement have been made to satisfy particular functions, such as showers, storage, etc.

PLAYGROUND FACILITIES

Tot lots have been established at campgrounds for the use of children between the ages of 5 and 12 who are camping in the area. Several lots are provided for each campground depending upon its size, in accordance with ER 1120-2-400. Each lot is designed to be approximately 5,000 square feet, and accommodate 30 to 50 children. The irregular form of each lot varies but the overall size and equipment remains similar.

The equipment suggested was thought to be both appropriate for children and in character with the natural setting. Commercial products painted red, yellow, orange, etc, were discouraged because their colors are not harmonious with the character of a natural area. All the equipment is erected on-site from local suppliers of wooden equipment. The surface of the tot lots is sand or wood chips to minimize minor injuries and scrapes.

ELECTRIC POWER, LIGHTING, AND TELEPHONE SERVICES

Electric power is furnished to the Corps of Engineers by the Iowa Power and Light Company. Electric lines within the government boundary in public use areas have been distributed underground through the use of direct burial cable. These underground lines are within road clearing limits. Transformers and distribution panels have been provided where necessary. Buildings, wells, sewage lift stations, and select camp units have all been furnished with electric power. Secondary distribution lines carrying power to individual camp units are not shown on the development plates, but will be detailed prior to construction.

Lighting has been provided at various facilities for the safety, security, and convenience of visitors. Low-level night lighting has been provided around such buildings as entrance stations, vault toilets, and comfort stations. Security lighting to prevent unauthorized entry and to allow emergency night work has been provided at administrative, maintenance, and operations buildings and structures of the Corps. Metal halide lighting will be provided at boat ramps for night identification and use of boat launching ramps.

Telephone service will be provided at each major recreation area at highly visible locations so that communications with authorities can be established in the case of emergencies.

WALKS AND TRAILS

Various types of walks and trails have been provided throughout the recreation areas and the entire lake region. Asphalt or concrete sidewalks will continue to be constructed between parking lots and facilities where heavy usage warrants. These paved sidewalks will also be provided in areas

where facilities accessible to the handicapped have been provided. Multi-purpose trails have been developed both within and between the recreation areas. Grades on the trails have and will continue to be controlled, and such facilities as benches, trash receptacles, and bridges will continue to be provided. Interpretive signs have been provided on trails where demand warrants. Trails are used for pedestrian, bicycle, and equestrian traffic and, during the winter, snowmobiles are allowed on certain designated trails. Off road vehicle trails and areas are not provided at Saylorville because the terrain and soils of the project do not lend themselves to this type of use. In addition, large plots of land needed for ORV use are not available. Additional foot, snowmobile, and bike trails are planned as part of the overall trail concept for Saylorville. Because bicycling is so popular and because Des Moines is within bicycling distance along the corridor, trails in Saylorville are designed with these two aspects in mind. The bike trails, to some degree, coincide with the foot trails. In other cases, bike trails deviate and are part of a roadway or exist as a trail by themselves. Certain standards for bike trails have been established by the Oregon State Highway Division which have been adopted for use at Saylorville:

Minimum trail width (two-way traffic) - 8-foot

Maximum grade - 15% for short distances

10% for long distances

Pavement - a minimum 2-inch asphaltic concrete or an emulsion-treated stone.

Where bike trails run parallel to a roadway, they are and will continue to be separated from the vehicle roadway by a 4-inch solid white line. In addition, delineator posts 2-1/2-inches in diameter, 24 inches high, and spaced 100 feet apart should be used. All bike trails are marked with a bicycle symbol sign mounted 48-inches above the ground wherever confusion could exist as to the trail direction.

SITE PREPARATION, GRADING, AND LANDSCAPE PLANTING

Site preparation, grading, and landscape planting for new development and for the upgrading of existing development, will vary according to slope, existing vegetation, general location, and other existing conditions at each site. Specific recommendations concerning these items are shown on site plans. Generally, development will be harmonious with the natural scene. The alteration of the existing natural character of a site will be accomplished with a minimum of grading for a specific result. Landscape planting, seeding, mulching, and sodding will be utilized to reclaim areas disturbed by construction. Landscape plantings will also serve as buffers; they will provide shade, and enhance the character of the natural landscape.

SIGNS AND NAVIGATION AIDS

Signs will continue to be used throughout the project area to inform and guide visitors for their safety and for their enjoyment of the recreation experience. The signage system will conform to the requirements of the North Central Division Sign Handbook NCDP-113-2-1 and Graphic Standards Manual EP 310-6-6, as well as ER 1130-2-400. The recreation symbols developed by the National Park Service will continue to be utilized wherever applicable.

- a. Traffic control signs are utilized throughout the project to insure the safety of both pedestrians and vehicular traffic. Such signs will conform to the American National Standards Institute Standard D6.1, Manual on Uniform Traffic Control Devices for Streets and Highways.
- b. Project rules and regulations are located in easily accessible areas where visitors will be able to read them. Beaches, boat ramps, information areas, entrance stations, and comfort buildings are all areas where such signs have been located.
- c. Directional signs are used throughout the Saylorville Lake area to direct visitors to the Dam and public use areas. The location and type of these signs will continue to be coordinated with the Highway Division of the Iowa Department of Transportation, the county, or the city of Johnston.
- d. Entrance signs are located at the entrance to each public access area. The name of the area and the types of facilities found there are listed. The facilities are shown through the use of recreation symbols.
- e. Information signs have been installed to provide visitors direction to recreational sites within an area. These signs use the recreational symbol in conjunction with a direction arrow. Another type of informational sign is a numbered campsite sign which identifies individual sites. Large display-type information signs will continue to be provided to orient visitors to recreation areas and to the entire lake region. Similar display-type signs announce the location and times when programs of interest will be held.
- f. Interpretive signs and markers provide special guidance to visitors by calling to their attention areas of cultural or historic significance, explaining project development and operations, and denoting natural features. These signs and markers appear along trails, roadways, and the lakeshore, and are of natural materials and colors so as to blend into their surroundings.
- g. Standard Coast Guard navigation aids and control buoys guide boats on the lake and inform boaters of the various use limits in special areas. The Project Safety Plan further discusses water hazards where aids and markers are required to provide for safe boating.

SOLID WASTE DISPOSAL

Specific recommendations and a schedule for solid waste collection and disposal have been developed by the Operations Division and the reservoir manager. Refuse is collected through the use of contracts with local Government agencies or private haulers. The solid waste is disposed of in a State or EPA approved landfill, or by any other method of refuse disposal and recovery which meets with the approval of the Corps of Engineers, Iowa Health Agencies, and the Environmental Protection Agency. Trailer dump stations are provided at each campground. The facilities are either single or double depending upon the size of the site and include: water hydrant, disposal unit, night lighting, and paved surface.

VISITOR SAFETY CONTROLS AND SPECIAL FEATURES

In locations where dangerous situations exist, protective fencing and barricades will continue to be installed to prevent access or travel to specific areas.

As specified by ER 1110-2-102, special features, including design considerations, will continue to be provided for the handicapped. These features will continue to include wheelchair ramps with nonslip surfaces, water closets in restrooms, and hard surfacing, curbing, handrails, and painted marking and texture changes on trails. To partially satisfy the recreational needs of the handicapped, special facilities for hiking are planned for development in the tailwater area. A handicapped fishing pier was completed in the spring of 1982. The pier is accessible by wheelchair and has a guard railing and tire stop.

FACILITIES FOR THE ELDERLY AND HANDICAPPED

The majority of recreation facilities in the project are suitable for the elderly. There is handicapped access to all of the buildings at Saylorville but two facilities were especially designed and constructed to give the handicapped person a better recreational experience. The eastern boat ramp at Lakeview has a wheelchair ramp with rest stops adjacent to the ramp so that a handicapped individual can get down the ramp, onto the courtesy dock and load into a boat with greater ease. The fishing pier in Cottonwood Recreation Area is designed specifically with the concept of getting the handicapped person out and over the water. Access to the pier is on one level and an excellent fishing spot is now accessible to those in a wheelchair.

SECTION IX
REALLOCATION OF RESERVOIR STORAGE
IN
SAYLORVILLE LAKE
FOR
MUNICIPAL AND INDUSTRIAL WATER SUPPLY

SECTION IX - REALLOCATION OF RESERVOIR STORAGE IN SAYLORVILLE
LAKE FOR MUNICIPAL AND INDUSTRIAL WATER SUPPLY

BACKGROUND

In January 1976, the Iowa Natural Resources Council (INRC) requested the Rock Island District, Corps of Engineers (NCR, COE) to study the feasibility of allocating water storage capacity in two Corps reservoirs, Lake Red Rock and Saylorville Lake, for municipal and industrial water supply. Technical reports^{1/} prepared by NCR determined that water supply storage was feasible and available at both Red Rock and Saylorville without affecting the originally authorized purposes. At present, however, the State has contracted storage at Saylorville Lake only.

The Rock Island District, Corps of Engineers, has entered into a contract with the State of Iowa to provide storage in Saylorville Lake for the purpose of water supply for municipal and industrial consumptive use. The State of Iowa, represented by the INRC, subcontracts the storage space with public utilities. The contract was approved by the Assistant Secretary of the Army (Civil Works) on 13 August 1982. The contract provides 14,900-acre-feet of storage and requires the conservation pool to be raised from 833 NGVD to 836 NGVD. The initial raising of the conservation pool to elevation 836 NGVD was implemented in October 1983. Saylorville was operational for water supply purposes in October 1983.

Overall, the net effect of raising the conservation pool to provide water supply to downstream users will be a beneficial one. The opportunity to provide a reliable source of water without significant environmental impacts will result in long-term benefits which substantially outweigh the short-term and minor adverse impacts. These benefits and impacts were discussed in an Environmental Assessment entitled Reallocation of Reservoir Storage in Saylorville Lake for Municipal and Industrial Water Supply, dated 30 April 1982. The Assessment was circulated for public review and a Finding of No Significant Impact was signed for the project on 25 May 1982.

CURRENT PLAN

The INRC requested storage capacity sufficient to provide an average flow of 75 cubic feet per second (ft³/s) with a reliability of not less than 99 percent. In order to achieve such storage capacity for a period of 25 years, the level of the conservation pool at Saylorville Lake must be raised to

^{1/} See Exhibit 1, Prior Pertinent Design Memoranda.

elevation 836/838 NGVD. This figure represents a conservation pool of 836 NGVD, with a winter pool raise to 838 NGVD. Past operating procedure for the reservoir has included a 2-foot raise above the 833 NGVD conservation pool in the fall and spring for waterfowl management. The water raise under the proposed plan will continue the policy of slightly higher levels to benefit waterfowl, and also is integral to maintaining the 99 percent reliability for water supply. After 25 years, the State has the option to modify the agreement, at which time the conservation pool elevation could be raised to 838/840 NGVD to compensate for sedimentation and maintain the same degree of reliability for a succeeding 25-year period.

AFFECTED RESOURCES AND MITIGATION

FEDERAL RECREATION RESOURCES

Cherry Glen Boat Launching Area

The principal features of the facility affected by the pool raise are the lower level boat ramp itself and the low level parking lot. Both are usable to water elevation 846+. As a mitigation measure, the low level parking lot will be resurfaced and the central area will be raised and surfaced (see plate 3). This mitigation action will provide 80 additional parking spaces. The additional area needed for parking at present has no value for habitat and consequently, the modification will have no significant effect on the environment.

The breakwater for the facility protects both ramps and provides a protected harbor. The breakwater is principally located at elevation 840+. The pool raise to 836/838 would not impair the effectiveness of the breakwater. If the pool is raised to 838/840 in the year 2008, the breakwater should be raised to elevation 844.

Oak Grove Beach

At a conservation pool of 833, the existing beach is approximately 1,400 feet long and 300-350 feet wide. Approximately 50-70 feet of beach width is lost at pool elevation 836, and an additional 60-80 feet of beach width is lost at elevation 838. Two vault toilets and a change building are at elevation 841+ NGVD, and two large parking areas are at elevation 846+ NGVD. The beaches are presently closed when rising water reaches the vault toilets. In order to reduce a health hazard when the pool is raised to 836/838 and to provide equivalent facilities at the 836 level, two vault toilets and a change building will be constructed at elevation 846/848 NGVD. In addition, sand will be added to the beach and gravel to the parking lots on a yearly basis as a replacement measure. The new vault toilets, change house, and the addition of sand and gravel to needed areas on a yearly basis will have no significant effect on any environmental resources (see plate 5).

Saylorville Lake Marina

Raising the pool to 836/838 NGVD will have an effect on the marina's low level parking lot (at elevation 841+ NGVD) and concrete stairs leading from the low level parking area to the boat slips. The boat slips and anchorage system were originally constructed to accommodate changing lake levels and consequently will not be affected. The marina's low level parking and stairs will be raised to elevation 845 NGVD. These proposed changes will not affect any environmental resources within the marina area.

NON-FEDERAL RECREATION FACILITIES

LEDGES STATE PARK

*THIS DOESN'T INCLUDE LEDGES
MITIGATION.*

Some concern has been expressed over possible impacts on Ledges State Park. In order to determine what damages, if any, would occur as a result of the pool raise, a computer analysis for frequency and duration was completed. The first occurrence of impact would be at approximately 863 NGVD when water begins to cover a low road in the park. Raising the pool will increase the frequency of inundation at that elevation by only 1 percent and the duration of flooding by only 0.1 percent. Neither of these changes will result in a significant impact.

JESTER COUNTY PARK

Approximately 10 acres of Jester State Park was flooded when the pool was raised. Most of this area is grassy parkland with a few scattered trees. The Corps presently has an easement to permanently overflow the area up to elevation 833 NGVD and occasionally overflow up to 892 NGVD. An agreement to accommodate the increased pool elevation will be negotiated (see plate 32).

EFFECTS ON NATURAL RESOURCES

SHORELINE

Raising the conservation pool 3 feet to elevation 836/838 NGVD did not significantly alter the configuration of the lake, except that the new conservation pool would extend further upstream and the actual shoreline length will be increased from approximately 39 miles to 43 miles.

VEGETATION

Few of the bottom land hardwoods remain in the main lake due to inundation and clearing practices which required removal of all vegetation growth exceeding 2 inches in diameter up to elevation 836 NGVD. In addition, selective cutting was employed up to elevation 870 NGVD. Clearing policy presently would require additional clear-cutting up to elevation 841 NGVD for an 836/838 NGVD pool. However, only minor clearing is required in this elevation band because fluctuation of the pool has essentially removed all substantial growth.

Downstream of the Iowa Highway 17 bridge, the most severe losses of shoreline vegetation would occur in the embayments which were not cleared or selectively cut, and at Lewis A. Jester County Park. Normal pool fluctuation has already severely impacted all but the most water-tolerant species.

Some abandoned cropland which has been left to revert to natural vegetation would also be inundated by the pool raise.

Above the Highway 17 bridge, all land except the satellite recreation areas, has been outgranted to the Iowa Conservation Commission (ICC). This 11,787 acre area is managed to provide quality habitat for upland game and waterfowl. The proposed pool raise has been coordinated with the ICC and the US Fish and Wildlife Service (FWS). At a meeting held on 19 March 1982 to discuss the selected alternative for water supply, both the ICC and FWS agreed that while there would be vegetation losses, the total impact would not be significant.

The ICC has constructed a subimpoundment for waterfowl management by inclosing an area behind dikes built to elevation 840.9 NGVD. While raising the pool may increase overtopping of the dikes by wave action, it will also benefit management of the subimpoundment. Raising the pool to 836/838 NGVD will make it possible to flood the impoundment to the desired depth of 1-3 feet primarily by opening the intake from the lake and, consequently, will reduce the amount of pumping needed. Also, under present operating conditions, the ICC has been required to drain the area when the lake reaches 836 NGVD; with a conservation pool elevation of 836 NGVD, the requirement to drain the subimpoundment would be rescinded.

Altogether, approximately 550 acres of terrestrial habitat will be lost at 836 NGVD and 810 acres at 838 NGVD, the majority of which is above the Highway 17 bridge. This will not constitute a significant loss, but will result in some changes in the pattern of usage for hunting and fishing. The area of terrestrial habitat lost will become shallow water, which is attractive to waterfowl, and after aquatic vegetation replaces the terrestrial habitat, the shallow areas will become additional fishery habitat.

FISH AND WILDLIFE

Fish and wildlife populations are a direct function of the quantity and quality of the habitat provided them. Raising the conservation pool will have varying effects on these populations.

Terrestrial wildlife populations occupying the existing main lake area are presently limited by such factors as high public use, steep shorelines, and lack of bottom land cover. Raising the conservation pool would inundate little habitat in this area. Therefore, these already limited populations would be only slightly affected.

The largest losses of wildlife habitat due to an increase in conservation pool would occur in the upper reaches in the land outgranted to the Iowa Conservation Commission. The effects of these losses would be varied and dependent upon the habitat requirements of the different species of animals. Furbearers, such as beaver, mink, muskrat, and raccoon, would be least likely to suffer from habitat change in the upper reaches. In fact, their populations could benefit from expansion of shoreline habitat.

As previously stated, approximately 550/810 acres of terrestrial habitat will be inundated. Since most of this acreage is in the upper reaches where the shoreline is broad and flat, a nearly equivalent amount of shallow water aquatic habitat will be created.

The conservation of the upper end of the reservoir to a lake-type fishery would occur. This transition should not affect the species composition to any significant degree, although population densities would be temporarily lowered until reproduction and recruitment takes place. Raising the pool level would have several positive effects on the fisheries. First, the flooding of timber in the embayments and upper reaches would create additional fish habitat. Second, the increase in surface acres would create more available water for the boat fishermen.

In the case of the increased depth of the main lake (Highway 17 bridge to the dam), the species most likely to utilize the deeper area for bottom feeding are carp, carp suckers, and others which have demonstrated an ability to tolerate less than normal levels of dissolved oxygen (DO). In addition, the volume of the lake is sufficient that during occasional periods of stratification, individuals of those species will be able to move out of areas of low DO into more suitable environment.

In order to confirm the determination that occasional increases in the frequency and duration of low DO would have little or no adverse impact, the Iowa Conservation Commission was consulted. They agreed that the potential occurrence of low DO would have no significant adverse effect on the fishery at Saylorville Lake. In their opinion, only a fully developed thermocline would create a problem for the fishery resource. At Saylorville, this is highly improbable because of the shallow nature of the lake.

The effects upon the waterfowl are very difficult to predict since most species utilize both terrestrial and aquatic habitat. Additional study would be required to determine the precise nature and extent of impacts of a change in pool elevation on the waterfowl population and usage. Upland (game and non-game) mammal and bird populations would be adversely affected due to inundation of bottom land vegetation used for cover and food.

Although animals dependent upon terrestrial vegetation for food and cover would be adversely affected by the loss of suitable habitat resulting from a raise in conservation pool, these losses should be tolerable. Conversely, the fish and furbearing populations would most likely receive some benefits from a raise in pool elevation. Therefore, as a whole, changing conservation pool to elevation 836/840 NGVD should not significantly affect the fish and wildlife populations in the project area.

ENDANGERED SPECIES

The U.S. Fish and Wildlife Service has evaluated the proposal and has determined there will be no impact on endangered species. (Letter dated 23 April 1982)

WATER QUALITY

An increase in the conservation pool to 836/838 NGVD will not result in any significantly adverse impact due to water quality. Greater dilution resulting from increased volume may, at certain times, improve water quality, especially during those periods when lake elevations are low.

Some concern was expressed that stratification resulting in degraded water quality would occur at the higher pool elevation. A study was undertaken to assess specifically the effects of stratification. The findings of the study indicate that stratification will result in minor increased frequency and duration of low DO in the lower layer of water in the main lake area. However, this reduction in DO will have no significant effect on any of the aquatic resources of the pool. Also, the impact on the total aquatic environment resulting from such stratification will probably be minor and insignificant. Increased stratification, if it occurs, will be most severe in that portion of the lake which was once the main channel thalweg of the Des Moines River before construction of the reservoir, and then only in the area immediately upstream of the dam where water depths are normally 30 feet or more. The determination of no significant impact notwithstanding, water quality will continue to be monitored at Saylorville. Exhibits 4 and 5 show the water elevation at 836 NGVD.

AESTHETIC VALUES

A 3-foot raise in the conservation pool elevation will result in an essentially positive benefit to the aesthetic characteristics of the lake. In the main lake the change will be least: a large expanse of water will visually be much the same. In the embayments and in the upper reaches, as well as along the main lake shoreline, raising the pool will alleviate, to a certain degree, the negative aesthetic impact caused by erosion and vegetation loss. However, it must be noted that the pool will continue to fluctuate as part of normal operation and, consequently, there will be continued erosion and bank cutting. In the shallow areas of the upper reaches, some siltation has begun to create mud flats during low water. Accretion will continue in these areas, eventually causing negative visual impacts. Raising the lake will delay this effect to a certain degree, but will not permanently stop the gradual fill-in of the shallow areas. Raising the lake may temporarily retard the reestablishment of vegetation in some areas until appropriate plant communities (water-tolerant species) take hold.

ARCHAEOLOGICAL AND HISTORICAL RESOURCES

An inventory of archaeological resources located within the area of the pool raise was completed in 1975 by the Iowa State University Archaeological Laboratory, Ames, Iowa. Shoreline monitoring by that institution continued formally until 1980 and resulted in the discovery of additional sites. Based on the results of the survey work, the Saylorville project lands were declared eligible for inclusion in the National Register of Historic Places as an archaeological district. A memorandum of agreement was then negotiated pursuant to 36 CFR 800 covering the construction and development of the project.

A total of 44 archaeological sites have been identified and recorded in the area of the pool raise up to the present time. Of these, 17 have been subjected to severe erosion, destroyed by construction, or tested sufficiently so as not to require further discussion. Since the last full scale surveys were conducted in 1973, the status of the remaining 27 sites may have changed considerably. The District, in consultation with the State Historic Preservation Officer, plans to resurvey those 27 sites to ascertain their extent and status. Further work will be done as specified in the existing MOA for those sites that are extant in the zone of affect.

A Memorandum of Agreement for mitigation of impacts to cultural resources from construction of the initial project was negotiated, pursuant to 36 CFR 800, and signed in June 1978. The MOA includes a clause covering the Corps District and the SHPO to develop mitigation plans for sites which will be adversely affected. A separate document addressing the mitigation plans will be released after the survey results have been analyzed and a mitigation plan has been developed.

AFFECTED MANMADE FACILITIES

In the service road on the north side of the dam (see exhibit 4-I), there is a slight depression by the intake tower adjacent to the berm. The initial raise of 836/838 NGVD will still leave the berm accessible from the left abutment for pool levels up to 840.5 NGVD. Therefore, there appears to be no urgency in raising this road depression and the work could be deferred to year 2008 if the pool is raised to 838/840.

SECTION X
PLAN OF PHYSICAL DEVELOPMENT

SECTION X - PLAN OF PHYSICAL DEVELOPMENT

ZONING OF PROJECT LANDS

GENERAL

Project fee title lands of 25,515* acres are zoned within the overall land use allocation/classification system prescribed in ER 1120-2-400. Under this system, it is possible to set a priority for use for a given parcel of land while not precluding needed uses which are compatible with the designated priority use. Existing developed recreation areas are zoned for recreation-intensive use (see section V). Partially developed and potentially developable recreation sites are described in section VI. Wildlife management sites licensed to the ICC are zoned for wildlife management. Table 58 shows the number of acres under each land use allocation, and plates 46 and 47 display the project zoning and land-use maps respectively, and table 59 displays developed and total acreage figures of Corps and leased recreation areas.

PROJECT OPERATIONS

Lands designated for the safe and efficient operation of the project for those authorized purposes other than recreation and fish and wildlife. This includes, but is not limited to, the land on which project operational structures are located. These areas include operations buildings, maintenance facilities, and satellite offices and storage yards. Lands allocated to this category are occupied by the dam, the spillway, maintenance buildings, and administration building, the barrier dam, and the dam and diversion channel at Big Creek Lake.

OPERATIONS: RECREATION - INTENSIVE USE

Lands designated for development of recreation facilities for intensive recreational activities and use by the visiting public. Facilities have been or will be provided to accommodate the recreation needs of visitors in concentrated numbers and such adjacent or associated lands without facilities as required for open space purposes to make a whole and desirable recreation area. Private or long-term exclusive group use of these lands will not be permitted. Management practices leading to habitat

* This figure includes the fee acreage in the Saylorville Lake Downstream Corridor.

improvement for the benefit of wildlife are encouraged. No licenses, permits, or easements will be issued for such noncompatible manmade intrusions as underground or exposed pipelines, cables, overhead transmission lines, or nonproject roads. Exceptions to this restriction may be made where necessary to serve a demonstrated public need in those instances where no reasonable alternative is available. No hunting or agricultural uses are permitted on this land.

OPERATIONS: RECREATION - LOW DENSITY USE

Lands designated as developed public use areas for low density recreational activities by the visiting public and as buffer zones between incompatible uses. Natural conditions preclude intensive public use development because extensive alteration of natural systems would be required. Difficult access also is a factor indicating low-density use as most appropriate for these lands. This zone may be appropriate when a conflict exists between public use and wildlife habitat. Private or long-term exclusive group use of these lands will not be permitted. Management practices leading to habitat improvements for the benefit of wildlife are encouraged. No licenses, permits, or easements will be issued for such noncompatible manmade intrusions as underground or exposed pipelines, cables, overhead transmission lines, or nonproject roads. Exceptions to this restriction may be made where necessary to serve a demonstrated public need in those instances where no reasonable alternative is available. Hunting (see plate 49) and agricultural uses are permitted on this land.

All hunting will be conducted within the rules, regulations, and jurisdiction of the Iowa Conservation Commission. Hunting is permitted on all Corps lands with the general exceptions as follows: wildlife refuges established by the Iowa Conservation Commission, all public campgrounds and picnic areas, designated areas of developed trails and specific management practices, and within the vicinity of the dam and other structures and buildings. All non-hunting areas will be adequately posted as such. Project personnel will conduct a survey and maintenance check of all posted areas just prior to the hunting season. Hand out maps of the areas closed to hunting should also be available. All enforcement of hunting regulations will be by Iowa Conservation Commission officers, except violations of Corps-posted grounds which will be enforced by Corps rangers.

OPERATIONS: WILDLIFE MANAGEMENT

Reserve forest

Revised
Lands designated as habitat for fish and wildlife or for propagation of such species and where wildlife habitat maintenance or improvement is appropriate. The majority of the land zoned for wildlife management is leased to the ICC. This allocation also includes lands available for low-density recreation. Private or exclusive group use of lands under this allocation will not be permitted. Vehicles will not be allowed, nor will

any structures not directly related to access or control of access through the area. Licenses, permits, or easements may be issued on a case-by-case basis for such manmade intrusions as underground or exposed pipelines, cables, overhead transmission lines, or nonproject roads. Such outgrants will include appropriate controls as required to preclude or minimize the adverse visual or other impacts upon the natural character of the area. Wildlife management lands are generally available for selected low-density recreation activities such as hiking, hunting, fishing, nature study and nature photography. Wildlife management lands may be restricted at certain critical periods when wildlife would otherwise be adversely affected, such as during critical breeding and nesting periods. Access, hunting, and fishing are prohibited in the 551-acre refuge area within the 11,787-acre area leased to the ICC for wildlife management.

OPERATIONS: NATURAL AREAS

Lands designated for preservation of scientific, ecological, historical, archaeological, or visual values. Lands managed to preserve and protect rare, unique, or sensitive species of flora and fauna are designated as natural areas. Limited or no development is contemplated on land in this classification. Such lands will normally be continuously available for low-density recreational activities. Vehicles will not be allowed, nor will any structures not directly related to access or control of access through the area. No hunting or agricultural uses are permitted on this land. In addition, lands in this category have been allocated for the preservation of scientific, historical, archaeological, or visual values. There are several prairie restoration sites located around the lake, and historical sites including the Logansport Site, Moingona Site, and the Saylorville Mounds. A cultural resource management plan is under development and will be a separate appendix to this master plan to be released at a later date.

SUMMATION OF ACREAGE IN EACH ALLOCATION

PROJECT OPERATIONS

The majority of land zoned as Project Operations is in the lower portion of the project and is occupied by the dam and outlet structures. The administration building and maintenance buildings are located northwest of the dam. (See plate 28.)

OPERATIONS: RECREATION-INTENSIVE USE

Project lands that are zoned under this land use allocation include the recreational areas managed by the Corps of Engineers, Jester County Park, Big Creek State Park, Swede Point Park, and the Polk City Recreational Sports Complex. (See plate 2 and plate 46.)

OPERATIONS: RECREATION - LOW DENSITY USE

The majority of project land zoned for low density recreation use is located between the Iowa Highway 17 bridge and the Mile Long Bridge. Other areas include the satellite recreation areas, the land bordering the west shoreline of Big Creek Lake, areas between the Walnut Ridge Recreation Area and the dam, and the area south of Cherry Glen and the dam. These areas are both comprised of upland and transition zone areas and are either vegetated with uneven-aged mixed forest stands or transition zone species. (See plate 2 and plate 46.)

OPERATIONS: WILDLIFE MANAGEMENT

The ICC lease area for wildlife management is located along both sides of the reservoir in the area above the Iowa Highway 17 bridge (see plate 47). The area leased to the State is similar in nature to those described above in recreation low density use. This lease area accounts for the majority of land under this classification (see plate 46).

OPERATIONS: NATURAL AREAS

The majority of acreage under this classification are the restored prairie areas previously discussed in section IV under vegetative resources. The Saylorville 5-Mound Group also accounts for 3 acres of this classification. The rest of the acreage is occupied by the Logansport and Moingona Sites.

TABLE 58

Land-Use Allocation

<u>Allocation</u>	<u>Acreage</u>	<u>Total Acreage</u>
<u>Project Operations</u>		
U.S. Army Corps of Engineers	200	
Other Federal Agencies	0	
States	70	
Local Public Agencies	0	
Private	0	270

TABLE 58 (Cont'd)

Operations: Recreation-Intensive Use

U.S. Army Corps of Engineers	1,653	
Other Federal Agencies	0	
States	941	
Local Public Agencies	39	
Private	38	2,671

Operations: Recreation Low Density Use

U.S. Army Corps of Engineers	4,277	
Other Federal Agencies	0	
States	160	
Local Public Agencies	978	
Private	0	5,415

<u>Allocation</u>	<u>Acreage</u>	<u>Total Acreage</u>
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Operations: Wildlife Management

U.S. Army Corps of Engineers (Range Mgmt.)	120	
Other Federal Agencies	0	
States	11,787	
Local Public Agencies	0	
Private	0	11,907

Operations: Natural Areas

U.S. Army Corps of Engineers	2	
Other Federal Agencies	0	
States	0	
Local Public Agencies	0	
Private	3	5

Fee Areas at Conservation

<u>Pool Elevation 833 Inundated</u> ^{1/}	<u>5,247</u>
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Total Easement Acres 1,392	Total Fee Acres	25,515 ^{2/}
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^{1/} Approximately 5,797 at elevation 836 NGVD.

^{2/} This figure includes fee acreage in the Saylorville Lake Downstream Corridor.

RECREATION SITES AND AREA PLANS

Recreation site construction was initiated in 1974 at the Saylorville project as outlined in the Recreation Master Plan, approved 4 February

1974. Existing developments are discussed in section V of this report, and proposed developments are discussed in section VI. Site plans and aerial photos of existing and proposed developments are included in this report (see plates 2 through 45, and exhibits 4A through 4K).

TABLE 59

Recreation Facilities Acreages

<u>Corps Recreation Areas</u>	<u>Developed Areas</u>	<u>Total Acres</u>
Cherry Glen Campground	32	72
Cherry Glen Picnic Ground	59	98
Cherry Glen Boat Launch	15	15
Oak Grove Beach	51	101
Oak Grove Picnic Ground	22	56
Prairie Flower Campground	76	331
Bob Shetler Campground	15	393
Acorn Valley Campground	40	74
Cottonwood Picnic Ground	120	310
Lakeview Boat Launch	41	41
Laurie Park Boat Launch	20	20
Dogwood Boat Launch	10	10
River Bend Boat Launch	5	27
Walnut Ridge Picnic Ground	40	100
Visitor Center	<u>5</u>	<u>5</u>
TOTAL	551	1,653
<u>Leased Recreation Areas</u>	<u>Developed Areas</u>	<u>Total Acres</u>
Iowa Conservation Commission		
Park Attendant Residence and Boat Ramp	5	25
Big Creek State Park and Recreation Area	933	1,143
Fish and Wildlife Area	0	11,787
Sycamore Access Boat Ramp	3	3
Boone County Conservation Board		
Swede Point Park	20	105
Polk County Conservation Board		
Jester County Park	5	897
Polk City		
Recreational Sports Complex	12	14
Boone County Historical Society		
Kate Shelly Memorial Park	2	2
Saylorville Marina	<u>38</u>	<u>38</u>
TOTAL	1,018	14,014

SECTION XI

SPECIAL PROBLEMS AND CONCERNS

SECTION XI - SPECIAL PROBLEMS AND CONCERNS

GENERAL

Previous sections of this Master Plan identified and evaluated many problems and needs specific to individual project sites and proposed solutions to alleviate them. In planning for continued development, conservation, and management of the natural and manmade resources of the Saylorville Lake project, some problems and needs deserve special consideration because of their unique character, or because direct solutions are not easily devised.

SITE IMPROVEMENTS

Various additions and alterations to the Saylorville Lake recreation facilities have been completed during the years since the project was first placed into operation. The majority of these facility improvements have been initiated and implemented by field management personnel as a part of the operations and maintenance program.

Field and District office personnel (representative from each division) will continue to make on-site reviews of conditions, discuss alternative solutions, review plans, and make recommendations relating to operation and maintenance improvements. A brief and constructive procedure will continue to be utilized for this review and recommendation process.

COORDINATED PLANNING

Recreation areas and facilities managed by various agencies within the market area should not be considered as competitors. All of the facilities managed by the various agencies should be viewed with the goal of fulfilling the recreational needs of the market area. Therefore, the planning for new facilities and improving existing facilities within the primary market area will continue to be coordinated to avoid duplication. An affirmative effort will continue to be implemented by Corps field managers and district personnel in cooperation with other Government entities (which have recreation facilities in the primary market area) to coordinate their efforts in meeting the recreational needs of the area.

SECTION XII
MASTER PLAN APPENDIXES

SECTION XII - MASTER PLAN APPENDIXES

GENERAL

The preparation and approval of appendixes to the Master Plan are critical elements in achieving the resource use objectives and associated development and management measures which are specified by the Master Plan. In accordance with the guidelines of ER 1130-2-400, the following appendixes for the Saylorville Lake Master Plan have been approved:

Appendix A - Project Resources Management Plan. Approved 6 June 1980.

Appendixes B and D - Forestry, Fish and Wildlife Management Plan. Approved 20 October 1983.

Appendix C - Fire Protection Plan. Approved 12 December 1979.

Appendix E - Project Safety Plan. Approved 3 April 1980.

Appendix F - Shoreline Management Plan. Not required. There is no private ownership of the shoreline at Saylorville Lake.

On 1 October 1983, the guidelines for Master Plan appendixes contained in ER 1130-2-400 were revised. In accordance with the revision, an Operational Management Plan (OMP) will replace the previous appendix system. The OMP will address the topics under the old appendix system in one document. The OMP will include two parts: (1) Natural Resource Management and (2) Park Management. Objectives and implementation plans will be established for each part. An OMP will be developed when the existing appendix plans become functionally obsolete and when funds are available through a budget priority process.

PROJECT RESOURCE MANAGEMENT PLAN (APPENDIX A)

The goal of this plan is to insure the protection and development of the project's natural and manmade resources by outlining and describing various operating and management procedures that are implemented by project staff. These management and operation procedures include lake level fluctuation, release rates, water supply, recreation, and forestry and wildlife-resource management. The plan also addresses operation and management procedures for the administration, management, and maintenance of Corps recreation areas, and the administration and management of other project lands. In addition, the plan includes procedures for staffing and organization, cooperating with other agencies, ranger activities, safety, encroachment, interpretive programs, and staff training.

FLOOD CONTROL

General Objective

. In order to realize full recreation potential, a conservation pool will be kept at elevation 836 NGVD if at all practical.

Specific Objectives

. To maintain minimum outflow of 200 ft³/s by releasing inflows up to 12,000 ft³/s from 21 April to 15 December and up to 16,000 ft³/s during the period of 16 December to 20 April.

. During flood control operations, to store all inflows above 12,000 ft³/s and 16,000 ft³/s in each respective time period in the river basin until the lake level rises to an elevation of 879 NGVD.

FLUCTUATION OF POOL LEVELS

General Objective

To reduce and repair the adverse effects of flood damage. Six steps will be followed (see Specific Objectives).

Specific Objectives

- . To plant fast growing species of grasses.
- . To annually reseed lowland areas as necessary with water tolerant vegetative species.
- . To replace beach sand when washed away or covered with silt.
- . To immediately clean recreation facilities of silt and drift debris.
- . To riprap the shoreline when erosion is too severe for vegetative protection.
- . To buoy breakwaters near boat ramps during periods of high water.

NAVIGATION

General Objective

- . To provide safe and high quality recreation boating opportunities.

Specific Objectives

. Future demand for pleasure boating may exceed the lake's carrying capacity. As a result, zoning various parts of the lake for specific types of boating use or establishing time frames for various types of boating may be required. These actions would require coordination and participation with and by State interests for implementation.

RECREATION

General Objectives

. To provide a diversity of public outdoor recreation opportunities in a relatively natural setting.

. This diversity will be aimed at complementing the recreational opportunities of surrounding communities.

Specific Objectives

. To utilize zoning in order to reduce the conflicts of incompatible recreational activities. The areas will be zoned for specific public use.

. To provide additional recreational opportunities through concessions, leases and licenses to private enterprise and local governing agencies.

. To continue to promote a public relations program through interpretive programs concerning the natural resources and management objectives of the project.

. To provide for maximum sustained public use without undue deterioration of the natural and manmade resources of the project.

. To establish maintenance standards above that normally expected in a public recreation area.

. To provide a safe and rewarding outdoor recreation experience to the visiting public.

VISTOR SAFETY

General Objective

. To provide a safe project environment for visitors, contractors and employees.

Specific Objectives

. To encourage the public to swim only at developed beach areas. The perimeters of designated swimming areas are buoyed to better confine swimmers within a safe area.

. To promote safe, clean beaches, no metal or glass containers, pets, or fishing activity will be allowed in developed beach areas.

. To locate lifesaving stations at beach areas that provide ring buoys and written emergency procedures to follow.

. To keep all boat ramps free of debris and vegetation which might hamper safe launching and loading maneuvers. Areas around boat ramps are posted to prohibit swimming, wading, and fishing.

. For project management personnel to stress water safety in their lectures and personal contact with the public.

. To include in interpretive programs information on the prevention of accidents and treatment of injury associated with outdoor recreation.

. To utilize warning signs, barricades, fences, etc., to warn visitors of dangerous areas and help prevent access where necessary.

. To carry out employee safety instruction and education through regular monthly safety meetings and safety lectures when the need arises in the field.

IN-SERVICE TRAINING PROGRAM

General Objective

. To maintain at Saylorville Lake Project a training program for training and career development. This plan will carry out the policy, basic concepts, and objectives of the training plan, Rock Island District, Corps of Engineers.

Specific Objectives

. To provide maintenance personnel with schooling from other sources, as needed.

. To provide training in clerical duties for many of the project staff; first, for all clerical positions and, secondly, for project rangers and management.

. Courses not required but which are beneficial to professional growth may be included in the training program as seminars, conferences, and workshops.

. To train the manager and rangers so that they can obtain and maintain a wide variety of skills to manage the project. Training is needed in the following categories: executive and management, supervision, legal, medical, scientific, engineering, and specialty or technical courses described in the Rock Island District Training and Career Development Program.

PROJECT FIRE PROTECTION PLAN (APPENDIX C)

The goal of this plan is to serve as a guide for the prevention and suppression of grass, forest, and structural fires on or near Corps property at Saylorville Lake. The plan outlines and describes methodologies for fire prevention, fire suppression, project fire suppression equipment and capabilities, presuppression planning, and staff training. The plan also includes a discussion concerning fire protection from local fire departments and the Corps cooperative effort with other government entities to protect (fire suppression) adjacent lands bordering its boundaries.

General Objective

. To serve as a guide for the prevention and suppression of grass, forest, and structural fires on or near Corps property at Saylorville Lake, Iowa.

Specific Objectives

. The Saylorville Lake areas have fire protection from local fire departments. The lands adjacent to U.S. Government boundaries include holdings of State, county, and local governments, and private interests. If a fire threatens Government lands, the Corps of Engineers will respond in a cooperative effort with the other agencies to protect its boundaries.

. The Corps of Engineers permits open campfires under Title 36, Chapter III, Part 327.10b, "Fires shall be confined to those areas designated by the District Engineer, and shall be confined to fireplaces, grills, or other facilities designed for this purpose. Fires shall not be left unattended and must be completely extinguished prior to departure."

. When the need arises for burning by Corps project personnel (e.g., driftwood accumulations, brush piles, buildings, or prairie grasslands) the Department of Water, Air and Waste Management will be notified.

. It is important to contact people using Corps recreation areas (camping, picnicking, and undeveloped areas) concerning fire prevention. The posting of signs, information on bulletin boards, interpretive programs, and visits to local schools, organizations, and clubs enlist the help of the public in preventing both structural and forest fires.

. Presuppression planning is aimed at preparing an efficient fire control organization that is well-equipped, instructed, and supervised. In addition to the project's fire-fighting force, close coordination will be planned with the Forestry Section of the Iowa Conservation Commission, the Polk County Conservation Board at Jester Park, and the local fire departments toward suppressing wildfires on Corps lands.

. Fire suppression will have priority over all other activities. Wildfires spread rapidly. Therefore, it is extremely important to have fast suppression action. It is much easier to suppress immediately a small fire with a few men than to control a large fire with many men later. The major objective of any plan should be to bring the wildfire under complete control before the next daytime period of intense burning.

. The first responsibility of the Corps Fire Boss will be the well-being of his fire crew during all phases of any wildfire attack. This includes their safety, welfare, and physical health.

. Periodic inspection will be made of areas that have burned. In areas of normal visitor use, dead trees and large dead limbs will be removed. In all areas, inspection will be made to determine the extent of natural revegetation.

PROJECT SAFETY PLAN (APPENDIX E)

The goal of the Project Safety Plan for Saylorville Lake was developed to assure a maximum effort to provide a safe project environment for visitors, contractors, and employees. The plan identifies common recurring hazards and unsafe conditions in each major phase of project operation. Precautionary measures to prevent, reduce, and control these hazardous situations and conditions have been identified in the plan.

VISTOR SAFETY

General Objective

. All structures to which the visiting public has access will be kept clean, orderly, and in good repair. All structures will be inspected daily by Corps personnel.

Specific Objectives

. The use of steps of stairs leading to and within stuctures will be kept to a minimum to reduce the common hazards associated with them.

. All structures, buildings, and stairs accessible to the visiting public at night will have adequate interior and exterior lighting.

. Entrances and exits will be kept free of obstructions.

. Any structures found to be in need of repair will be reported to the park manager, and the repairs will be made as soon as possible. If a repair cannot be completed in a timely manner and the structure poses a safety hazard, then the structure and/or the hazard will be secured from public access until the necessary repairs are made.

SANITATION

General Objective

. Toilet and shower facilities, picnic shelters, beach houses, visitor center, and office areas will be regularly cleaned by contractor personnel.

Specific Objectives

. With each cleaning, contractors will be required to wash, rinse, and dry all floors, toilets, lavatories, mirrors, shower stalls and benches, hand dryers, and other fixtures. A disinfectant and detergent will be used for the wash. All doors, walls, ceilings, and lighting fixtures will be kept clean and dry. The exterior of all buildings will be kept clean of insect debris, cobwebs, wasp nests, and all other deposits.

. The contractor shall insure to the park manager that his employees and the public will not be exposed to any toxic or harmful chemicals as a result of his operations.

. All facilities will be inspected daily by Corps personnel to insure compliance with the terms of the contracts, and the facility's sanitary and safe condition.

SEWAGE DISPOSAL

General Objective

. Sewage disposal will primarily be accomplished by means of lagoon systems. Sewage will be transferred from the recreation areas to the nearby sewage lagoons by sewage lift pumping stations.

Specific Objectives

. The sewage lift stations will be equipped with warning buzzers and red warning lights to indicate malfunctions in the system.

. The sewage lagoons will be located within locked, fenced areas, and will be posted, "Sewage Lagoons - Keep Out." Aquatic vegetation will be removed from sewage lagoons by mechanical methods, or approved chemical applications. During the recreation season, the liquid level in the lagoons will be kept in a 2- to 6-foot range. Additional water will be added to the lagoons, as necessary, to insure proper operation.

. Sewage will be removed from vault-type toilets by a contracted commercial pumping unit as necessary.

SOLID WASTE DISPOSAL

General Objective

. Trash, litter, and garbage will be collected by a contractor and project personnel on a daily basis.

Specific Objectives

. Refuse containers will be emptied by contract personnel at least three times each week.

. All mowing operations will be conducted on litter-free areas only. The mowing over of trash and litter will not be allowed.

. All trash will be removed to an approved solid waste disposal site. Regular inspections of the contractor's performance will be conducted to insure a safe and sanitary project environment.

. Several trash and debris dump sites have been identified on recently purchased land in the floodway corridor, below Saylorville Dam. Cleanup operations in the corridor area by contractor personnel will be completed before the development of public recreation facilities.

. Problem areas in the floodway corridor will be posted, "No Dumping" and will be patrolled frequently by park rangers to reverse the current trend of indiscriminate disposal of solid waste materials.

PUBLIC ACCESS

General Objective

. All Corps of Engineers access roads, trails, and parking areas will be maintained in a proper and safe condition. Gravel areas will be chemically treated to control dust. Hard surface areas will be swept clean of loose gravel, glass, and other debris as necessary.

Specific Objectives

. Guardrails will be installed where danger exists of vehicles going out on control and into the lake, down steep grades, or into high density recreation areas.

. Parking areas will not be allowed to fill beyond their designed capacity.

- . A speed limit of 15 miles per hour will be posted in all recreation and parking areas.

- . During the winter, snow removal and sanding of roads will be performed as needed.

- . All steps, bridges, handrails and other constructed items on trails will be inspected weekly by Corps personnel and repaired as necessary.

PUBLIC USE AREAS

General Objective

- . Title 36 Code of Federal Regulations will be enforced on all project lands and waters to insure maximum safety for all project visitors. All public use areas will be regularly inspected by Corps personnel for unsafe or hazardous conditions.

Specific Objectives

- . Launching ramps will be constructed with a grooved concrete surface to provide good tire traction. Launching ramps will be inspected daily during the recreation season by Corps personnel for silt, driftwood, and other debris.

- . Corps-managed, high-level launching ramps will be lighted at night.

- . Courtesy docks will be provided at Corps-managed launching ramps.

- . The docks will be inspected daily by Corps personnel and kept in proper repair. The docks will be removed at the end of each boating season and completely inspected before being reinstalled for the next season.

- . No swimming areas will be posted with signs and/or buoys. Areas posted no swimming will include launching ramp harbors, the outlet structure intake area, the marina harbor, and the Big Creek terminal dam and spillway.

- . In order to maintain a safe and healthful facility, the following restrictions will be posted at the beaches: No fires, pets, motor vehicles, boats, glass objects, fishing, camping, littering, or keg beer.

- . Each year, prior to the swimming season and after periods of inundations, beach areas will receive complete inspections. Swimming areas will be sounded or walked off in order to detect underwater hazards

such as dropoffs, deep holes, loss of sand, siltation, and/or debris. Beaches will be closed during periods of high waters. All unsafe conditions will be corrected before beach areas are opened to public use.

PUBLIC INFORMATION

General Objective

. In order to insure the maximum safety for all project visitors, an information and education program will continue to be incorporated into the interpretive, sign, maintenance and daily patrol programs.

Specific Objectives

. Park rangers will advise park visitors of storm warnings by use of loudspeaker systems installed in patrol vehicles and boats.

. Terrain hazards, such as washouts, loose rocks, erosion, and maintenance repair work, will be posted, barricaded, or corrected as necessary to prevent accidents.

. All project personnel will receive instruction on emergency procedures to follow when evidence of structural distress of potential dam failure is observed.

. No hunting or carrying of fire arms will be permitted in recreation or construction areas. Hunting will not be allowed within 900 feet of such areas. Access roads into, and the boundaries around, recreation and construction areas will be posted as "no hunting" areas.

. The park manager will promote, develop, and maintain public interest in recreational safety through cooperation with all interested local organizations.

. In order to effectively carry out the role of the Corps of Engineers in boating safety, there will be a maximum of cooperation and coordination with the Office of the State Waters Superintendent.

EMPLOYEE SAFETY

General Objective

. All operations and maintenance work will be performed in absolute compliance with the provisions of EM 385-1-1, "Corps of Engineers General Safety Requirements Manual," dated 1 June 1977, and "Occupational Safety and Health Administration Guidelines."

Specific Objectives

. The Project Safety Officer, or other qualified person, will conduct weekly safety meetings with all employees present.

. The Project Safety Office will insure that all safety material received from the District Safety officer is adequately distributed.

. All tools will be kept in good condition and used only for the purpose for which designed. All power tools will be used in accordance with manufacturer's instructions. Only qualified personnel who have received specific training will operate power tools.

. Painting, spraying, and the handling of open vaporous substances will be done only in well ventilated areas and according to the manufacturer's instructions and all applicable safety requirements. All flammable chemicals will be stored in fireproof lockers designed for such items.

. All park rangers and technicians, both permanent and temporary, will be required to maintain a current certificate of completion for a first aid course. The minimum course acceptable will be the American Red Cross Standard Multimedia System course.

. All buildings will be kept in a clean and orderly manner. Local emergency telephone numbers will be conspicuously posted near all telephones in the administration and maintenance buildings.

. All vehicles will be maintained in good repair and operated in a safe manner. Maintenance of vehicles will be controlled by assigning each vehicle to an employee who will be responsible for obtaining required maintenance.

. First aid kits and fire extinguishers will be kept in all vehicles, boats, and major buildings. Ranger vehicles will also contain a wool blanket and a torpedo buoy with 50 feet of floating rope. All safety equipment in vehicles will be inspected monthly to assure completeness and availability.

PROJECT FORESTRY, FISH, AND WILDLIFE MANAGEMENT (APPENDIXES B AND D)

The goal of this plan will be to outline the development, management, and protection of vegetative resources, and to establish a fish and wildlife habitat development and maintenance outline for Saylorville Lake. This plan provides the guidelines for the administrative and the management staff in pursuing these outlined goals.

The scope of this plan encompasses fish and wildlife management as well as forestry management. The fish and wildlife plan evaluates fish and wildlife habitat designated areas, prescribes practices for improving or maintaining such habitat, evaluates the effect of these practices, and coordinates work and information with other Federal, State, and county agencies. In conjunction with the fish and wildlife plan, the forestry plan provides an inventory of existing vegetative conditions, implements vegetative management for recreation use and development, preserves and improves wildlife habitat and aesthetic values, controls soil erosion, and restores, establishes and promotes natural ecological conditions.

FOREST MANAGEMENT

General Objectives

- . The objectives of the Forest Management Program are to increase the value of all project lands for recreation and/or wildlife through sound forestry practices. Management practices will not be dictated by requirements for sustained yields of timber products.
- . The forest management program attempts to encourage the presence of the greatest variety of plants and animals and assure their presence in the future.

Specific Objectives

- . Establish suitable forest cover on recreational areas. The need is for vegetative cover to serve as shade, screening, buffers, erosion control protection, and wildlife cover.
- . Select those open areas which should be reforested and replant them with desirable species.
- . Protect steep banks from erosion.
- . Develop and hold a stable population of desirable wildlife.

- . Protect heavy-use areas from overuse.
- . Reestablish suitable vegetative cover on areas denuded by overuse and high water.

WILDLIFE MANAGEMENT

General Objectives

- . Saylorville Lake's Wildlife Management Plan will be directed towards increasing the number of wildlife species inhabiting project lands to the point of greatest use and enjoyment by the public in accordance with the multi-use objectives of the lake project.
- . In general, the goal of wildlife habitat enhancement practices is to improve the quality and diversity of habitat for both game and non-game species.

Specific Objectives

- . Habitat development methods directed at improving wildlife populations will be mainly that of providing food and cover habitat through manipulation of plant species. This will be done primarily by: 1) controlling secondary field succession through mowing, disking or burning; 2) planting trees and shrubs that have high wildlife values; and 3) planting food strips of grains or grass/legume mixtures to provide wildlife food as well as succession control.
- . Prairies are becoming a substantial resource on Saylorville's upland sites. The prairie and its associated flora and fauna must be considered a remarkable gain in positive resource development.
- . The stabilization, habitat development, historical concept, increased soil fertility, and low maintenance requirement, all directly related to prairies, provide the basis for the planting programs.
- . Non-consumptive uses on wildlife, such as observations, sight-seeing, and photography, will receive equal considerations with that of consumptive uses such as hunting. Manpower will be a potentially limiting factor.
- . The formation of potholes and pond development and management are being implemented for waterfowl habitat.

SECTION XIII

COST ESTIMATES

SECTION XIII - COST ESTIMATES

GENERAL

A summary cost estimate of the proposed recreation facilities at Saylorville Lake is provided in table 60. Itemized cost estimates are presented for such development in tables 61 (Prairie Flower Group Campground), 62 (Bob Shetler Picnic Grounds), 63 (Sandpiper Recreation Area), and 64 (Trails), and are based on June 1984 prices. An itemized preliminary cost estimate of the Second Marina is provided in appendix 2, pages 2-15 and 2-16 of this report. The total Federal costs in developing support facilities for a second marina vary between \$643,900 and \$699,600 depending on the desired quality and site selection.

TABLE 60

Summary Cost Estimate

<u>Facility</u>	<u>Amount</u>
Prairie Flower Group Campground	\$ 2,040,000
Bob Shetler Picnic Grounds	267,200
Sandpiper Recreation Area	2,257,500
Trails	1,467,700
Second Marina	<u>699,600</u>
SUBTOTAL	\$ 6,732,000
ENGINEERING AND DESIGN (8+%)	539,000
SUPERVISION AND ADMINISTRATION (6+%)	<u>404,000</u>
TOTAL	\$ 7,675,000

TABLE 61

Prairie Flower Group Campground Cost Estimate

<u>Item</u>	<u>Cost</u>
Physical Setting	
Site Preparation	\$ 76,600
Landscaping	48,335
Recreation Features	
Picnic Shelters	147,000
Playfield	20,000
Picnic Tables	30,000
Playgrounds	30,000
Store Building	50,000
Fire Rings	12,500
Camp Site (Pads)	59,870
Access Features	
Roads/Parking Lots (Asphalt)	776,310
Sanitary Features	
Shower Buildings	280,000
Waterlines	10,800
Sewerlines	117,650
Drinking Fountains	18,000
Waste Water Drains	3,750
Trash Receptacles	4,875
Trailer Dump Station	10,000
Safety/Interpretive Features	
Electrical Distribution	34,750
Amphitheater	25,000
Signs	5,000
Wheel Stops	3,875
	<hr/>
Subtotal	\$ 1,773,915
Contingencies (15%)	266,085
Total	<hr/> \$ 2,040,000

TABLE 62

Bob Shetler Picnic Ground Cost Estimate

<u>Item</u>	<u>Amount</u>
Physical Setting	
Landscaping	\$ 4,000
Recreation Features	
Picnic Shelters	35,000
Playgrounds	10,000
Picnic Tables	30,000
Grills	5,000
Access Features	
Roads/Parking Lots (Grandular)	104,100
Sanitation Features	
Drinking Fountains	9,000
Vault Toilets	3,000
Waterlines	18,000
Trash Receptacles	8,250
Safety/Interpretive Features	
Signs	1,000
Wheel Stops	5,000
	<hr/>
Subtotal	\$ 232,350
Contingencies (15%)	34,850
Total	<hr/> \$ 267,200

TABLE 63

Sandpiper Recreation Area Cost Estimate

<u>Item</u>	<u>Amount</u>
Physical Setting	
Site Preparation	\$ 531,630
Landscaping	34,030
Beach	131,550
Recreation Features	
Picnic Tables	2,400
Picnic Shelters	70,000
Change House	30,000
Playground	15,000
Access Features	
Roads/Parking Lots (Asphalt)	794,440
Boat Ramp (Concrete Lane)	36,000
Sanitary Features	
Vault Toilets	36,000
Waterlines	10,000
Hydrants	2,000
Safety/Interpretive Features	
Signage	21,000
Electrical/Security Lighting	20,000
Parking Barriers	72,000
Guard Rail	15,000
Courtesy Docks	142,000
	<hr/>
Subtotal	\$ 1,963,050
Contingencies (15%)	294,450
Total	<hr/> \$ 2,257,500

TABLE 64

Trails Cost Estimate

Bicycle Trail—Cherry Glen to Big Creek

<u>Item</u>	<u>Amount</u>
Physical Setting	
Site Preparation	\$ 351,100
Landscaping	16,000
Recreation Features	
Benches	6,000
Access Features	
Paving	272,850
Bridges	300,000
Safety/Interpretive Features	
Signs	2,500
	<hr/>
Subtotal	\$ 948,450
Contingencies (15%)	142,250
Total	<hr/> \$ 1,090,700

Foot-Ski Trail From Walnut Ridge to Mile Long Bridge

<u>Item</u>	<u>Amount</u>
Physical Setting	
Site Preparation	\$ 75,200
Landscaping	8,500
Recreation Features	
Benches	3,000
Access Features	
Granular Surfacing	51,250
Safety/Interpretive Features	
Signs	1,500
	<hr/>
Subtotal	\$ 139,450
Contingencies (15%)	21,550
Total	<hr/> \$ 161,000

Foot-Ski Trail From the Diversion Dam to Mile Long Bridge

<u>Item</u>	<u>Amount</u>
Physical Setting	
Site Preparation	\$ 99,548
Landscaping	11,270
Recreation Features	
Benches	3,756
Access Features	
Granular Surfacing	71,374
Safety/Interpretive Features	
Signs	1,878
	<hr/>
Subtotal	\$ 187,826
Contingencies (15%)	28,174
Total	<hr/> \$ 216,000

SECTION XIV
RECOMMENDATIONS

SECTION XIV - RECOMMENDATIONS

GENERAL

It is recommended that this revision to the Saylorville Master Plan be approved as a guide to the management, utilization, and development of the natural and manmade resources of the project, while developing additional future opportunities for public use and wildlife management.

This Master Plan contains a broad range of resource use objectives and development and management recommendations. These recommendations fall into four groups:

- . Maintenance and Operations
- . Cooperative Planning
- . Feature Design
- . Master Plan Appendixes

MAINTENANCE AND OPERATIONS

Maintenance and operations recommendations, including, but not limited to, the following, can be implemented subject to the availability of funding and manpower.

- . The implementation of annual open lawn maintenance procedures, including, but not limited to, reseeding, aeration, fertilization, and the application of chemicals for pesticide and/or herbicide control in accordance with Federal and State law, COE regulations, and the Project Resource Management Plan (appendix A to this Master Plan).
- . The implementation of various forestry and wildlife management practices detailed in the Forest, Fish, and Wildlife Management Plan (appendixes B and D to this Master Plan).
- . Operate and maintain project facilities and resources for maximum use and safety by the visiting public consistent with resource capacity limitations on a basis that is equal for all potential users.
- . The development, restoration, and preservation of prairie areas within project lands as outlined in the Project Forestry - Fish and Wildlife Plan (appendixes B and D to this Master Plan).

- . Planting of native plants as noise buffers and visual screens.
- . Control of access to undeveloped areas as appropriate.

COOPERATIVE PLANNING

It is recommended that cooperative efforts with Federal, State, and local Government entities, as well as citizens interest groups, be continued and expanded relative to coordinated planning for development, preservation, or enhancement of land and water resources. These cooperative efforts should include, but not be limited to, the primary market area zone of influence recreational needs, project visitors data, preservation of natural areas, establishment of new recreational facilities within the market area, and fish and wildlife habitat enhancement.

FEATURE DESIGN

It is recommended that the following order of priority be followed in implementing the resource objectives, and development of additional recreation facilities.

- . Trails
- . Second Marina
- . Sandpiper Sailboat Launch
- . Sandpiper Beach
- . Prairie Flower Group Campground Area
- . Bob Shetler Picnic Area

The development of the proposed facilities listed above is contingent upon the following conditions being met prior to construction, and should be undertaken during detail design stages.

Cultural Conditions. All areas proposed for development are to be intensively surveyed. Any identified sites must be tested and mitigated, if necessary. The State Historic Preservation Officer is to receive and review report of such investigations for agreement of findings.

404 Conditions. The fill material used for constructing the peninsula in the Sandpiper Recreation Area is to be physically contained during construction. Containment of the fill material must incorporate the use

of cofferdams or sheet pilings. Alternative methods of containment must be submitted to Iowa Department of Water, Air and Waste Management for review and approval.

Other Conditions. Before a proposed marina near the Lake View Recreation Area is developed, access is to be investigated to determine if there are any limitations. Site plans of a successful developer for a second marina will require additional cultural, environmental, and 404 review and coordination prior to construction.

Any trail development constructed by the Corps of Engineers in areas leased to other interests shall be maintained and operated by lease interests. Formal agreement is to be obtained and siting jointly developed by such interests.

MASTER PLAN APPENDIXES

The preparation and approval of an Operational Management Plan (OMP) to the Master Plan, as outlined in revised ER 1130-2-400, are critical elements in achieving the resource use objectives and associated development and management measures which are specified by the Master Plan. Accordingly, the following appendixes have been prepared and approved in accordance with the old appendix system:

- Appendix A - Project Resource Management Plan, 6 June 1980
- Appendix B and D - Forestry, Fish and Wildlife Management Plan, 20 October 1983.
- Appendix C - Fire Protection Plan, 12 December 1979
- Appendix E - Project Safety Plan, 3 April 1980
- Appendix F - Lakeshore Management Plan, Not Required

Master Plan Appendixes recommendations, including, but not limited to, the following, can be implemented subject to the availability of funding and manpower.

- The plans will be revised (i.e., goals, objectives, management procedures) into a single OMP when the existing appendix plans become functionally obsolete. The Recreation Branch of the Operations Division - Rock Island District, will be responsible for the revision. The revised OMP will be coordinated with the Planning Division of the Rock Island District and with various Federal, State, and local Government entities. A yearly coordination letter report reflecting the accomplishments of the previous year and the objectives for the coming year will be sent to various Government entities.

SECTION XV
CONCLUSIONS

SECTION XV - CONCLUSIONS

CONCLUSIONS

Saylorville Lake is a popular all-season recreation area because of its close proximity to Des Moines and because many of its recreational resources are water-oriented. The existing project recreation facilities make a significant contribution to serving the recreational needs of the market area, particularly in serving the need for water oriented recreation facilities. Opportunities to develop additional recreation facilities on Corps lands are limited. These limiting factors include a restricted land base as well as financial, natural resource, and social constraints. Within restrictions imposed by existing regulations and policies, it is possible to improve the quality of recreational opportunities by minor facility improvements at existing sites. In the future, undeveloped sites which display the potential to support recreation facilities could be improved by the sensitive development of the site in regard to its natural resources. The preservation of natural resource values is of the utmost importance in making decisions concerning the development of these sites.

The wildlife management area leased to the Iowa Conservation Commission consists of both upland and bottom land. The upland areas are particularly productive and are sensitive ecosystems. The bottom land areas are valuable when inundated during the fall because they are used as a resting and feeding area for waterfowl species. The project lands managed by the Corps of Engineers for wildlife purposes will be managed in a manner that will complement the State-managed area. These Corps wildlife management areas will be protected, enhanced, and preserved in order to keep the areas productive for both consumptive and nonconsumptive wildlife.

This revised and updated Master Plan provides guidelines for the continued development and management of Saylorville Lake utilizing past, existing, and anticipated factors which will influence the use of project resources. Various positive benefits will result through the careful implementation of the plan in regard to people in the project market area and the natural resources of the project.

Alteration of this Master Plan may be necessary as conditions change; in anticipation, updating will be scheduled when deemed necessary.

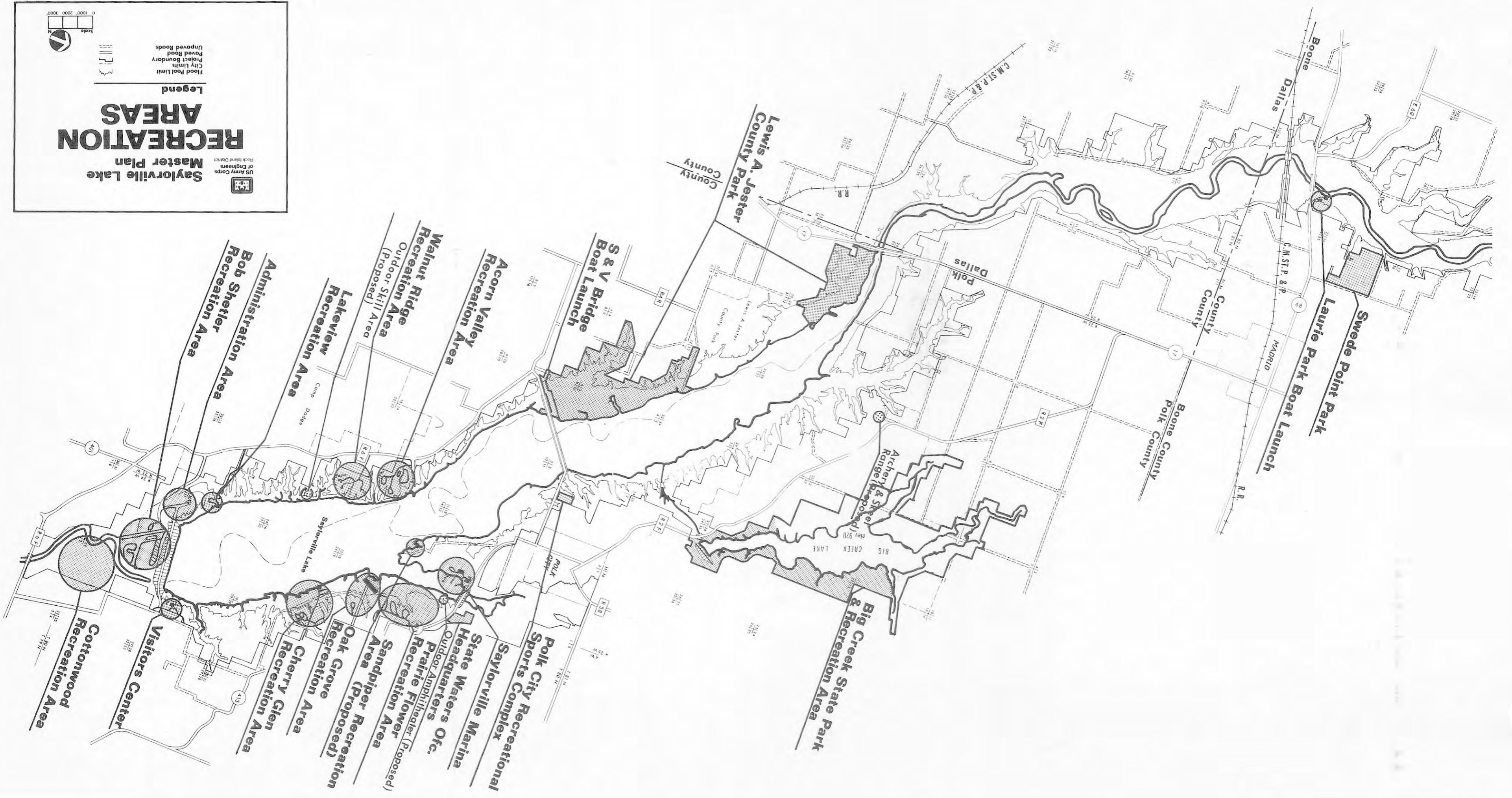
US Army Corps of Engineers
Flood Control District

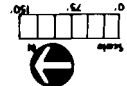
Saylorville Lake Master Plan RECREATION AREAS

Legend

- Flood Foot Limit
- City Limits
- Project Boundary
- Paved Road
- Unpaved Roads

Scale
0 1000' 2000' 3000'



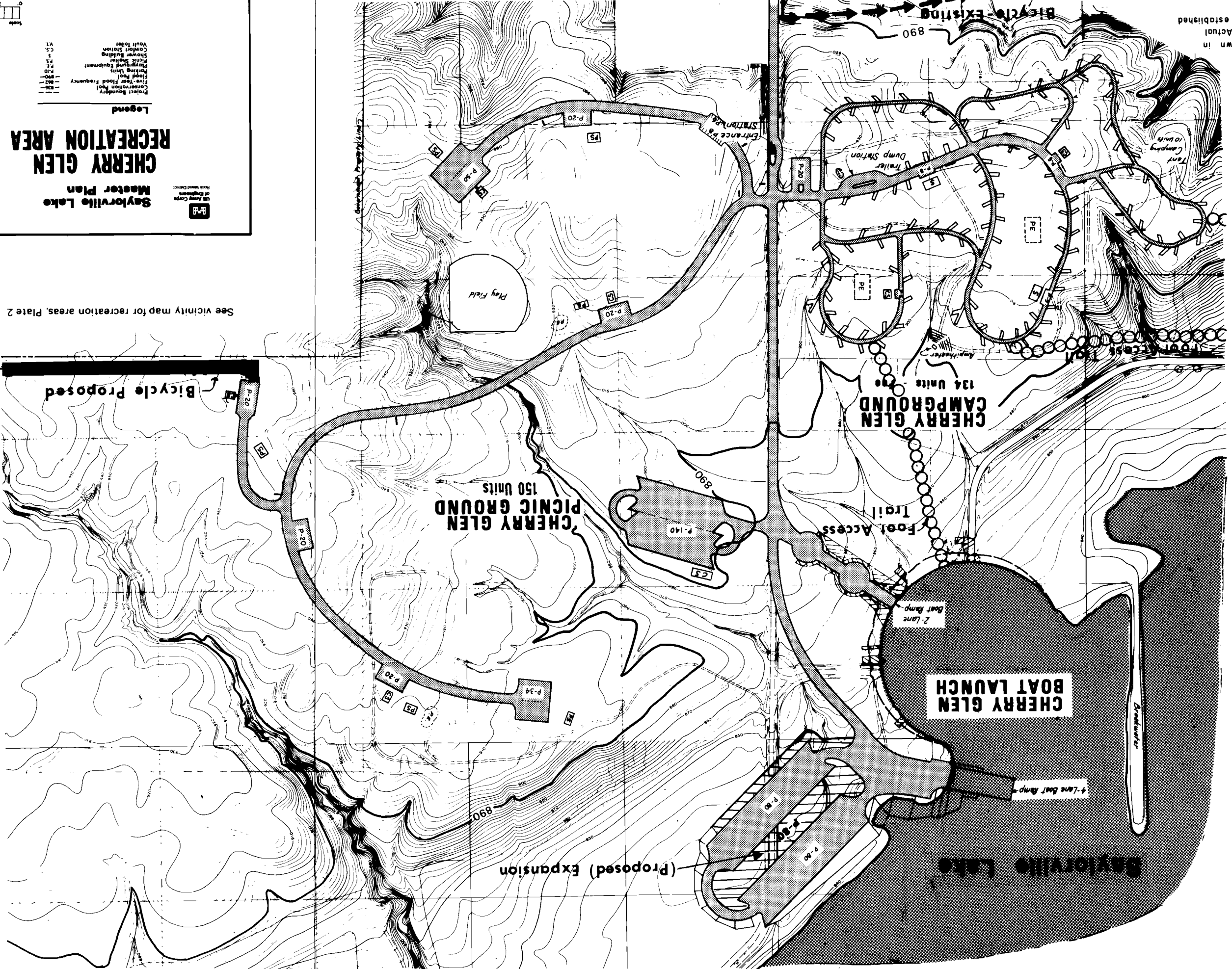


Cherry Glen Master Plan Recreation Area



- Legend**
- Project Boundary
 - - - Conservation Flood Frequency
 - - - Five Year Flood Frequency
 - - - Flood Pool
 - - - Parking Unit
 - - - Playground Equipment
 - - - Picnic Shelter
 - - - Shower Building
 - - - Comfort Station
 - - - Vault Toilet

See vicinity map for recreation areas, Plate 2



NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.
See Plate 24

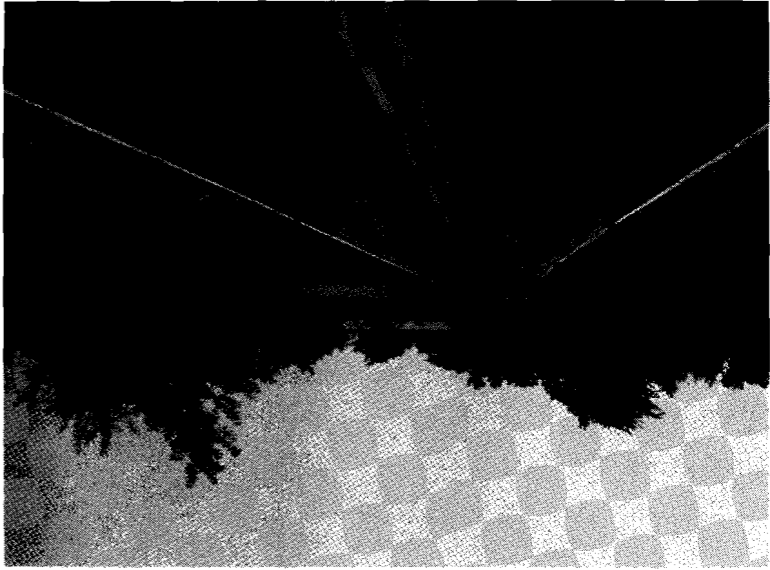


PHOTO 1 Cherry Glen Picnic Ground -
Looking south at the parking lot and
picnic shelter at the south end of the
west access road.

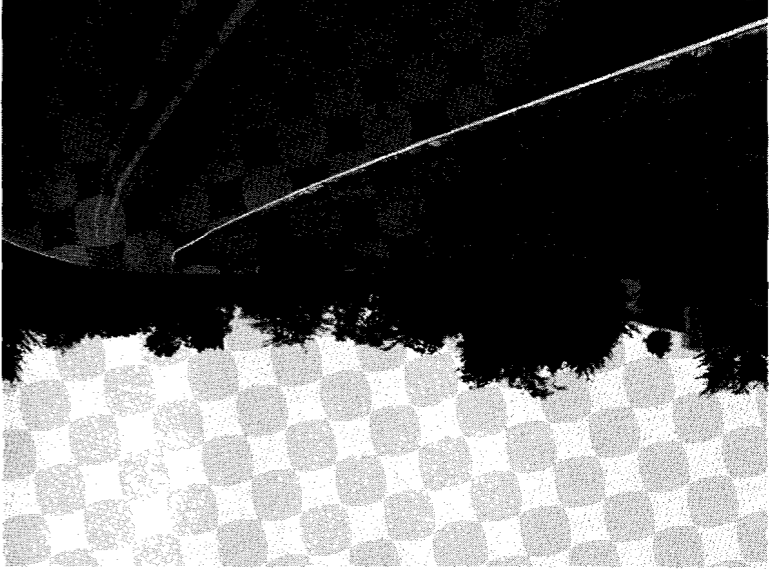


Photo 2 Cherry Glen Picnic Ground -
Looking north on the east access road
(from the south end of the road near the
entrance to the picnic ground) at a
picnic shelter and lawn area in the
left center of the picture.

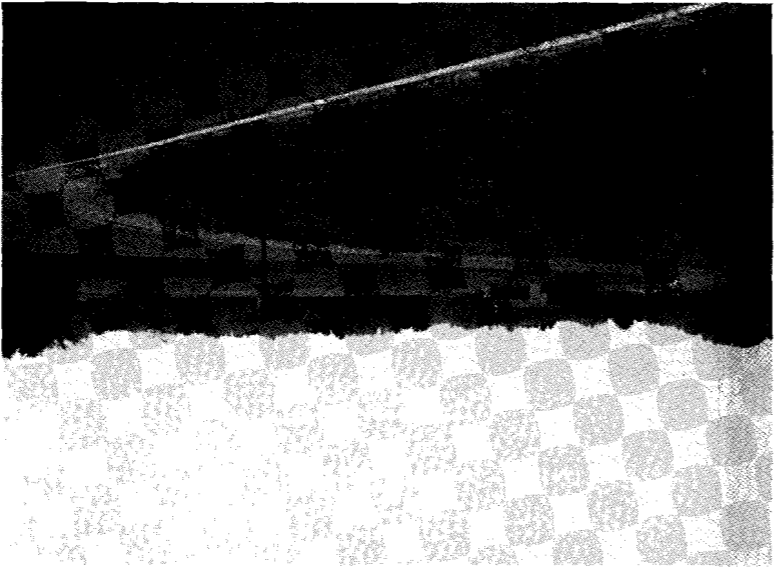


PHOTO 3 Cottonwood Picnic Ground -
Looking southeast on the northwest
side of the central loop area.

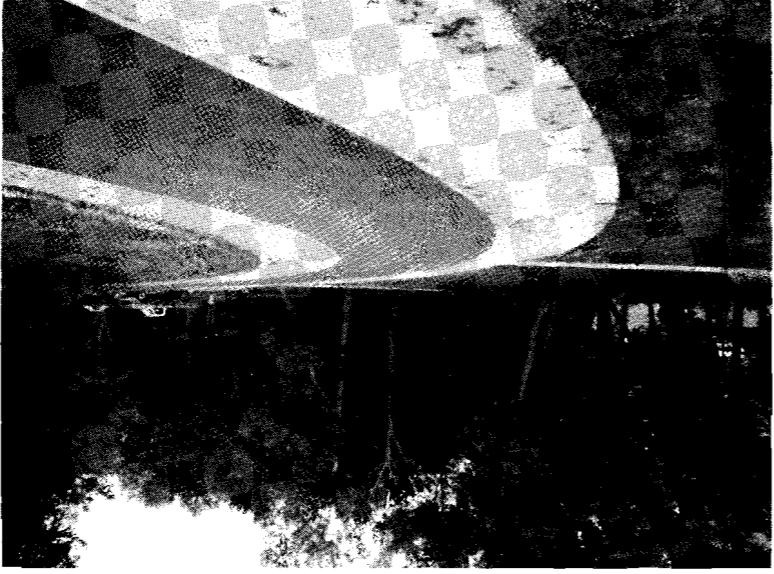


PHOTO 4 Cottonwood Picnic Ground -
Looking southeast on the northwest end
of the northwest picnic loop. Fish
cleaning stations and a comfort station
are shown in the middle ground.



Saylorville Lake
Master Plan
US Army Corps
of Engineers
Rock Island District
Cherry Glen &

Photographs

Cottonwood Picnic Ground

PHOTO 6 Oak Grove Picnic Ground -
Looking north into a picnic table area.



PHOTO 5 Oak Grove Picnic Ground -
Looking south towards the picnic
shelter east of the loop road area.



PHOTO 8 Walnut Ridge Picnic Ground -
Looking west along the end of the north
central access road at a picnic shelter,
comfort station and 35 car parking lot.

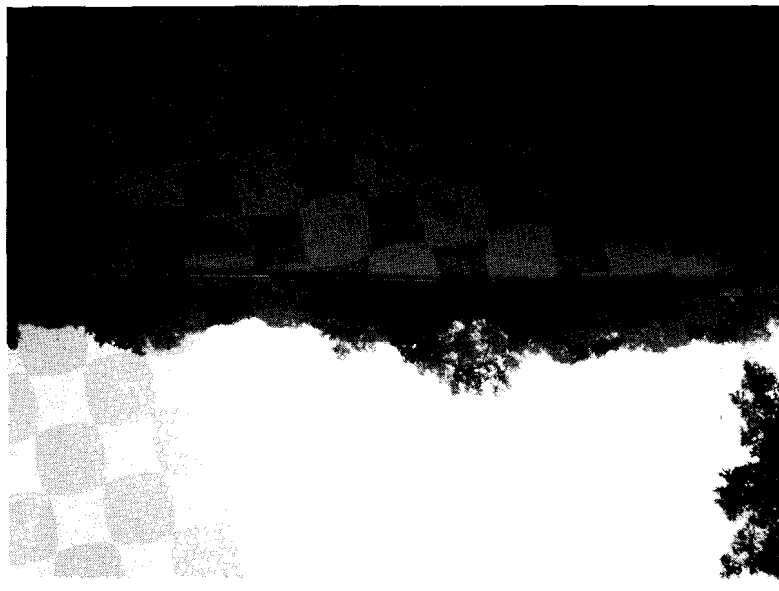
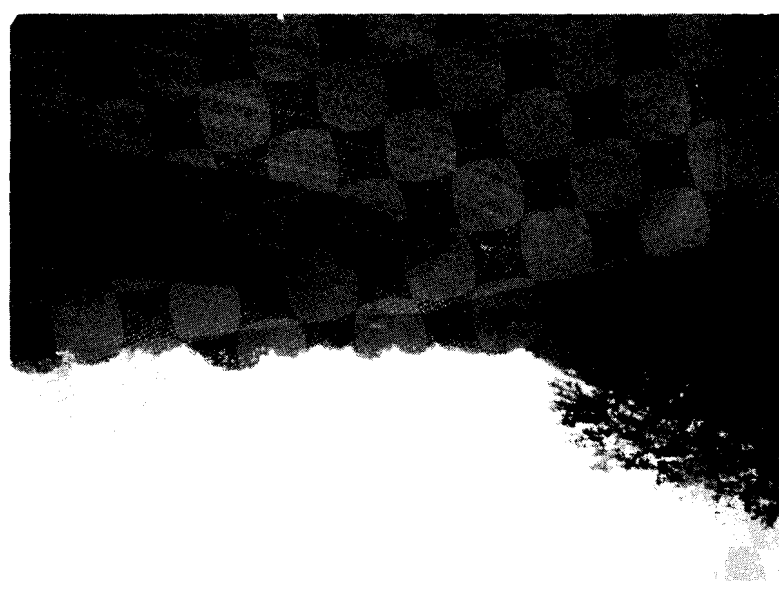



PHOTO 7 Walnut Ridge Picnic Ground -
Looking northeast along the northern most
access road. The picture also shows the
comfort station and picnic shelter
(distant background) for this access road.



Saylorville Lake
Master Plan
US Army Corps
of Engineers
Rock Island District



Oak Grove & Walnut Ridge
Photographs

PLATE 8



NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.
See Plate 24

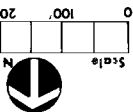
ACORN VALLEY CAMPGROUND AREA

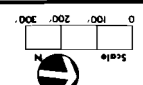
Master Plan
Sayorville Lake



- 120 — Project Boundary
- 120 — Conversion Flood
- 120 — Five Year Flood Frequency
- 120 — Flood Pool
- 120 — Parking Unit
- 120 — Playground Equipment
- 120 — Picnic Shelter
- 120 — Shower Building
- 120 — Comfort Station
- 120 — Youth Toilet

Legend





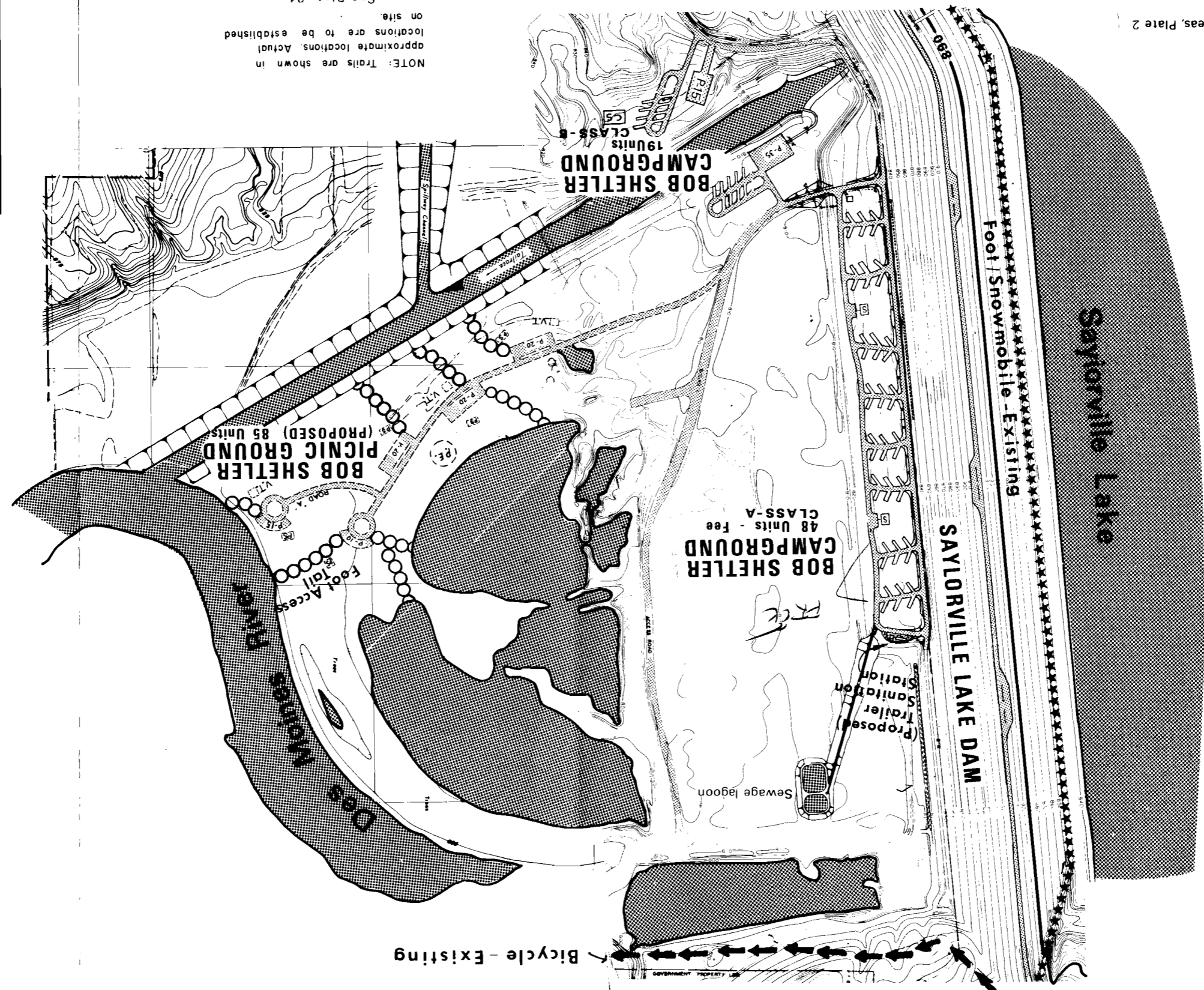
- Legend**
- 814- Project Boundary
 - 810- Conservation Pool
 - 800- Five-Year Flood Frequency
 - 800- Flood Pool
 - 810- Parking Units
 - 815- Picnicking Equipment
 - 815- Picnic Shelter
 - 815- Shower Building
 - 815- Comfort Station
 - 815- Vault Toilet

**Saylorville Lake
Master Plan
BOB SHETLER
RECREATION AREA**



US Army Corps of Engineers
Rock Island District

NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.
See Plate 24



See vicinity map for recreation areas, Plate 2

PHOTO 9 Acorn Valley Campground - Looking west (from the east end of the trailer camping loop) at trailer camping spurs playground and shower building.

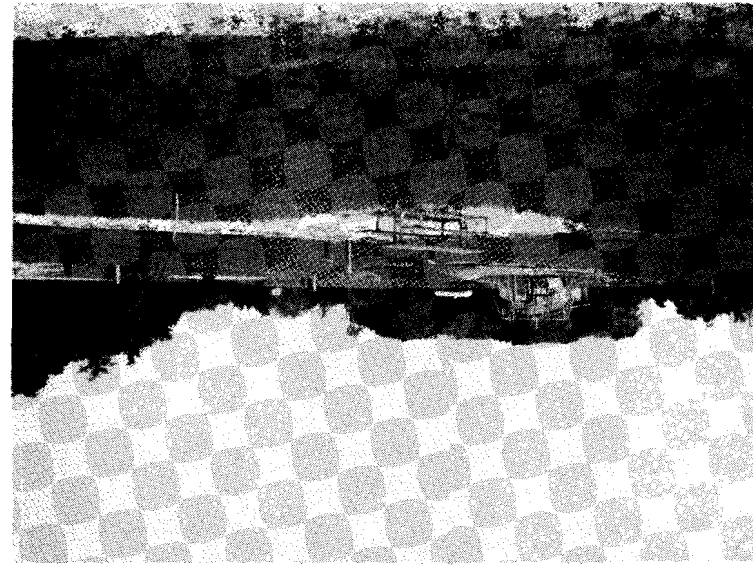


PHOTO 10 Acorn Valley Campground - Looking east down the tent camping access road from a point east of the shower building. A car parking lot and turn around loop are shown at the end of the access road.

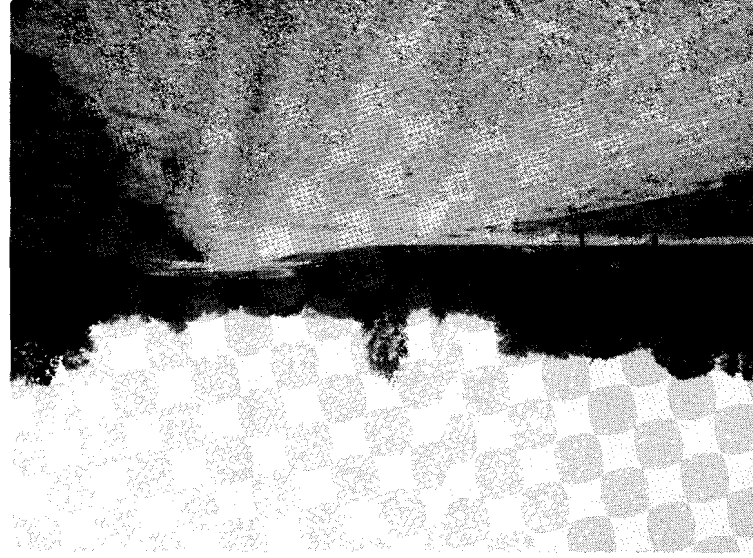


PHOTO 11 Bob Shelter Class A Campground - Looking to the south-east at the facility from the top of the reservoir dam.

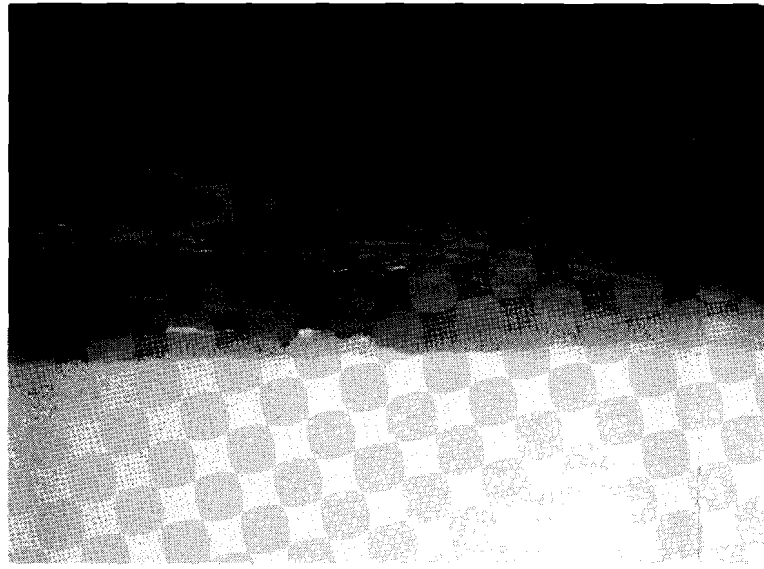
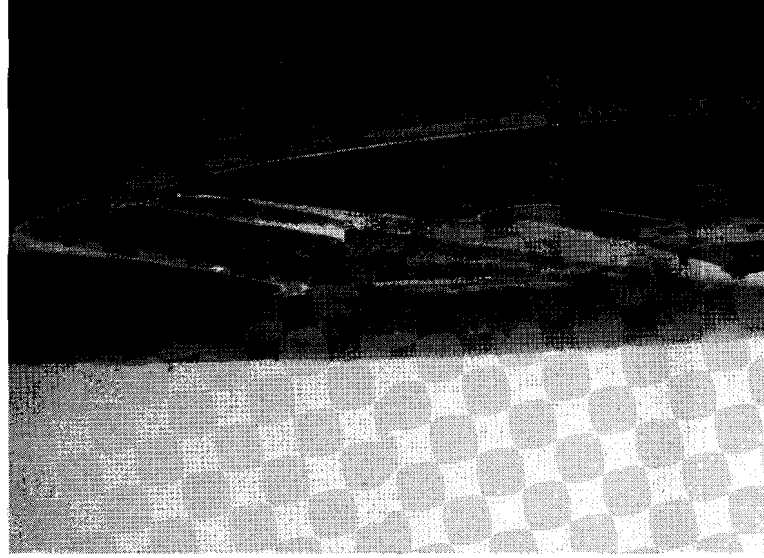


PHOTO 12 Bob Shelter Class B Campground - Looking to the south-west at the campground, outlet channel (tailrace), fishing facilities and access from the top of the reservoir dam.



Saylorville Lake
 Master Plan
 US Army Corps
 of Engineers
 Rock Island District
 Acorn Valley &

Bob Shelter Campground

Photographs

Photographs

Prairie Flower Campground

Cherry Glen &

Saylorville Lake
Master Plan

US Army Corps
of Engineers
Rock Island District



PHOTO 13 Cherry Glen Campground -
Looking southwest from the main
access road toward the southwest
central loop.



PHOTO 14 Cherry Glen Campground
Amphitheater - Looking southwest from the
access path to the facility.




PHOTO 15 Prairie Flower Campground -
Looking west at the main access road
to the facility off of Highway 415.



PHOTO 16 Prairie Flower Campground -
Looking west at the Blazing Star Loop.

No. 14
Scale



**Saylorville Lake
Master Plan**

DOGWOOD BOAT LAUNCH

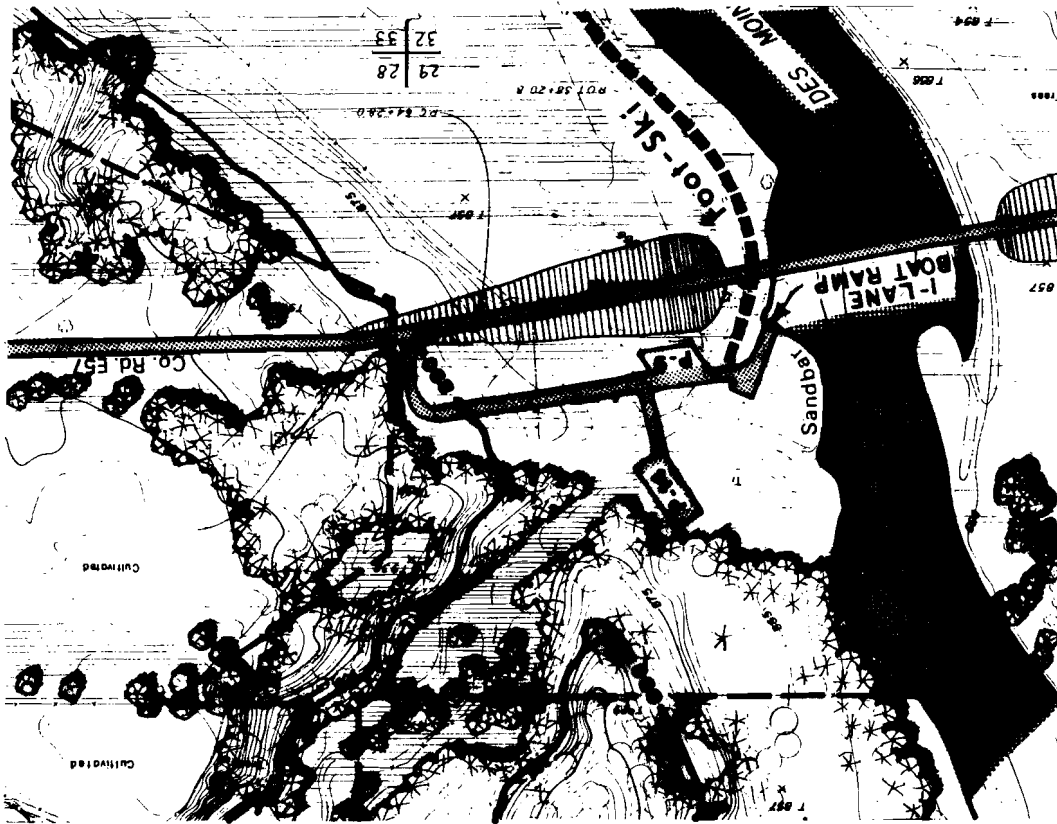
Rock Island District
U.S. Army Corps
of Engineers

Legend

- Project Boundary
- Conservation Pool
- Five Year Flood Frequency
- Road Pool
- Existing Timber
- Picnic Shelter
- Shower Building
- Comfort Station
- Vault Toilet
- Parking Drive
- Playground Equipment

See vicinity map for recreation areas, Plate 2

DOGWOOD



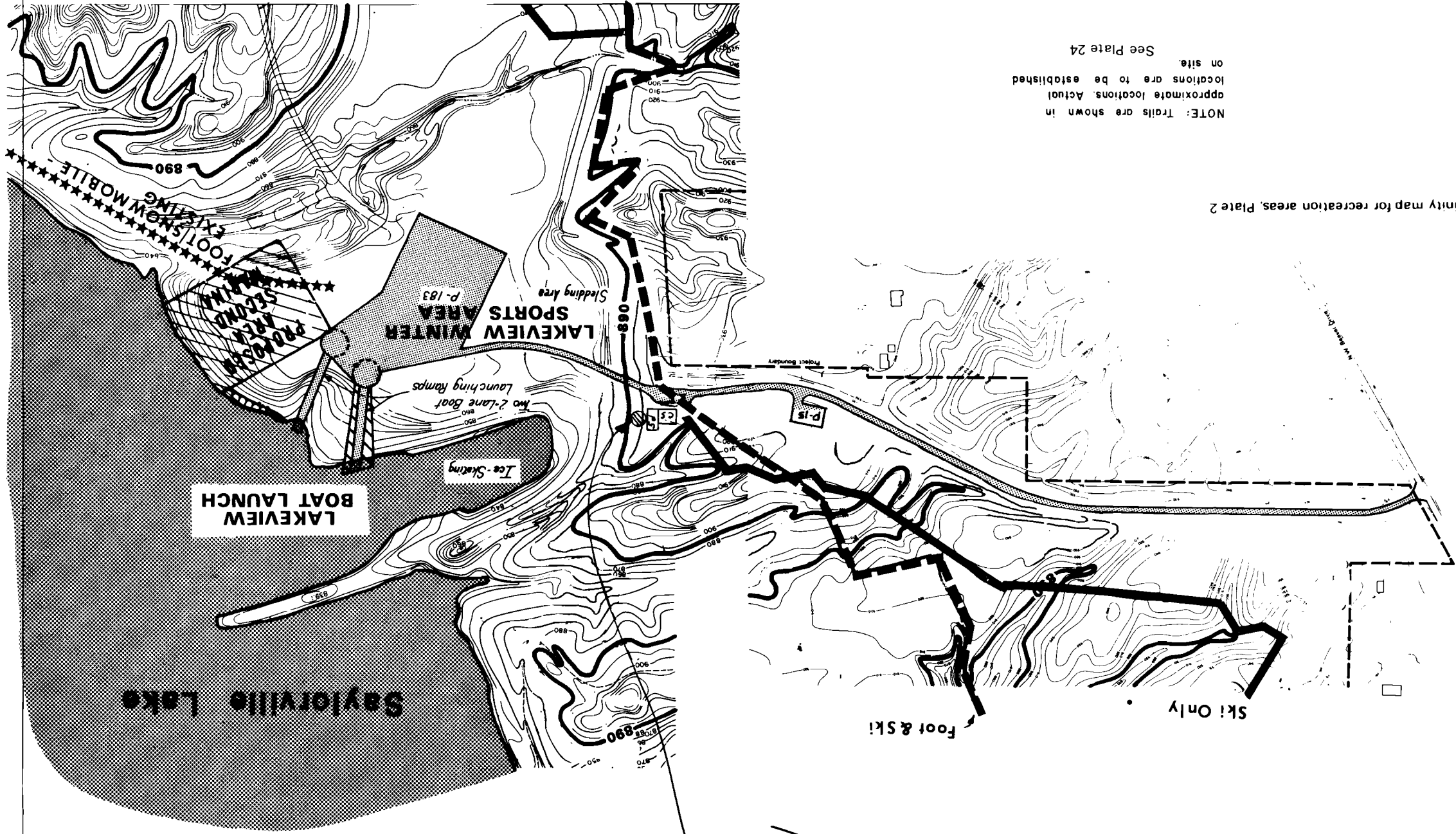
LAKEVIEW RECREATION AREA
Master Plan
Saylorville Lake



Legend

- P-183 — Project Boundary
- P-182 — Conversion Pool
- P-181 — Five Year Flood Frequency
- P-180 — Flood Pool
- P-179 — Parking Unit
- P-178 — Playground Equipment
- P-177 — Picnic Shelter
- P-176 — S
- P-175 — Shower Building
- P-174 — Comfort Station
- P-173 — Youth Toilet
- P-172 — VT

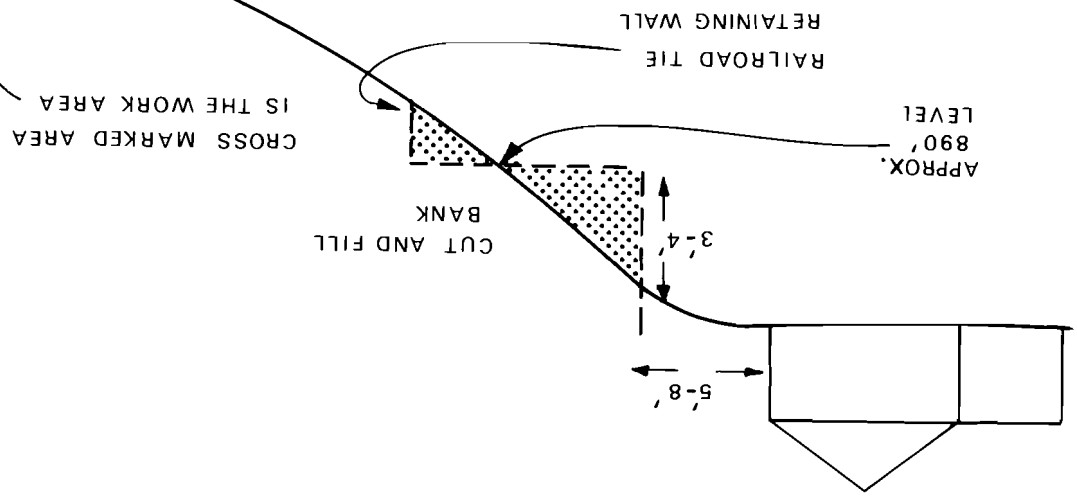
Scale: 0 100 200 300




NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.
See Plate 24

See vicinity map for recreation areas, Plate 2

PLATE INSERT
PROPOSED TERRACE FOR
EROSION CONTROL





Seyonville Lake
Master Plan

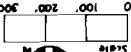

Laurie Park Boat Launch

Rock River District
City of Engineers

Legend

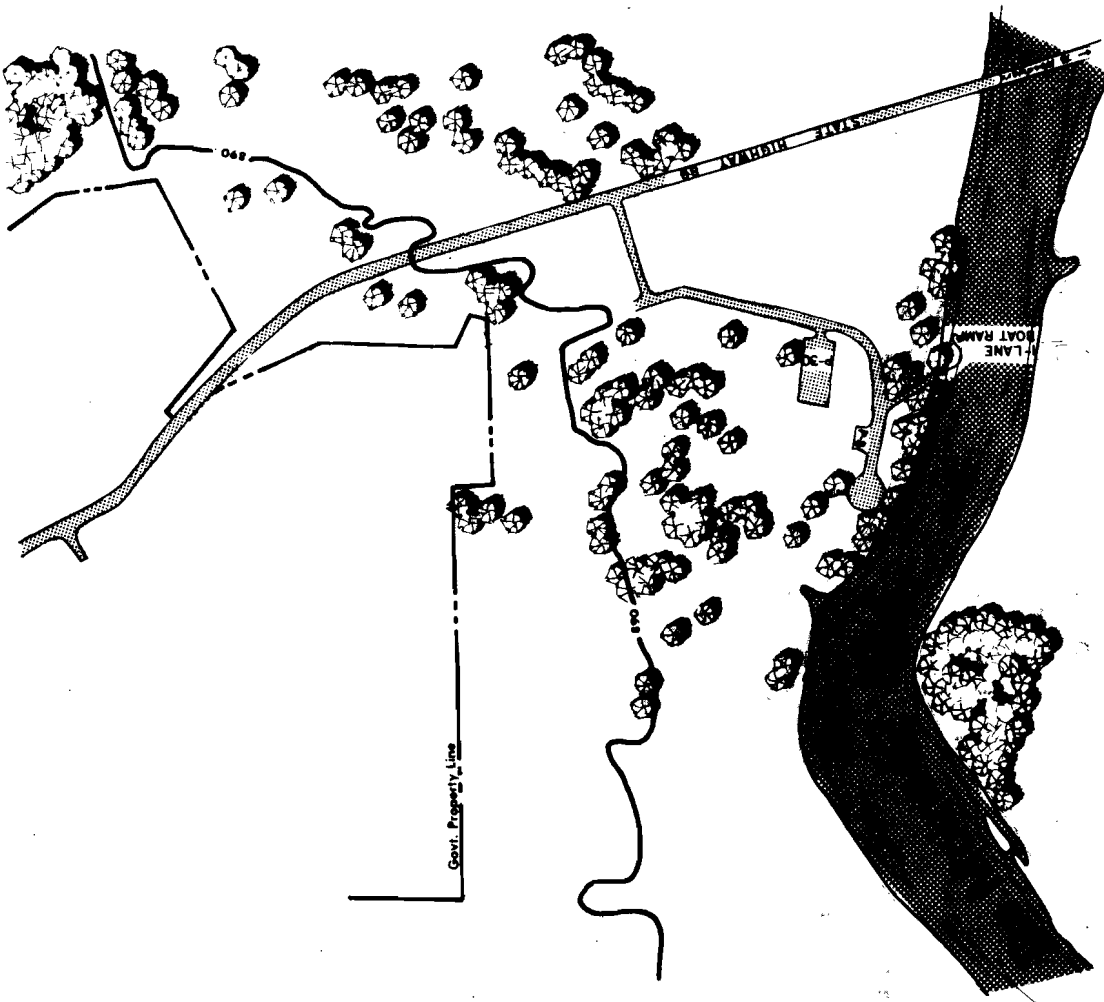
- 836 — Project Boundary
- 837 — Conservation Pool
- 838 — Five-Year Flood Frequency
- 839 — Flood Pool
- 840 — Parking Units
- 841 — Picnic Shelter
- 842 — Playground Equipment
- 843 — Shower Building
- 844 — Camper Station
- 845 — Vault Toilet

Scale

See vicinity map for recreation areas, Plate 2

Laurie Park



Saylorville Lake
Master Plan

U.S. Army Corps of Engineers
 Fort Belknap District

RIVER BEND BOAT LAUNCH

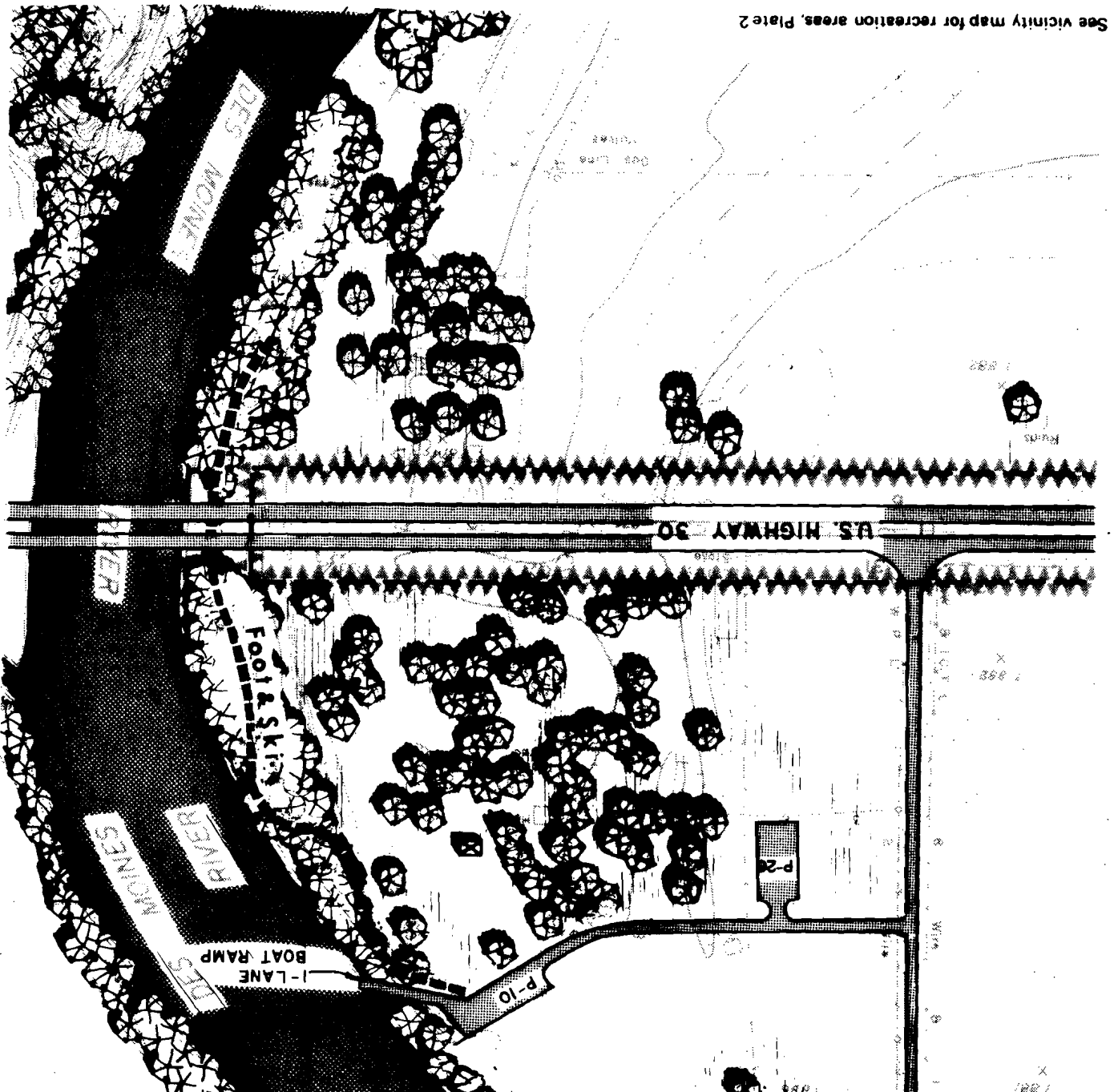
Legend

	Project Boundary
	Concentration Pool
	Five Year Flood Frequency
	Flood Pool
	Existing Timber
	Picnic Shelter
	Concrete Building
	Metal Building
	Sprinkling Unit
	Fire Alarm Equipment

No. 17

NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.
 See Plate 24

RIVER BEND



**SAaylorville Lake
Master Plan**

US Army Corps
of Engineers
Rock Island District

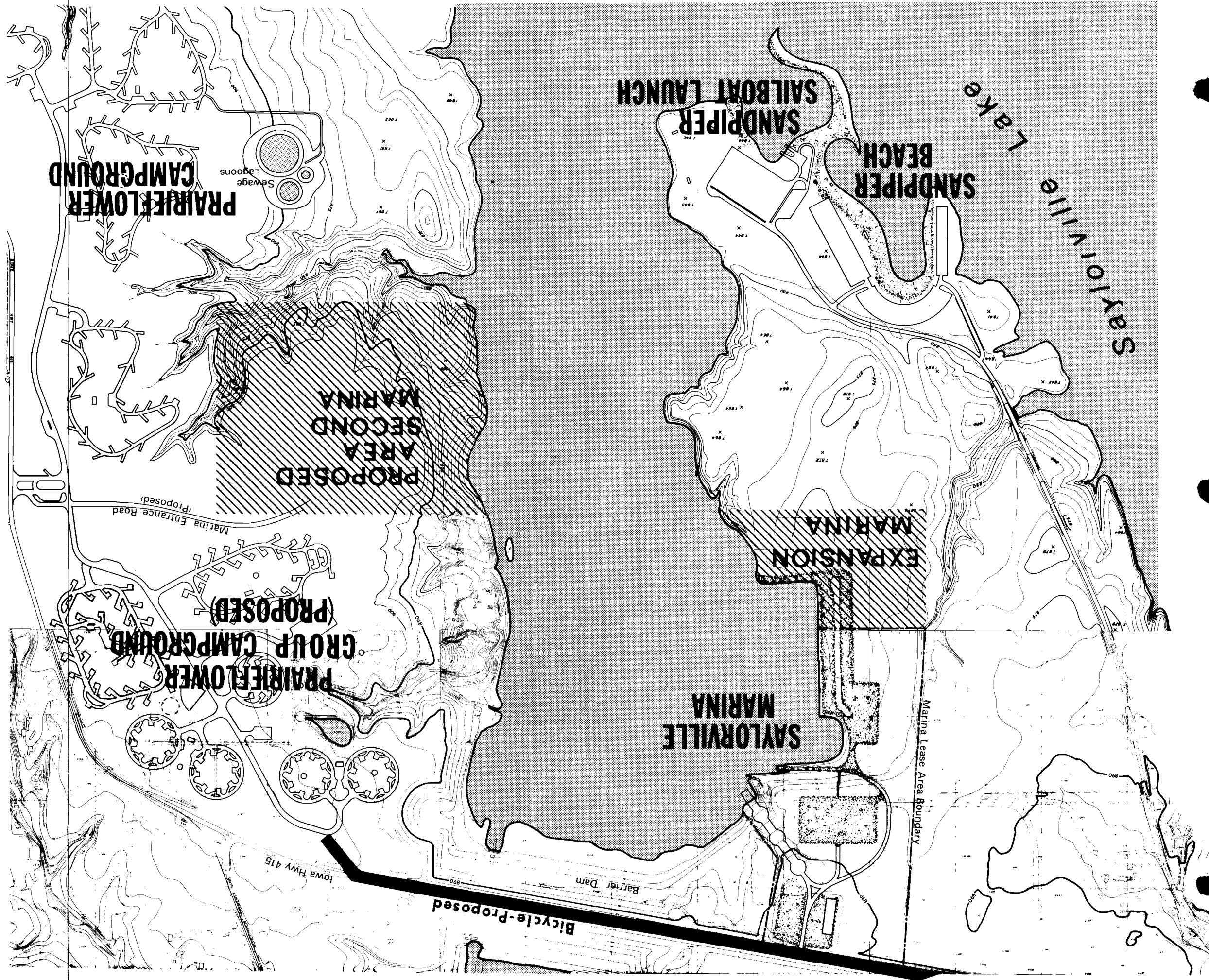
**MARINA DEVELOPMENT
ALTERNATIVES**

Legend

- Project Boundary
- - - - - Construction Foot
- - - - - Live Floor Flood Frequency
- - - - - Flood Foot
- - - - - Building
- - - - - R-10
- - - - - R-15
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- - - - - R-1000

Scale 0 50' 100' 150' 200'

N



See vicinity map for recreation areas, Plate 2

NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.

See Plate 24

Photographs

Dogwood Boat Launch

Saylorville Lake
Master Plan
US Army Corps
of Engineers
Rock Island District
Cherry Glen &

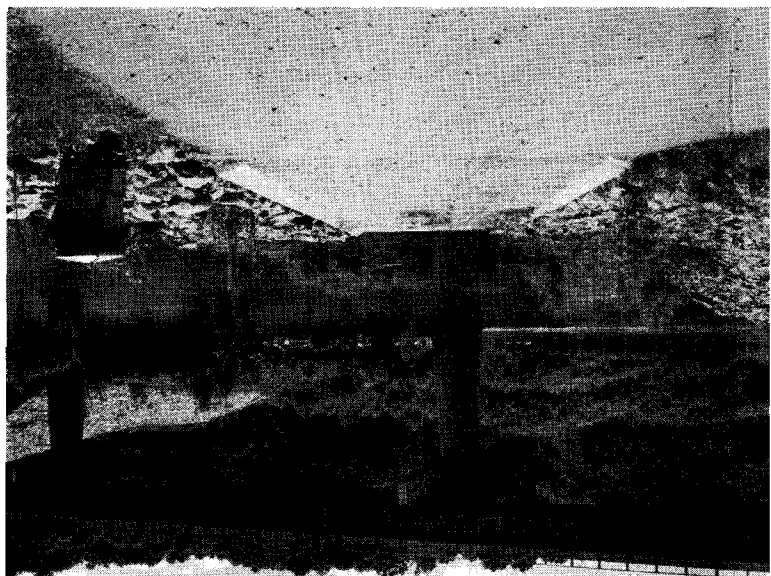


PHOTO 19 Dogwood Boat Ramp -
Looking southwest at the launching
ramp, Des Moines River and County
Road E 57 bridge.

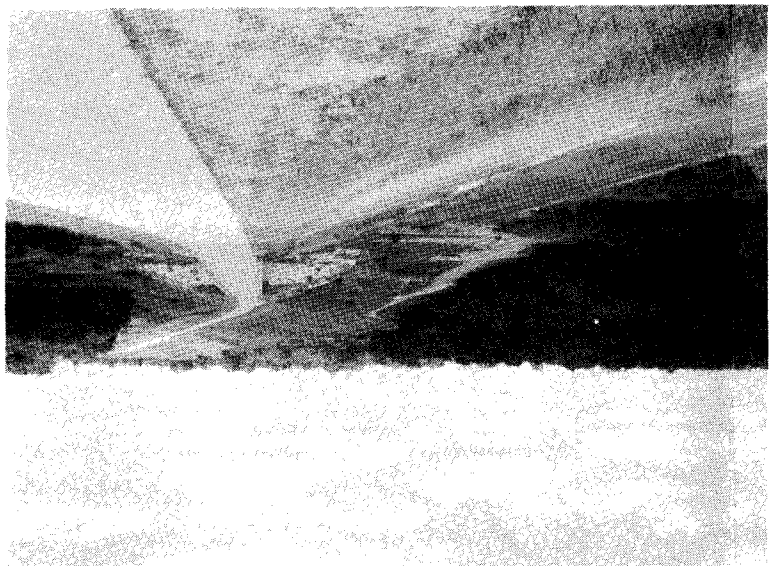


PHOTO 20 Dogwood Boat Ramp -
Looking east at the access road, boat
parking lot, launching ramp and
County Road E57 bridge from County
Road E57.

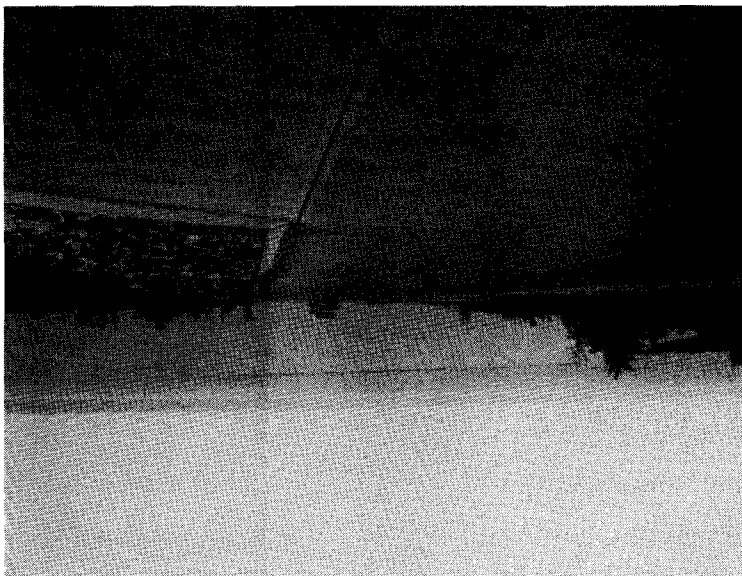


PHOTO 17 Cherry Glen Boat Launch -
Looking west from the top of the upper
level launch ramp.

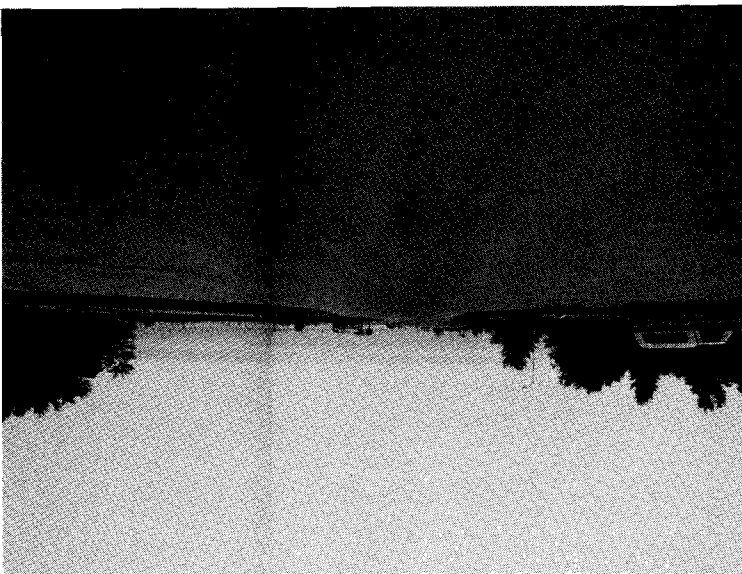


PHOTO 18 Cherry Glen Boat Launch
Upper Parking Lot - Looking southwest
from the northeast end of the upper
parking lot.

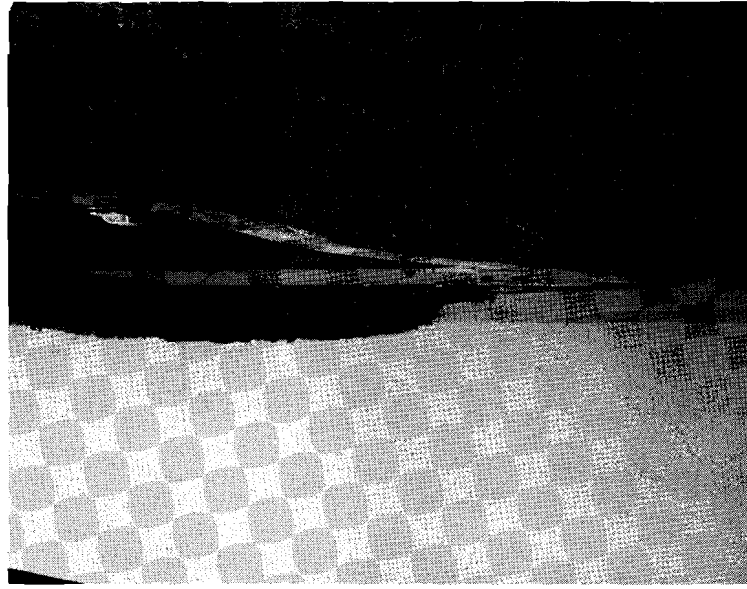


PHOTO 21 Lakeview Boat Launch -
Looking southeast at the access
road, parking lot and launching ramps.

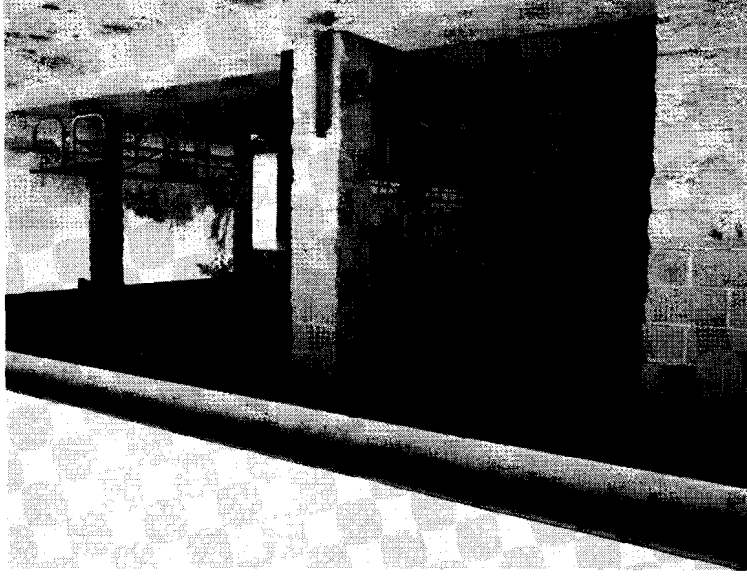


PHOTO 22 Lakeview Boat Launch -
Looking at combination shelter and
comfort station located west of the
launching facilities.

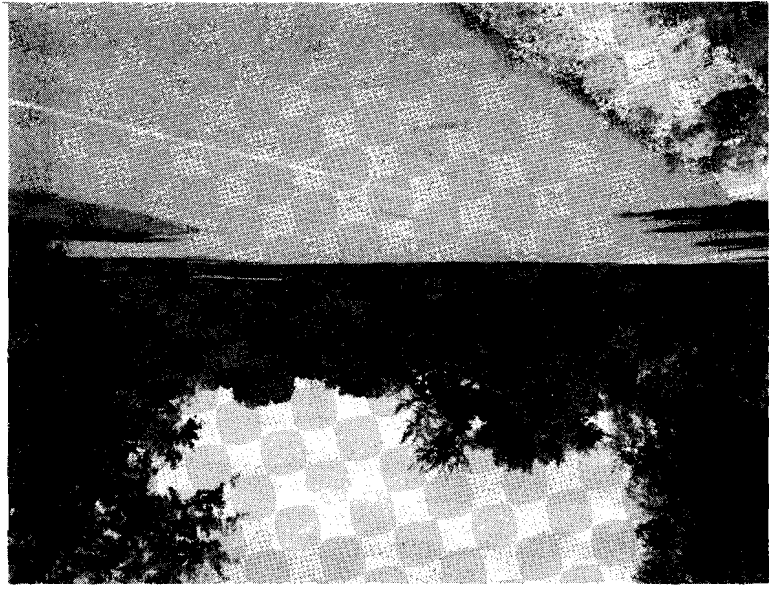


PHOTO 23 Laurie Park Boat Ramp -
Looking north at the parking lot.
The top of the boat launching ramp
is shown in the left central portion
of the picture.

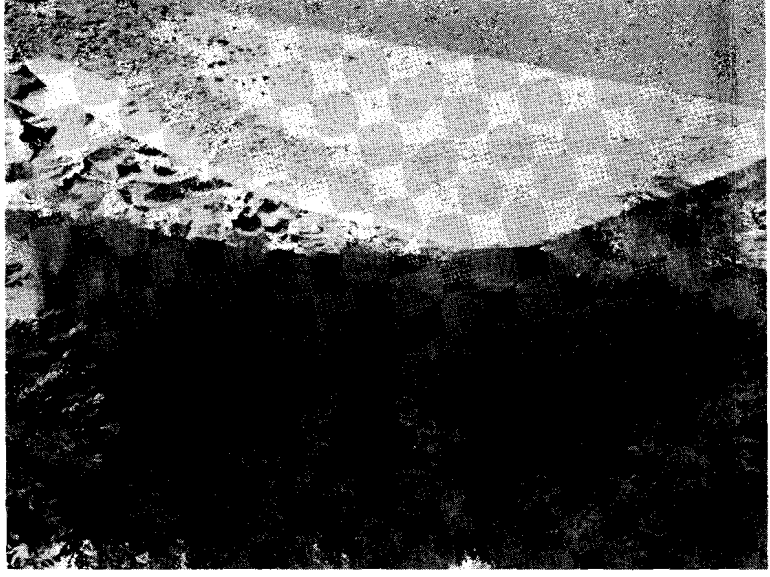



PHOTO 24 Laurie Park Boat Ramp -
Looking southwest at the launching
ramp and Des Moines River.

Saylorville Lake
Master Plan
US Army Corps
of Engineers
Rock Island District



Lakeview &
Laurie Park Boat Launch
Photographs

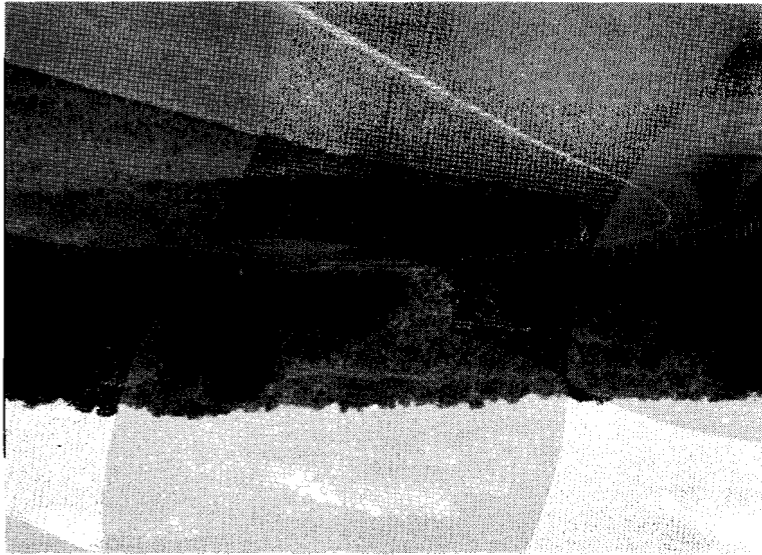


PHOTO 25 Riverbend Boat Ramp -
Looking east at the access road
and parking lot for the launching
ramp.

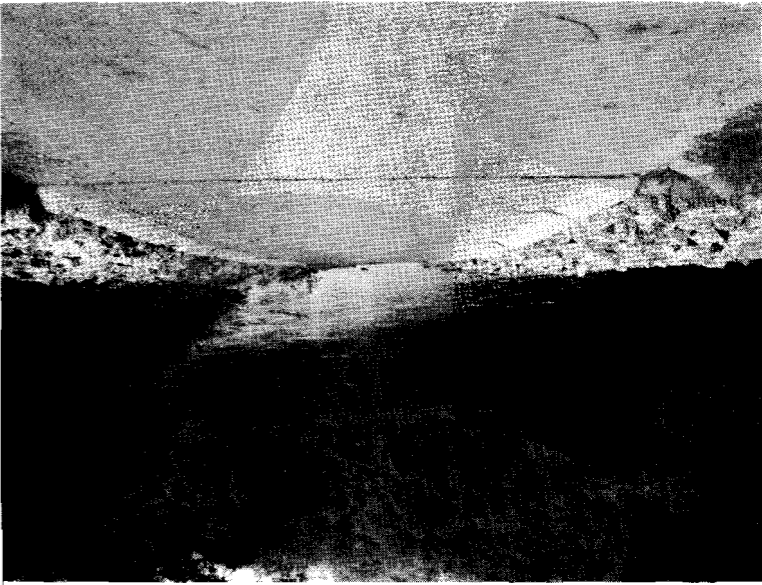


PHOTO 26 Riverbend Boat Ramp -
Looking southeast at the boat
launching ramp and Des Moines River.

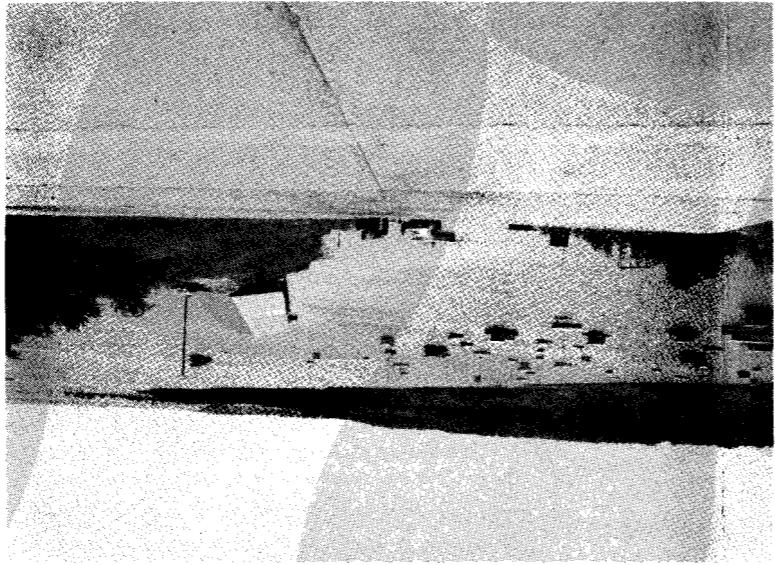


PHOTO 27 Saylorville Lake Marina
Launching Ramp - Looking south at
the ramps and bay area.

Saylorville Lake
Master Plan
US Army Corps
of Engineers
Rock Island District
Riverbend &
Saylorville Marina Boat Launch
Photographs

SAYLORVILLE LAKE
Master Plan
SAYLORVILLE MARINA

US Army Corps of Engineers
 Civil Works District

Legend

- 826- Conservation Pool
- 840- Five Year Flood Frequency
- 890- Flood Pool
- P-10 Parking Units
- P-E Playground Equipment
- P-S Picnic Shelter
- S Shower Building
- C-S Concessor Station
- Y-T Youth Toilet

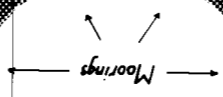
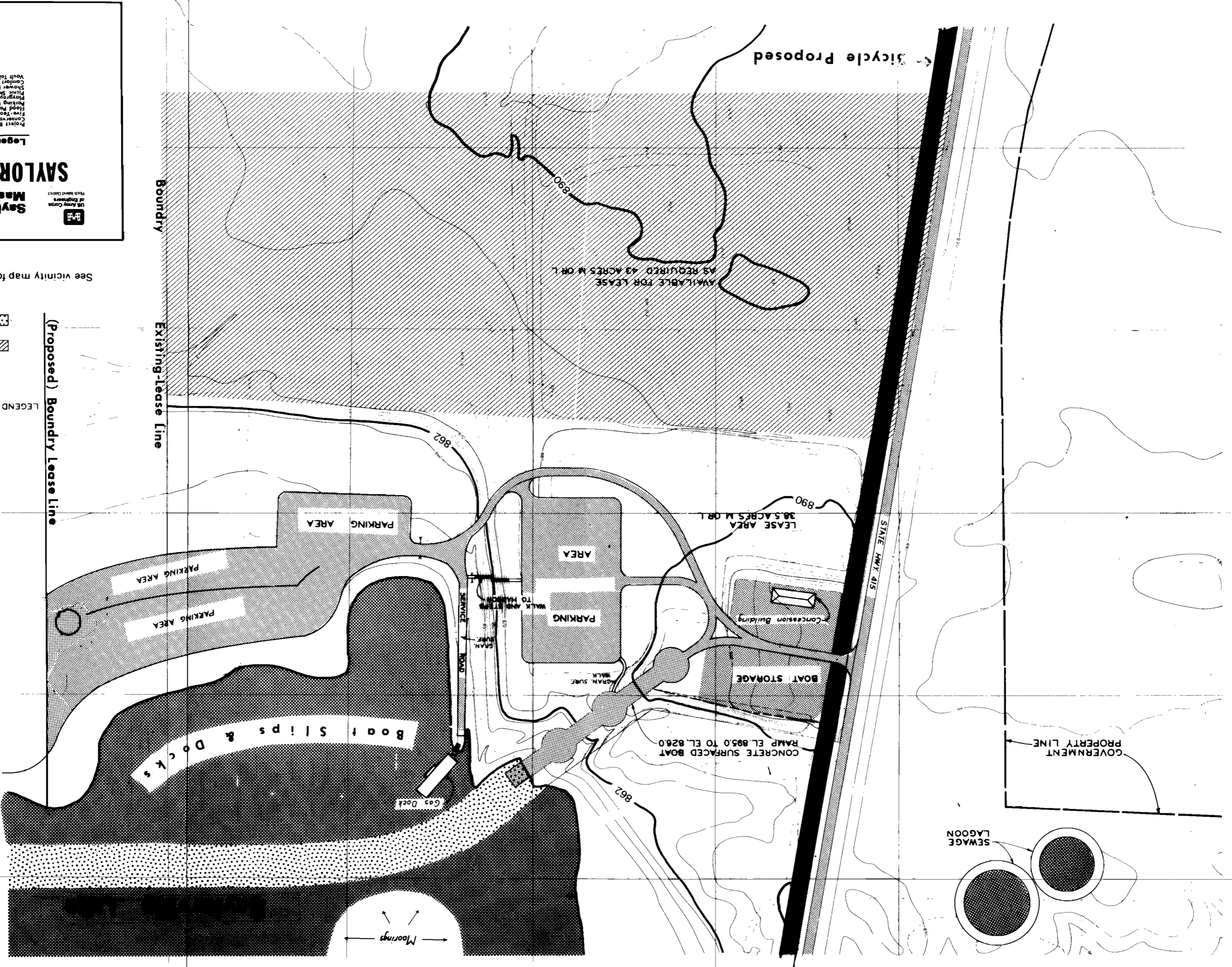
Scale
 0 100' 200' 300'

See vicinity map for recreation areas, Plate 2

LEGEND:

- LEASE AREA - 38.54 ACRES TOTAL
 7.02 ACRES ABOVE
 ELEVATION 890.0
- POTENTIAL LEASE AREA -
 43.04 ACRES TOTAL
- CLEAR CHANNEL TO MARINA

NOTE: Trails are shown in
 approximate locations. Actual
 locations are to be established
 on site.
 See Plate 24



Photographs

Saylorville Lake Marina

US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan



PHOTO 29 Saylorville Lake Marina -
Standing on top of the barrier dam
Looking south into the bay area.

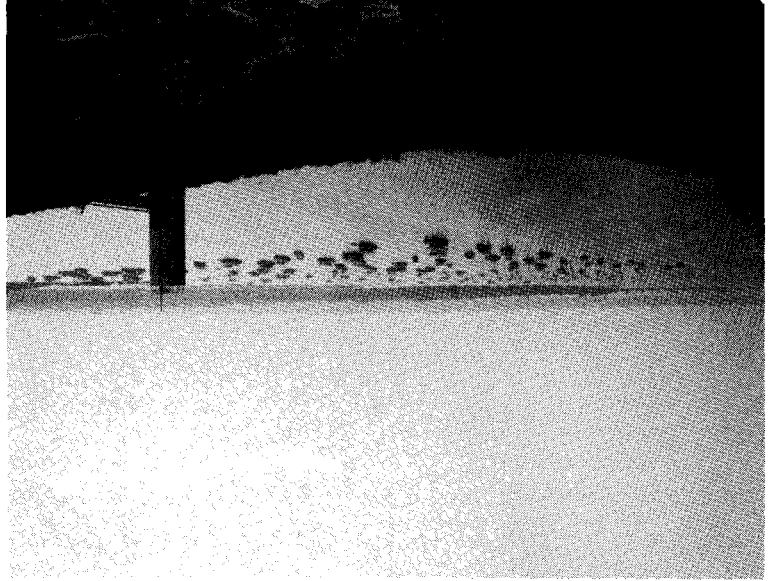
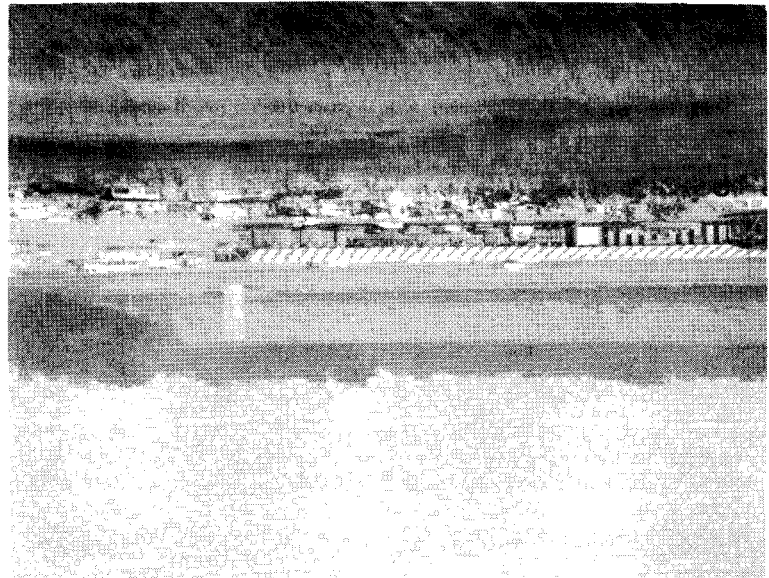
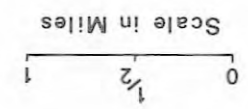


PHOTO 28 Saylorville Lake Marina -
Looking northeast (from the south end
of the bay) at covered slips, buoy
moorings and the barrier dam.



NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.



TRAIL SYSTEM

Saylorville Lake
Master Plan
US Army Corps
of Engineers



Legend

- Flood Foot Limit (Elev. 890)
- City Limits
- Project Boundary
- Paved Road
- Unpaved Roads
- TRAILS -
- Foot & Ski (Backpack to Campgrounds Available)
- Foot & Ski - Proposed
- Ski Only Maintained During The Winter Only
- Foot / Snowmobile - Existing
- Foot / Snowmobile - Existing
- Bicycle - Proposed
- Equestrian / Foot
- Bicycle - Existing

TRAIL SYSTEM
PLATE 24B





PHOTO 30 Foot Access Trail -
Looking at a foot access trail
from the Cherry Glen Campground
Amphitheater to the lake.




PHOTO 31 Bicycle Trail -
Looking north at the access way
to the trail directly north of
the 90 degree turn in the main
access road to the Cottonwood
Recreation Area.



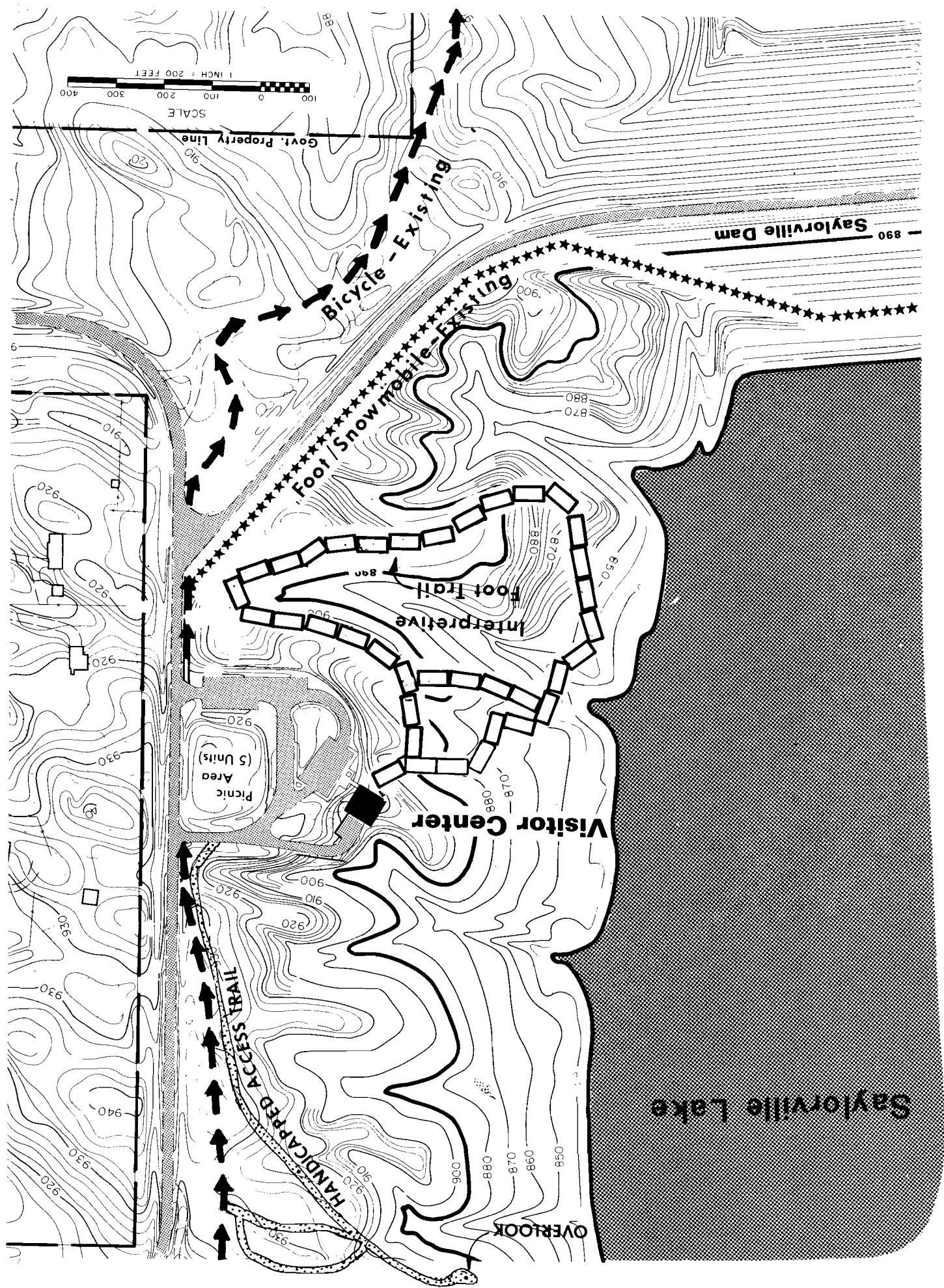
PHOTO 32 Bicycle Trail -
Looking north on the trail
between the Cottonwood
Recreation Area and Visitors
Center.

Saylorville Lake
Master Plan
US Army Corps
of Engineers
Rock Island District



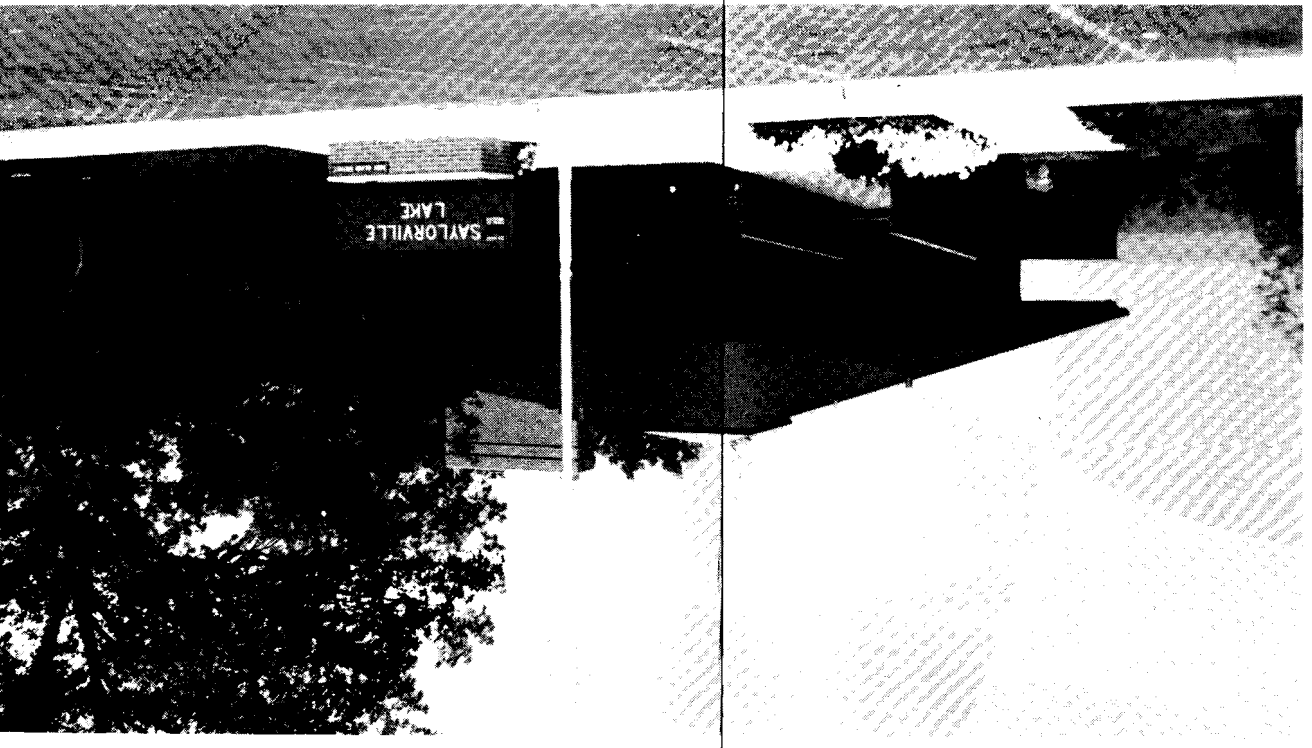
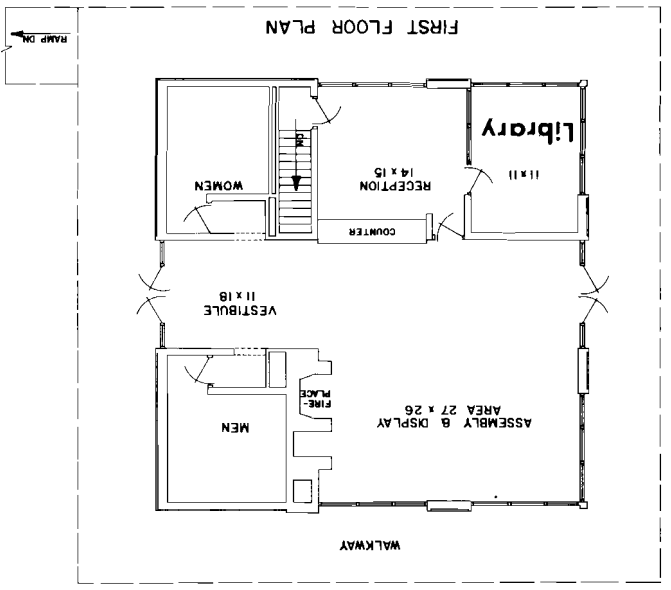
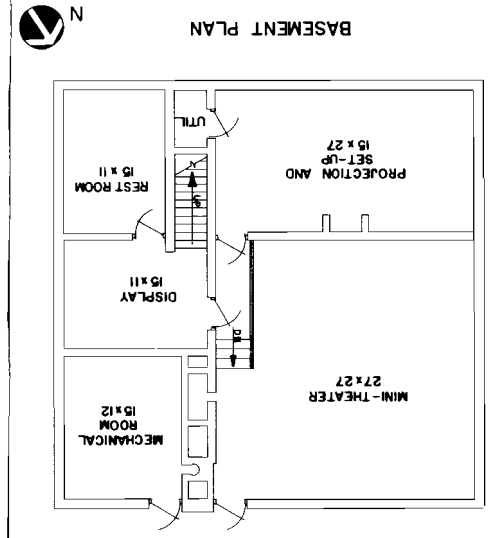
Trail System
Photographs

PLATE 2



NOTE: Trails are shown in approximate locations. Actual locations are to be established on site. See Plate 24

See vicinity map for recreation areas, Plate 2



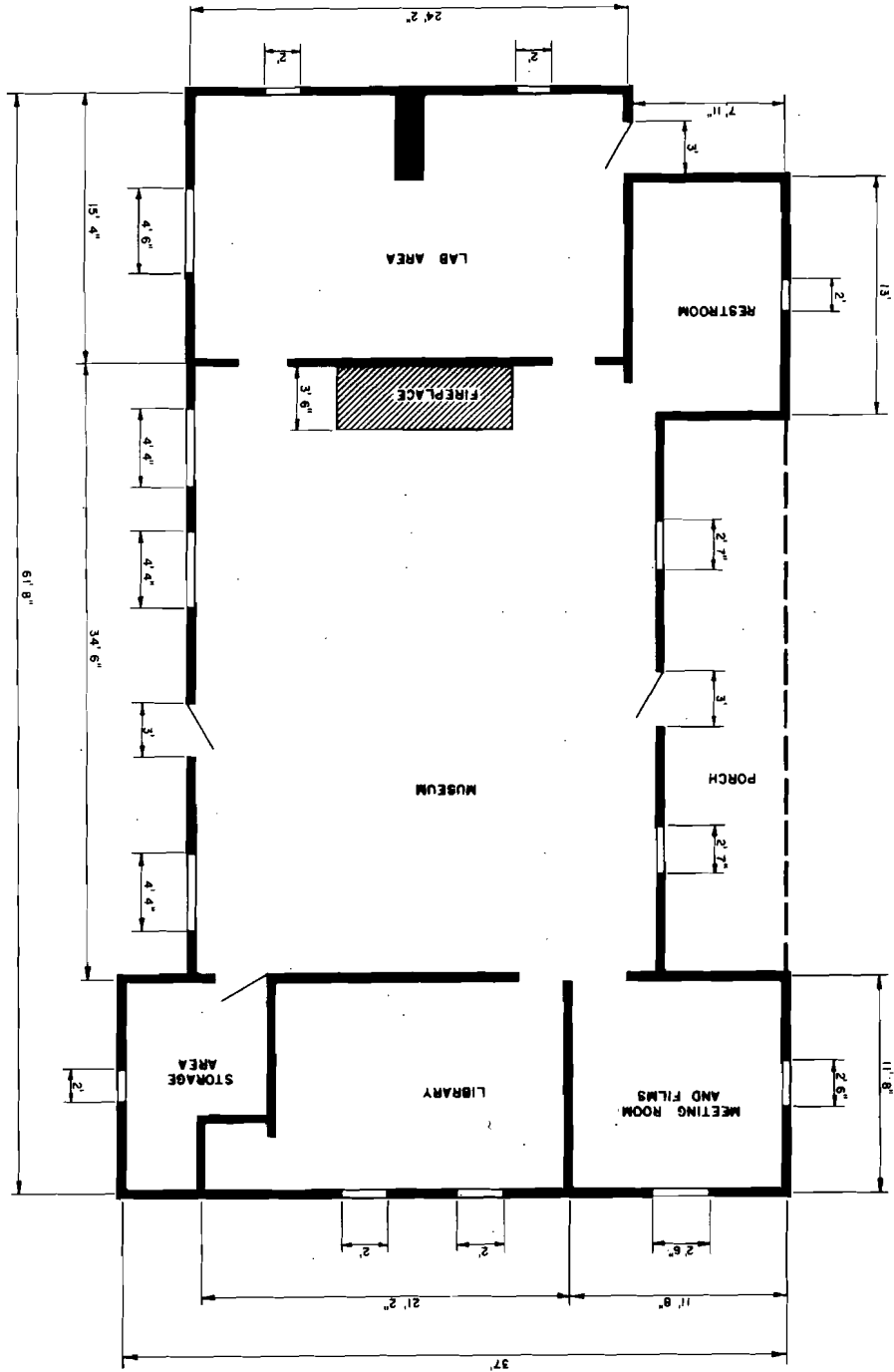
**Saylorville Lake
Visitor Center
Master Plan**





VISITOR CENTER ANNEX

Saylorville Lake
Master Plan



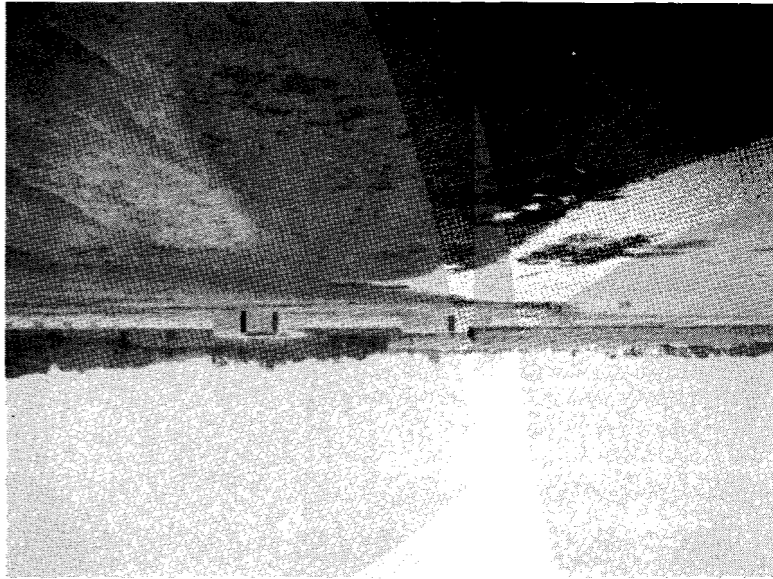


PHOTO 33 - Oak Grove Beach -
Looking northeast from the southwest
end of the beach at the beach and
supporting facilities.

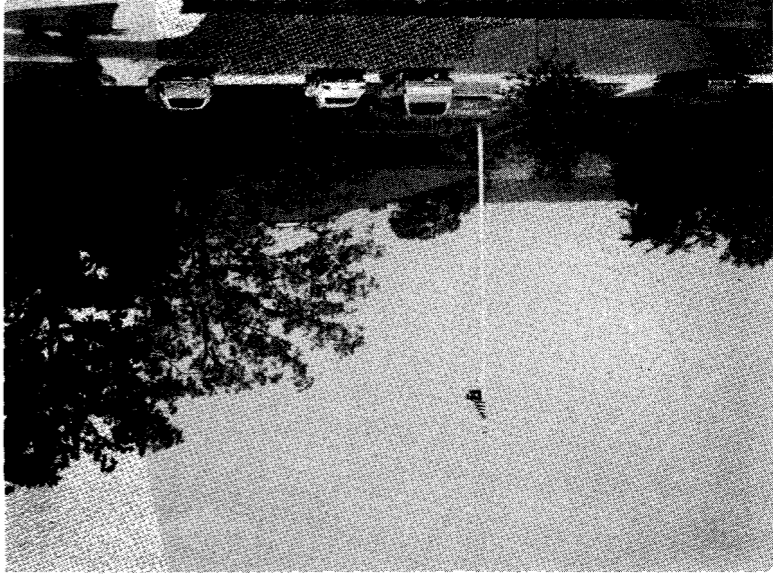


PHOTO 34 Visitors Center
Looking west at the east
entrance to the building.

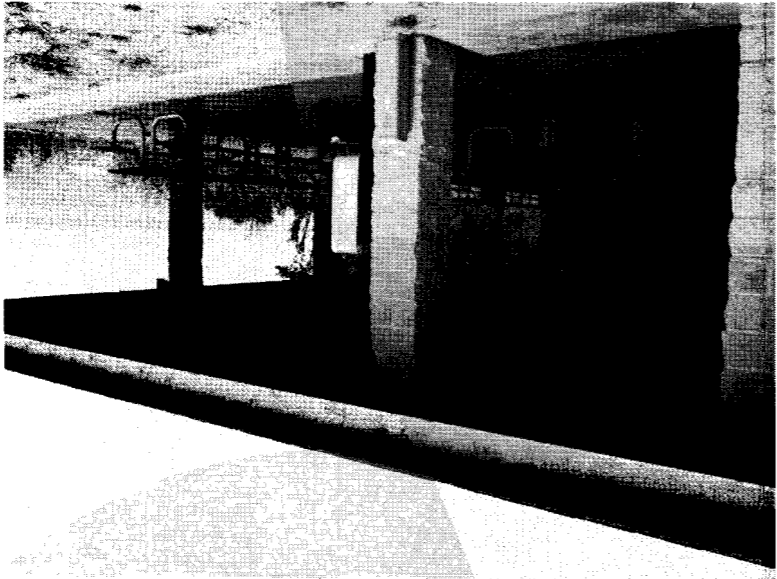


PHOTO 35 Lakeview Winter Sports Area
Looking at a combination comfort
station and warming shelter used
as a supporting facility for
winter recreation activities
within the area.

Saylorville Lake
US Army Corps
of Engineers
Rock Island District

Visitors Center, Oak Grove Beach
Lakeview Winter Sports
Area Photographs

Master Plan

Saylorville Lake
Master Plan
S & V BRIDGE BOAT LAUNCH

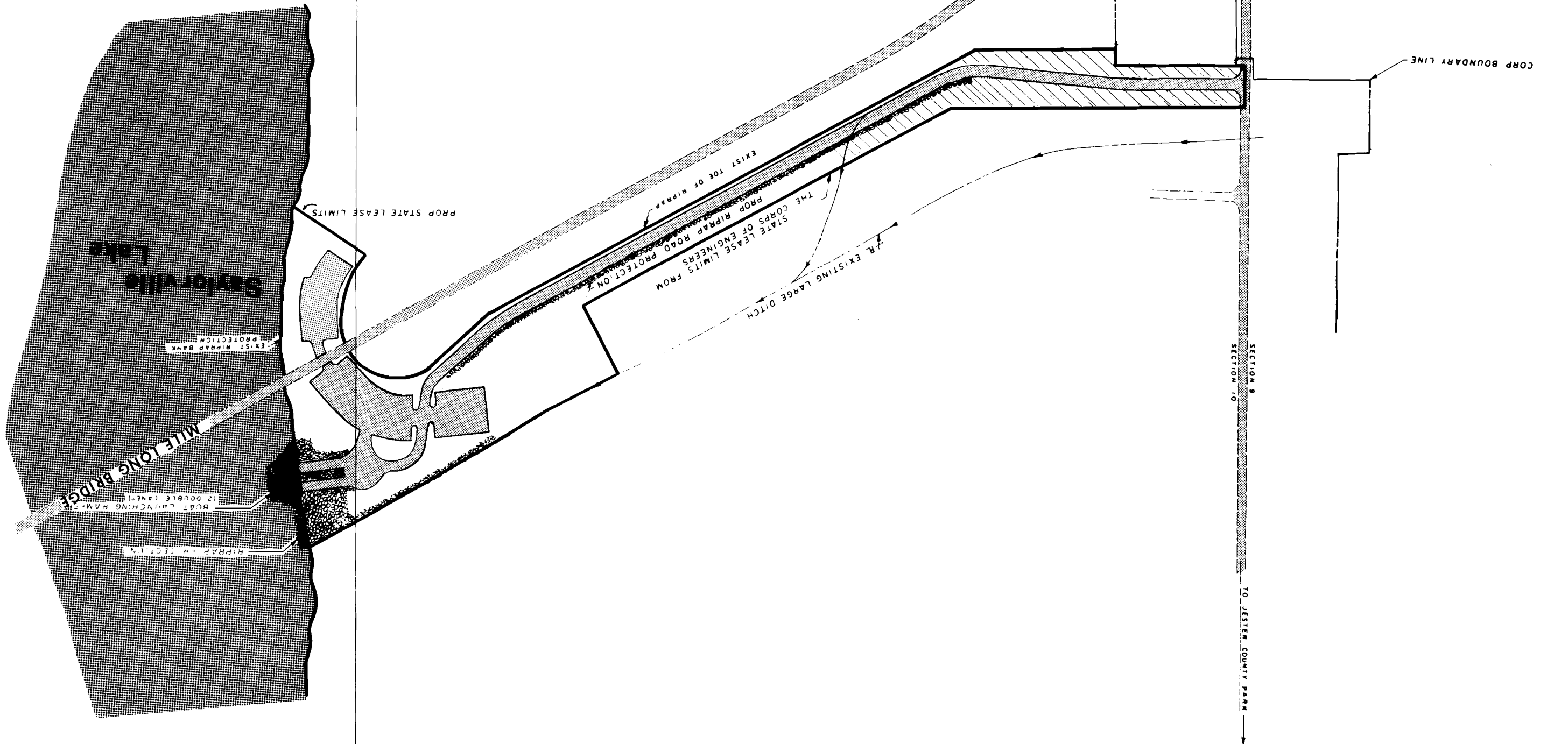
US Army Corps of Engineers
 Civil Service District

Legend

- Project Boundary
- - - Conservation Road
- Five-Year Flood Frequency
- Flood Pool
- 100
- 500
- 1000
- Flood Pool
- Pumping Unit
- R-10
- R-1
- R-2
- R-3
- R-4
- R-5
- R-6
- R-7
- R-8
- R-9
- R-10
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- R-95
- R-96
- R-97
- R-98
- R-99
- R-100

No Scale

See vicinity map for recreation areas, Plate 2



TO GARDNER

CEMETERY

CORP BOUNDARY LINE

Saylorville Lake

EXISTING RIPRAP BANK PROTECTION

MILE LONG BRIDGE

RIPPRAP PROTECTION

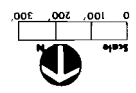
PROP STATE LEASE LIMITS

PROPOSED RIPRAP ROAD PROJECT ON THE CORPS OF ENGINEERS STATE LEASE LIMITS FROM THE EXISTING LARGE DITCH

EXISTING TOE OF RIPRAP

SECTION 9
SECTION 10

TO JESTER COUNTY PARK



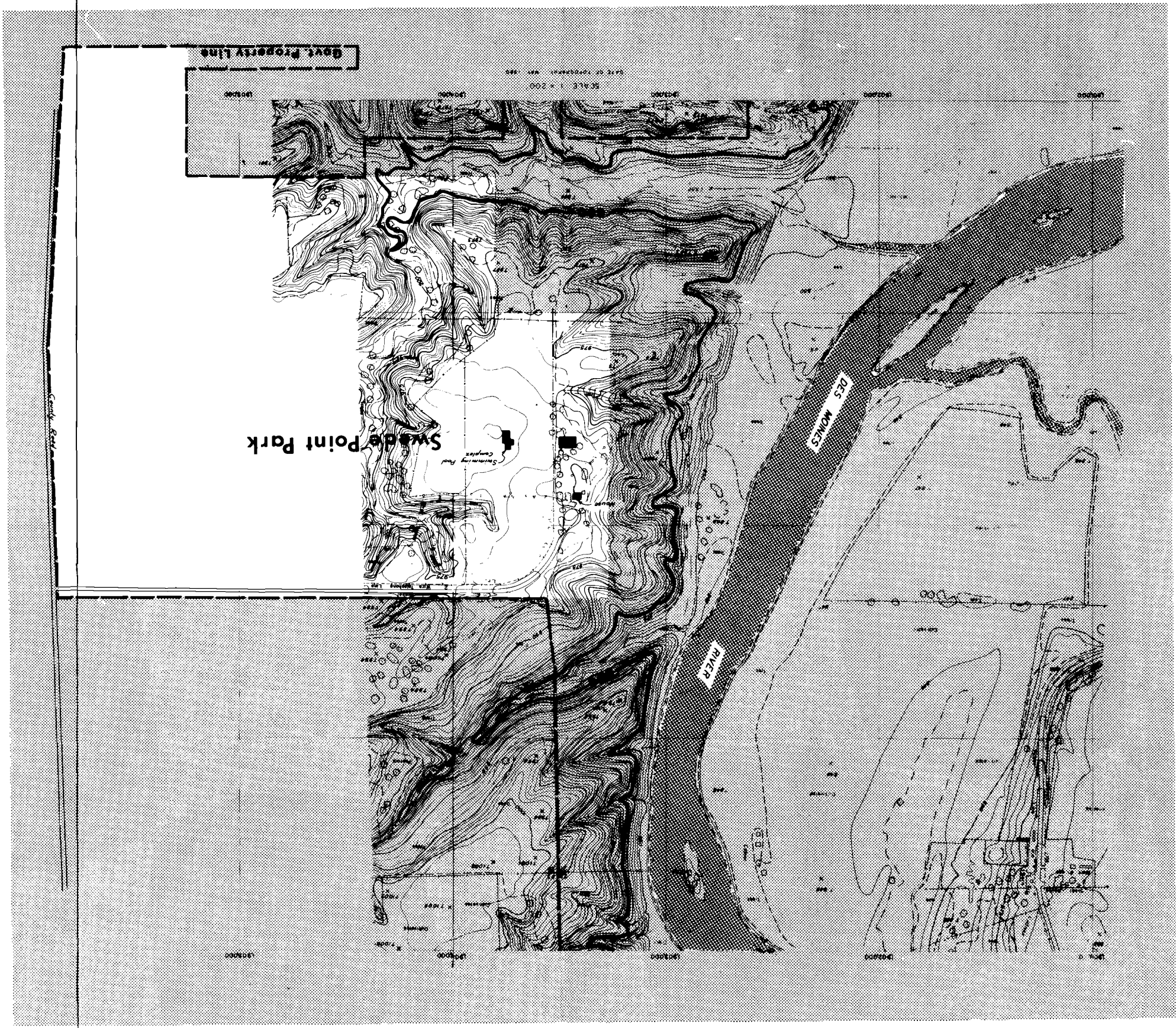
- 424 — Project Boundary
- 425 — Conservation Pool
- 426 — Five Year Flood Frequency
- 427 — Flood Pool
- 428 — Parking Units
- 429 — Playground equipment
- 430 — Picnic Shelter
- 431 — Shower Building
- 432 — Comfort Station
- 433 — Vault Toilet

Legend

SWEDE POINT PARK

Master Plan

US Army Corps
of Engineers
Fort Belvoir, Denver



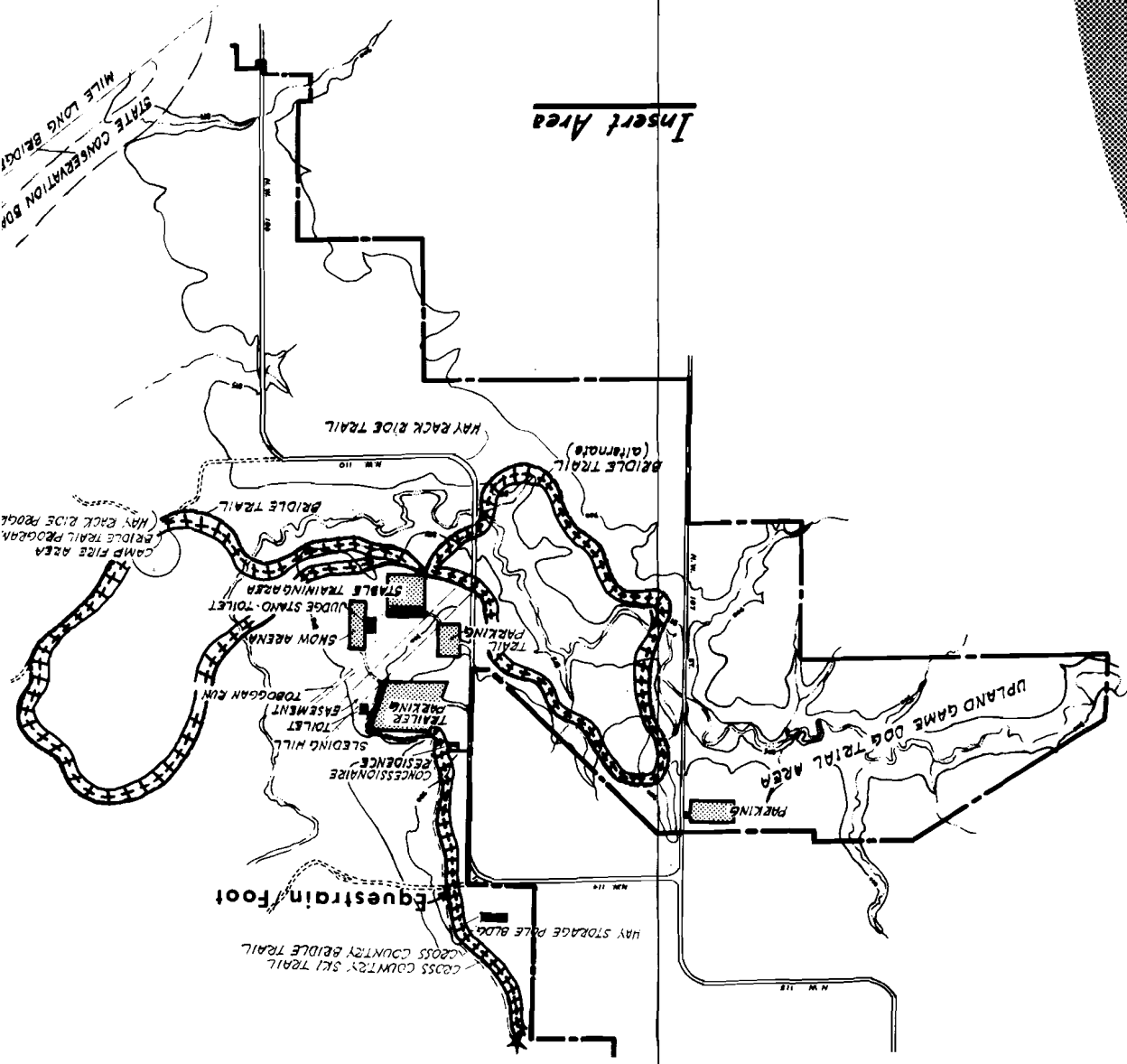
See vicinity map for recreation areas, Plate 2

Saylorville Lake Master Plan
JESTER COUNTY PARK
 Legend

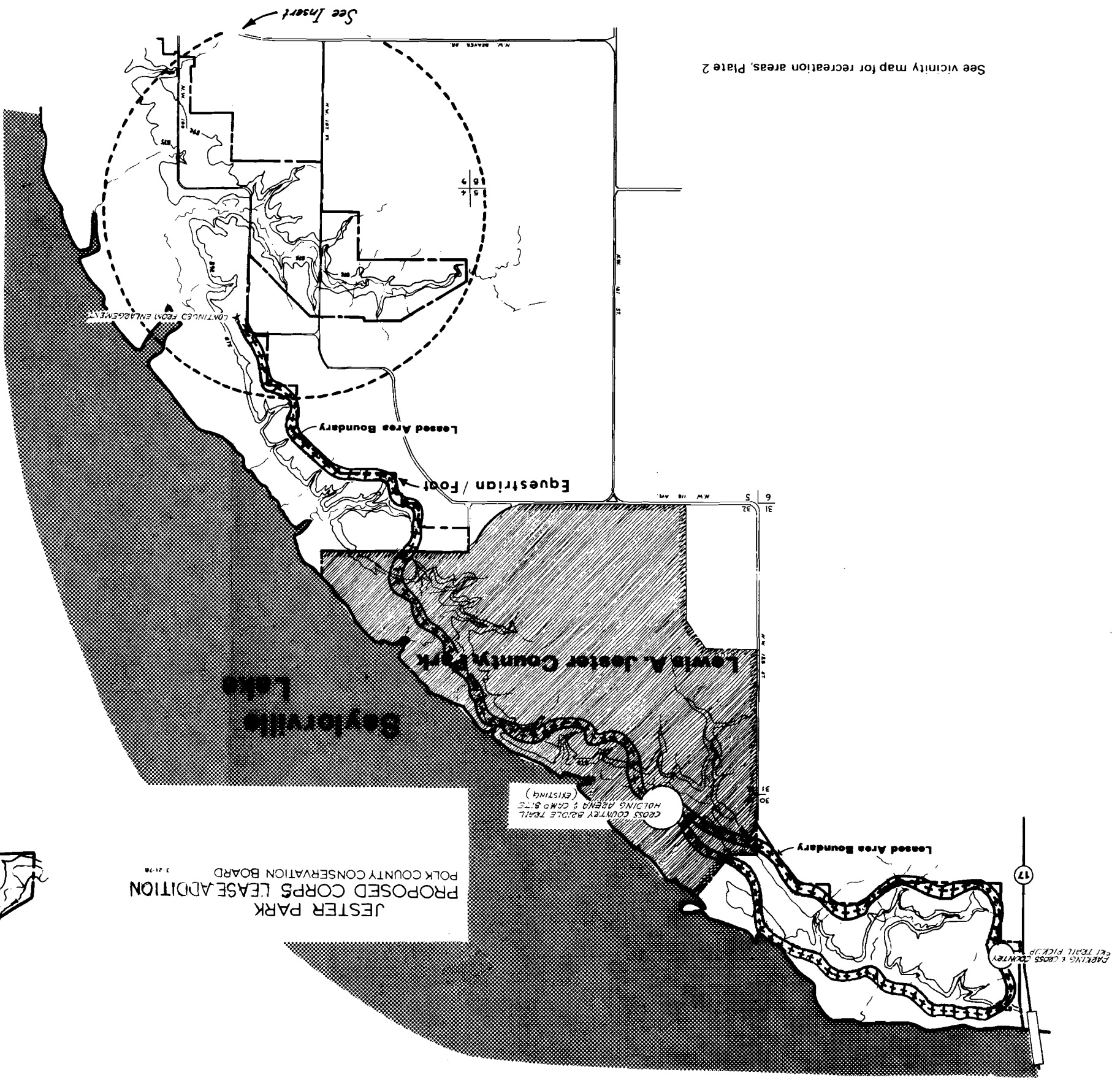
—	Project Boundary
- - -	Conservation Pool
- - -	Five-Year Flood Frequency
- - -	Flood Pool
- - -	Flowing Unit
- - -	Playground Equipment
- - -	Picnic Shelter
- - -	Shower Building
- - -	Compt. Station
- - -	Vault Toilet

US Army Corps of Engineers
 Rock River District

No Scale



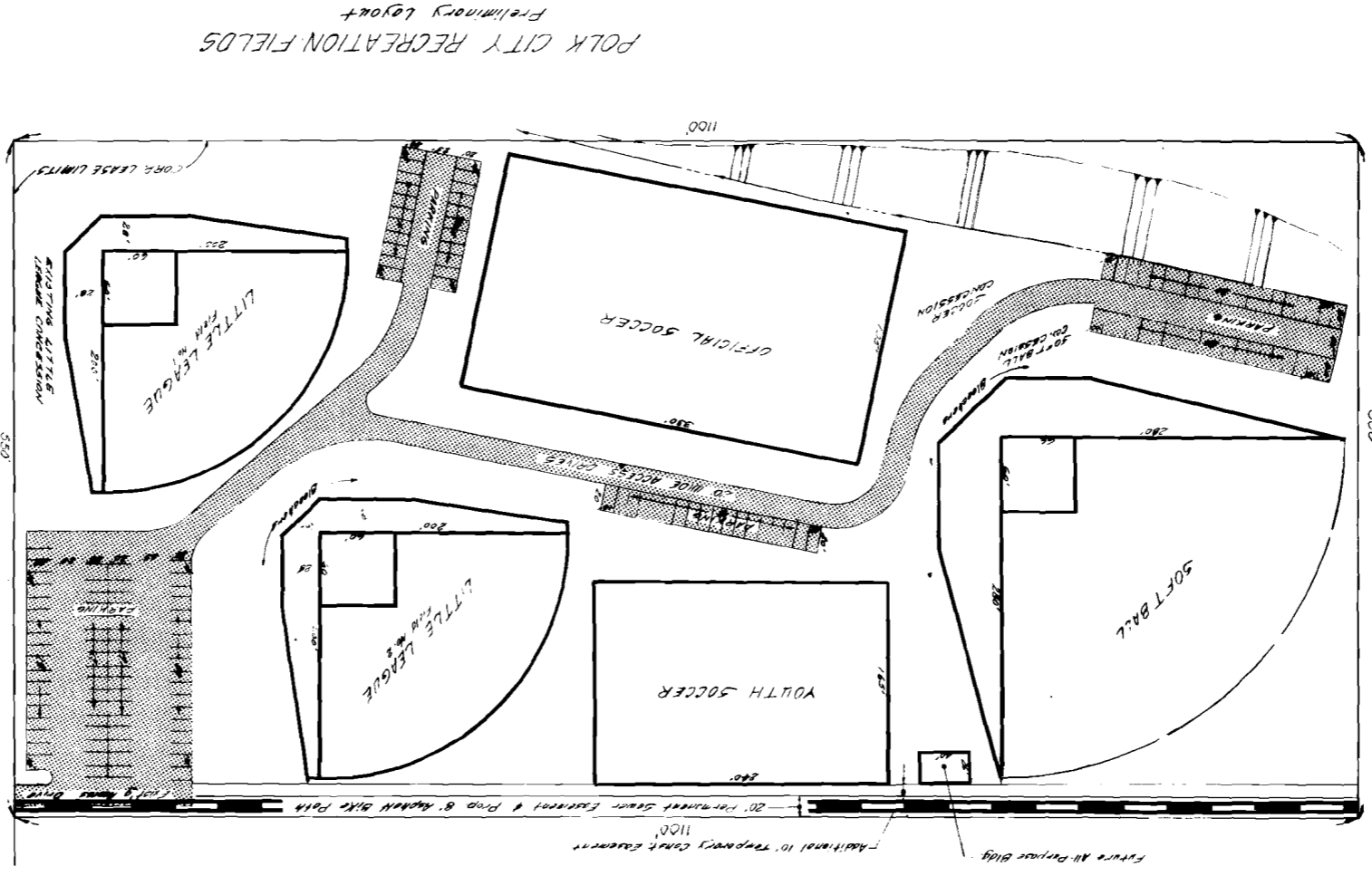
Insert Area



JESTER PARK
 PROPOSED CORPS LEASE ADDITION
 POLK COUNTY CONSERVATION BOARD
 3-21-78

See vicinity map for recreation areas, Plate 2

NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.
See Plate 24




POLK CITY RECREATION FIELDS
Preliminary Layout

**POLK CITY RECREATIONAL
SPORTS COMPLEX**

Saylorville Lake
Master Plan

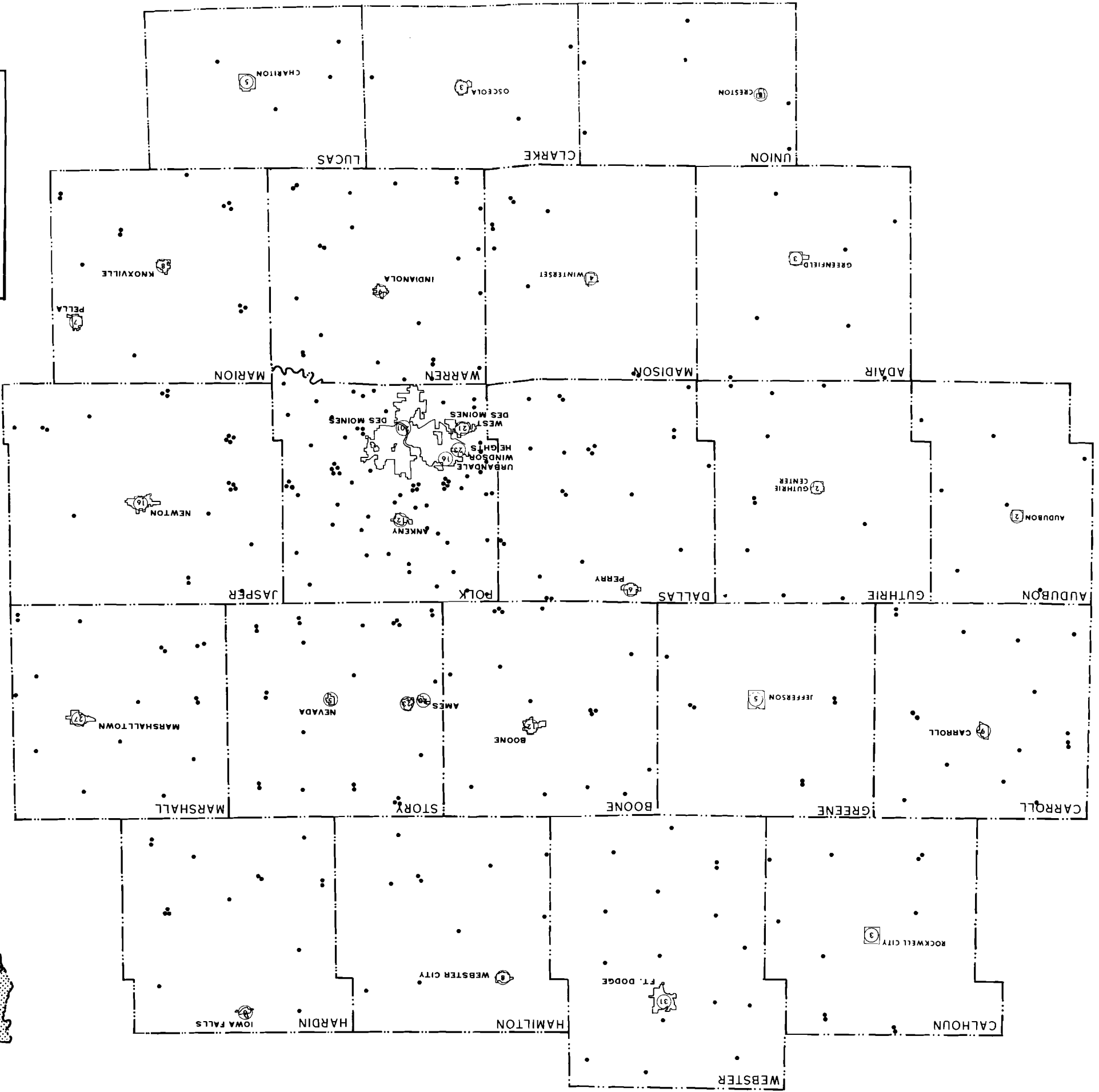


US Army Corps of Engineers
 Saylorville Lake
 Master Plan
 Rock Island District



POPULATION DISTRIBUTION

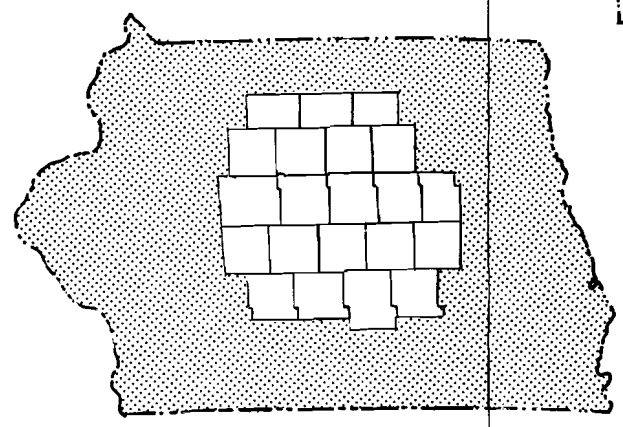
Scale 0 5 10 MILES



Legend

Each dot represents 1000 people.

Multiply number in circle Times 1000 = * x 1,000

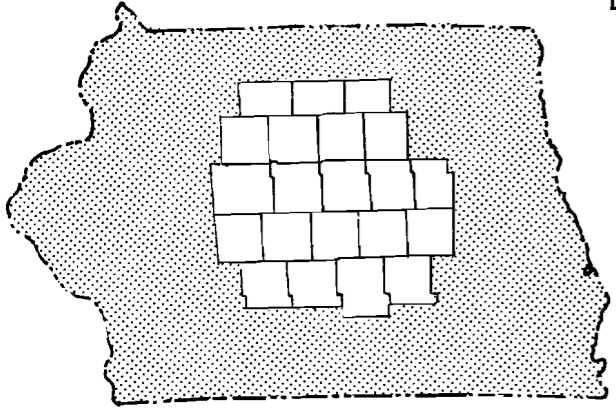
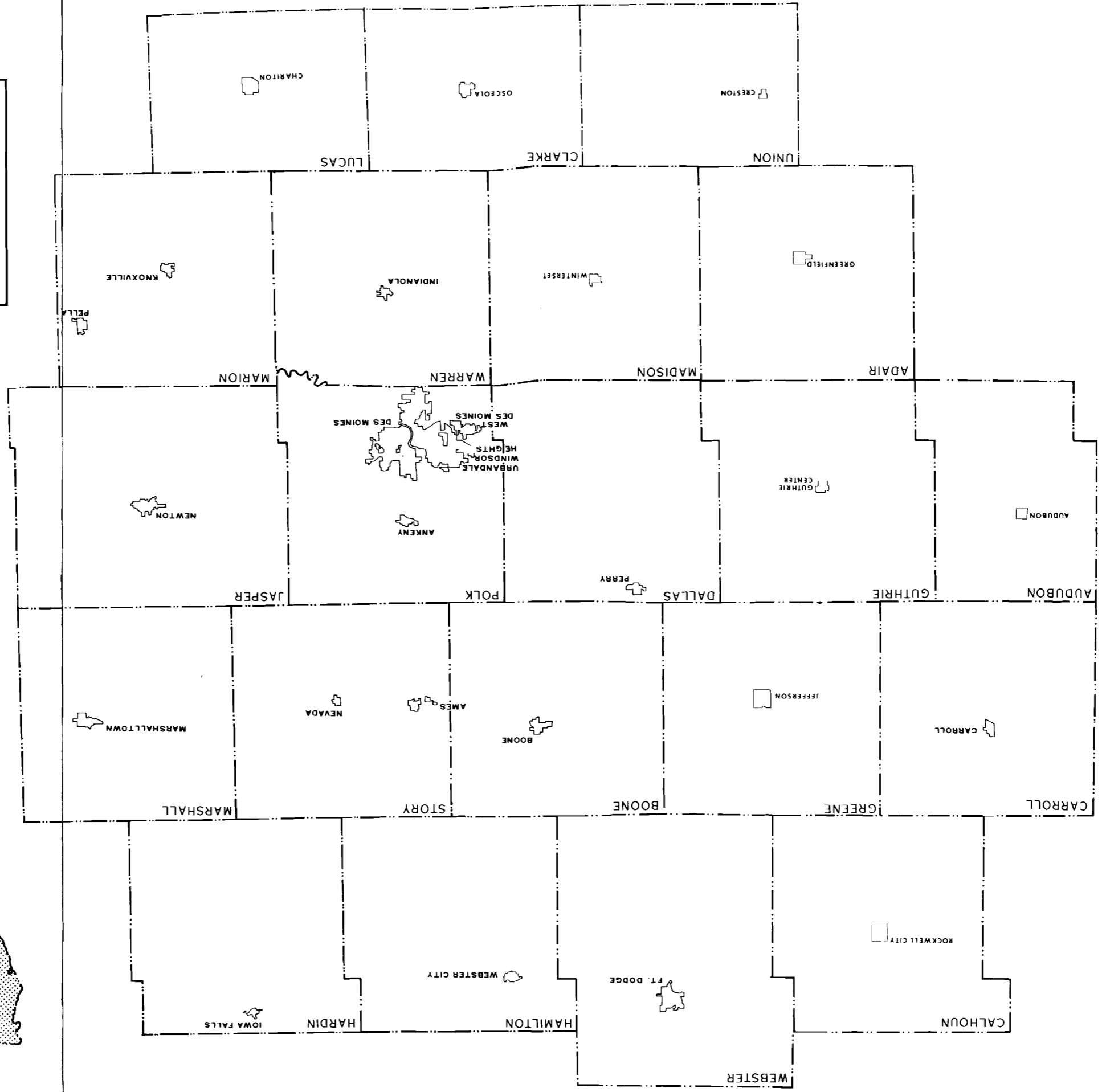
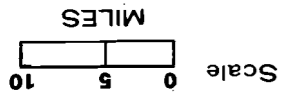


**CITIES WITHIN THE
30-50 MILE ZONE
OF INFLUENCE**

**US Army Corps
of Engineers**
Rock Island District


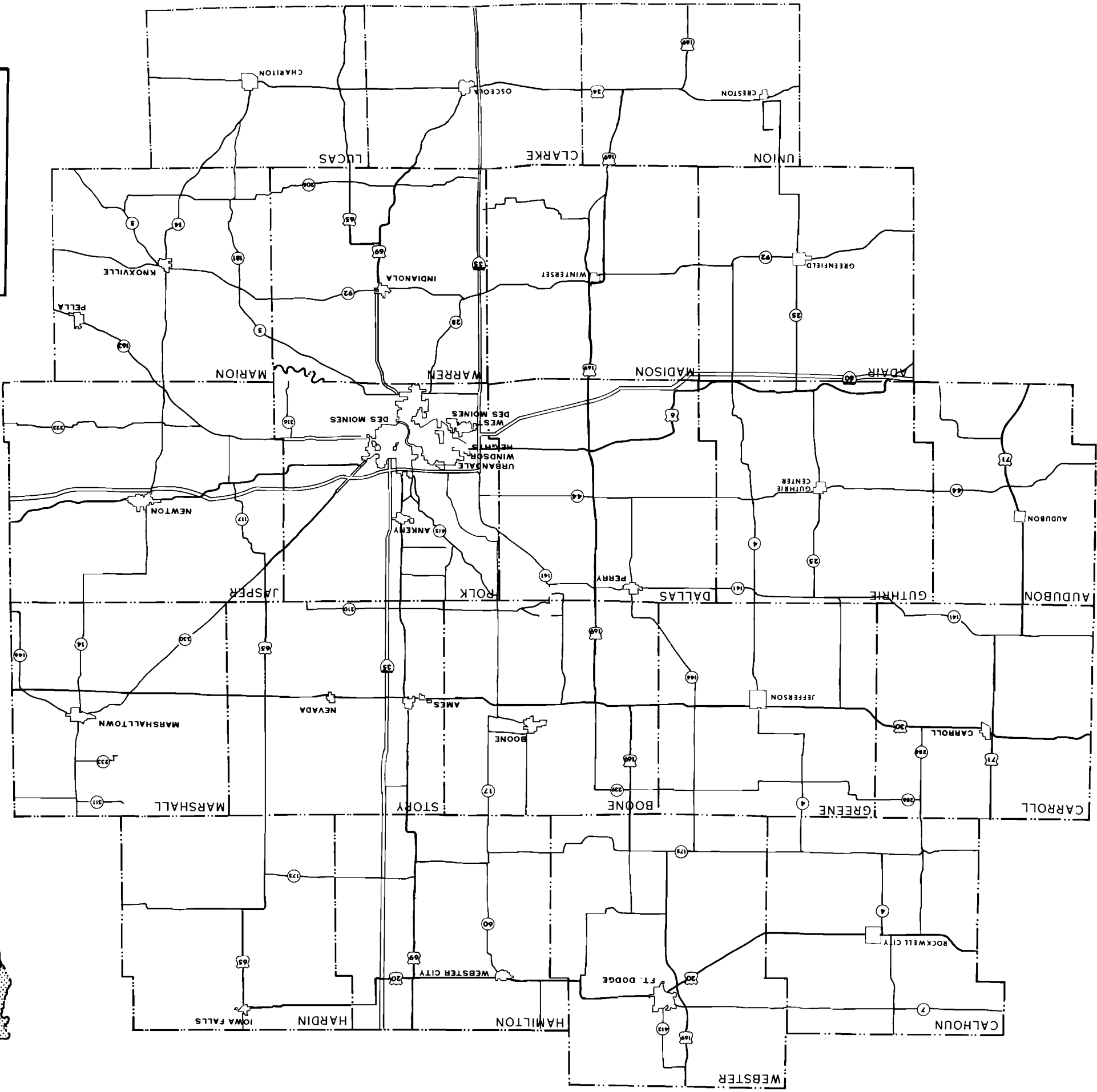


Saylorville Lake
Master Plan



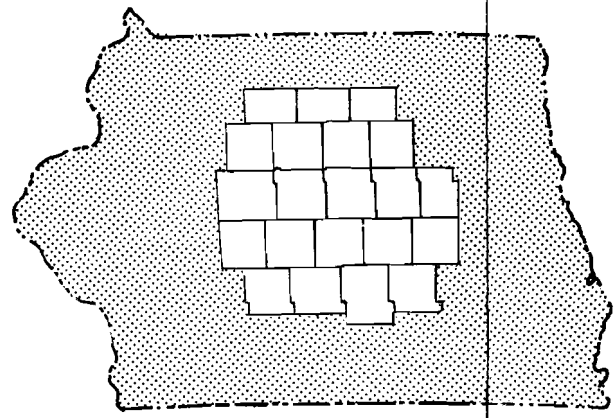
US Army Corps of Engineers
 Rock Island District
 Saylorville Lake
 Master Plan
HIGHWAY SYSTEM

Scale
 0 5 10
 MILES





LEGEND
 Highway Symbols

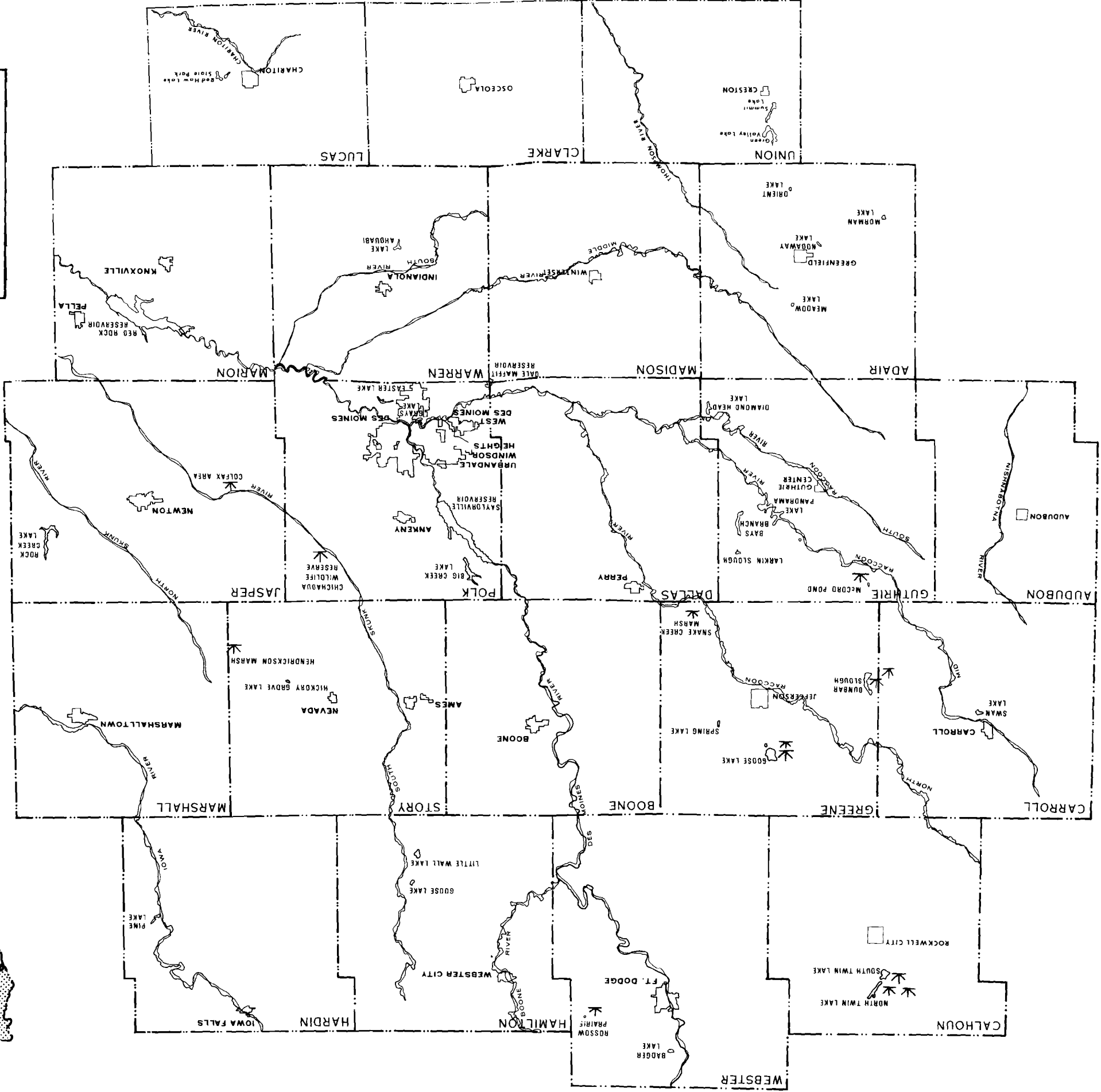
- - STATE
- ◌ - FEDERAL
- ◌ - INTERSTATE




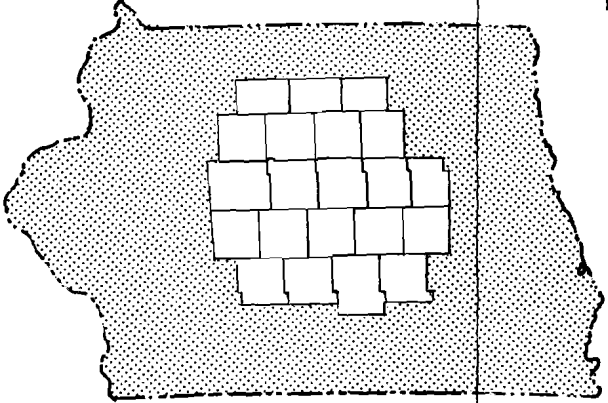
US Army Corps of Engineers
 Rock Island District
Saylorville Lake Master Plan
WATER RESOURCES



Scale 0 5 10 MILES


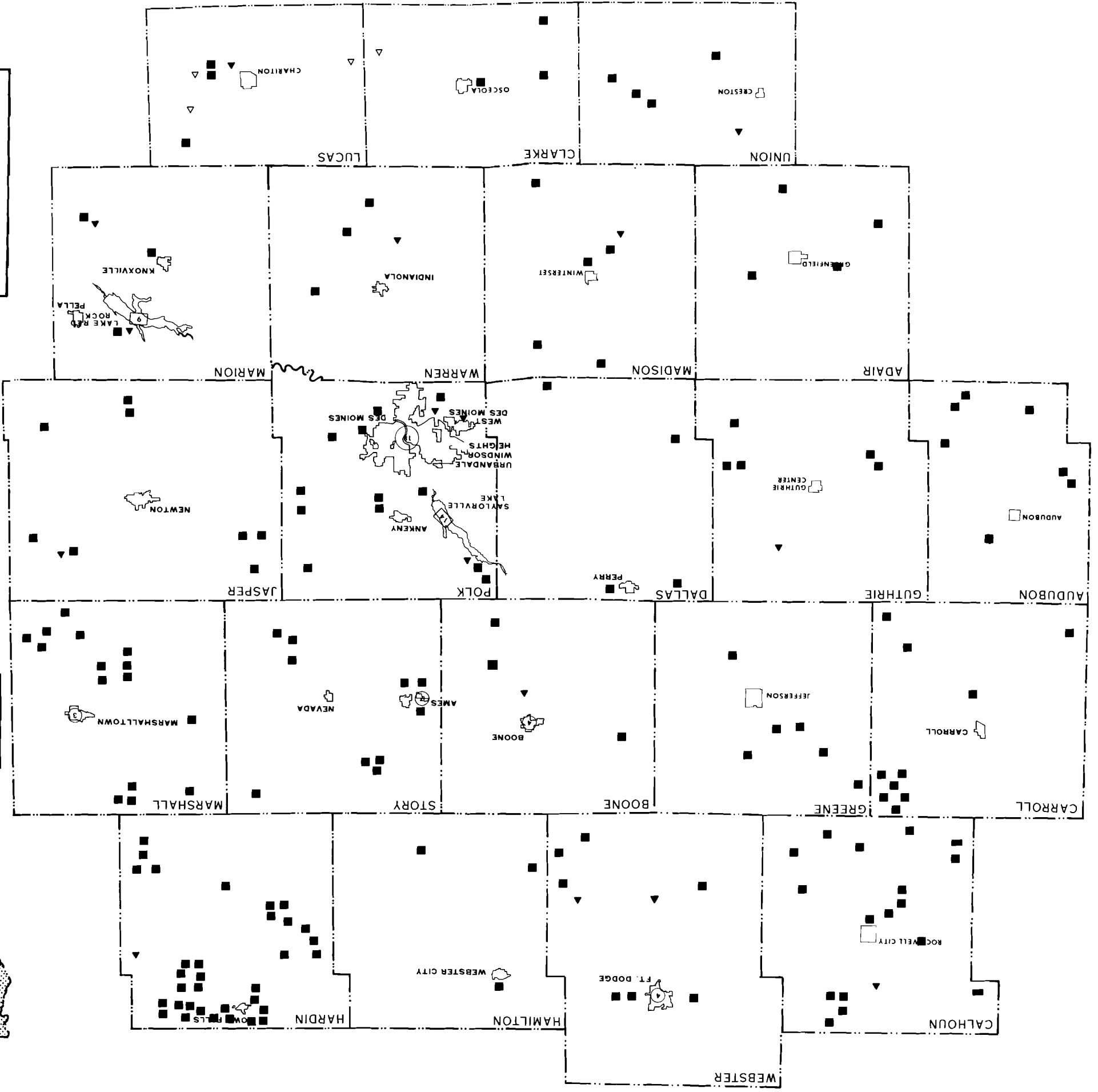


note - Marsh - 



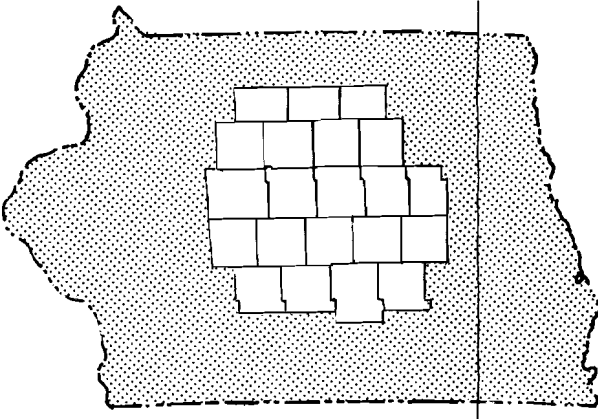
US Army Corps of Engineers
 Rock Island District
Saylorville Lake Master Plan
RECREATION RESOURCES

Scale 0 5 10 MILES


Legend

- State Parks - ▲
- County Recreation Areas - ■
- City Parks - ○
- State Forests - ▽
- Federal Recreation Areas - □



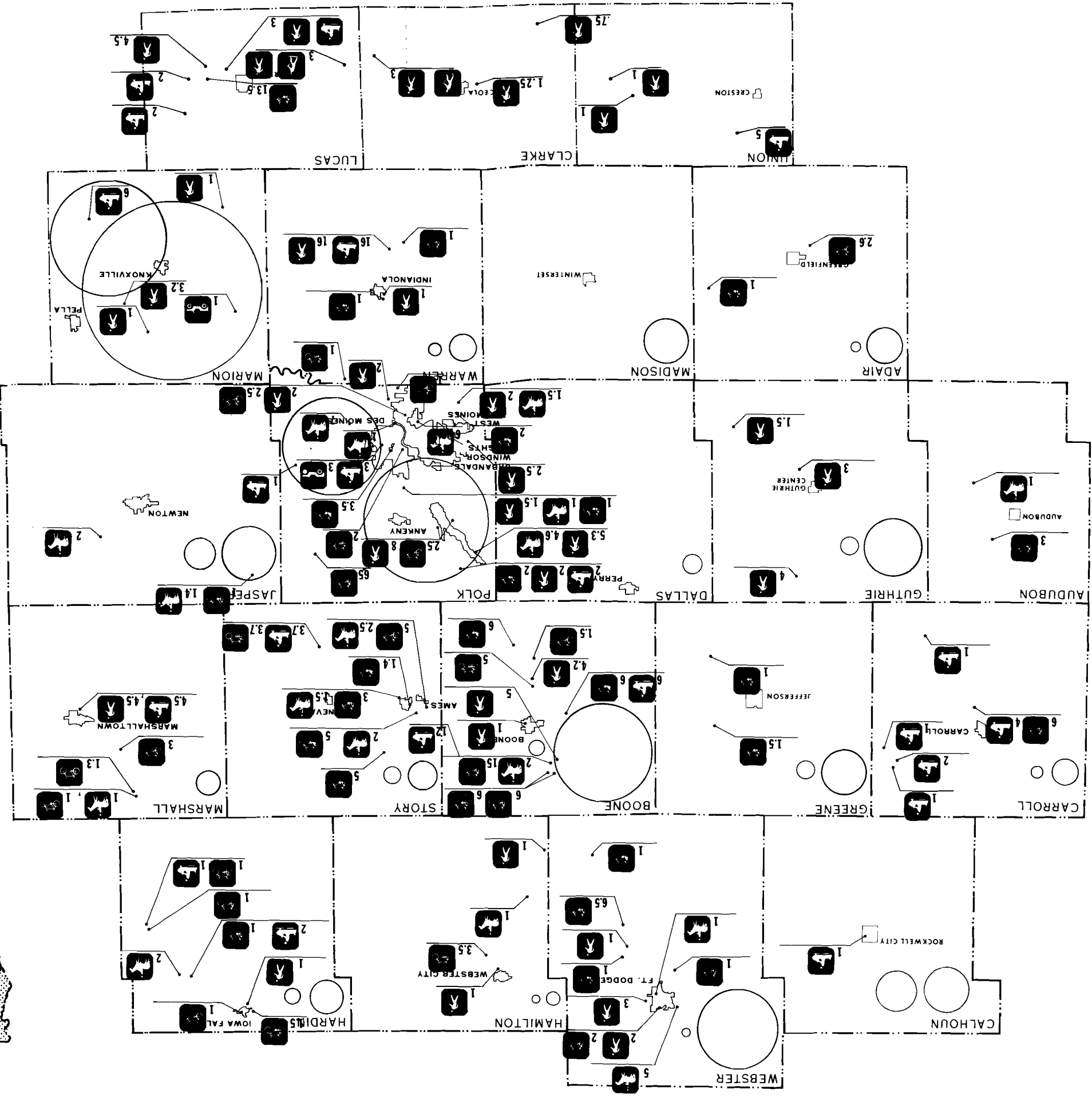
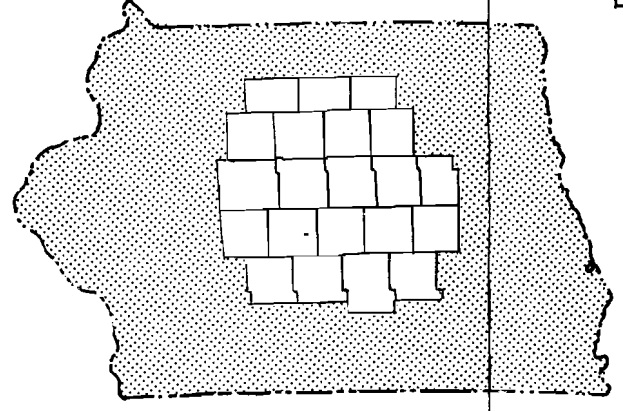
US Army Corps of Engineers
 Rock Island District
 Saylorville Lake
 Master Plan
 RECREATION RESOURCES

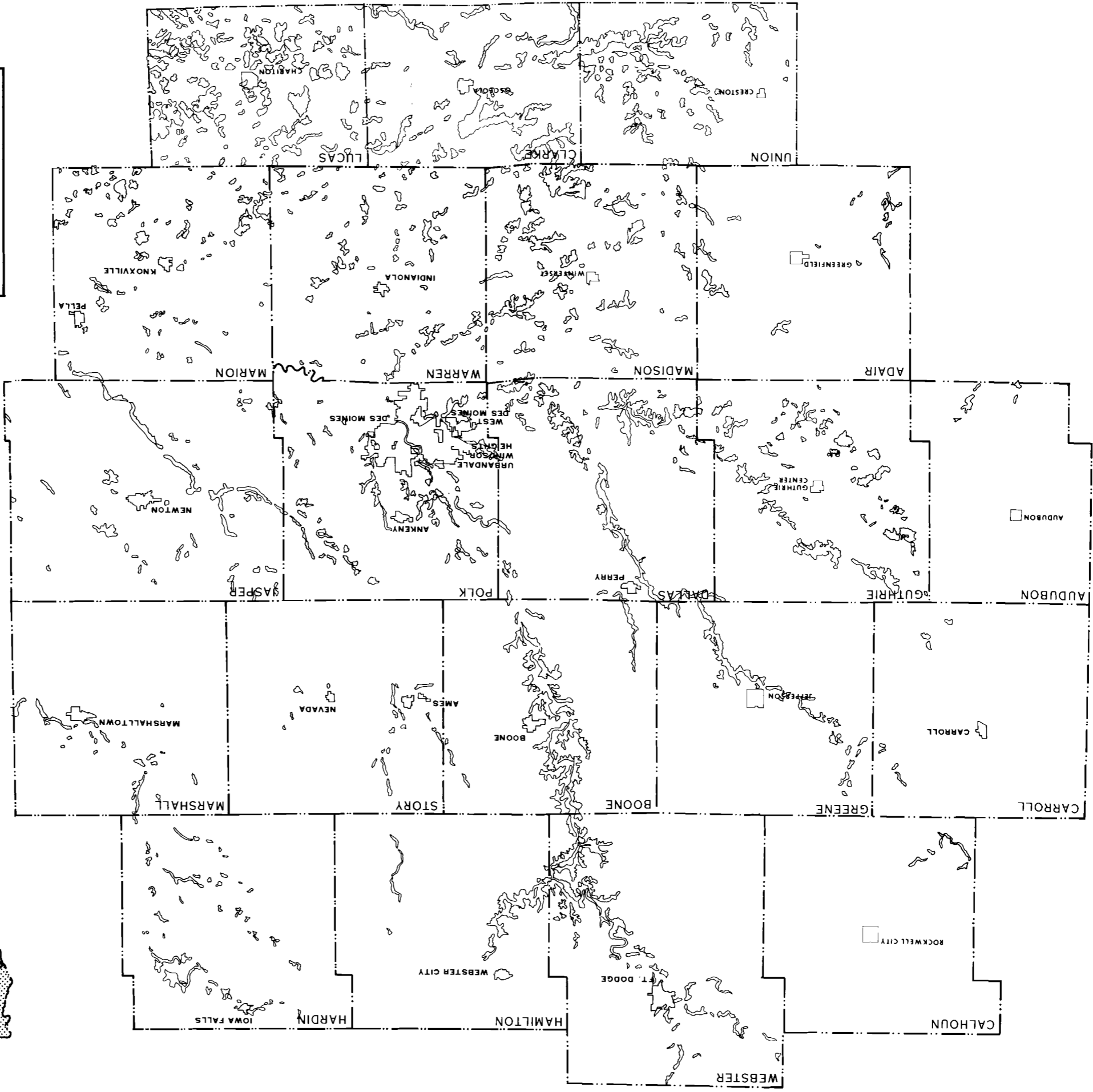
Scale
 0 5 10
 MILES



Legend

- Trails - Trail length in miles - 3.5 in each county. The left circle represents a relative amount of public hunting area. The right circle represents the area of accessible lakes over 10 ac. circle are not to scale of map.
- Bike -
- ATV -
- Foot -
- Horse -
- Snowmobile -
- County Ski & Hiking -

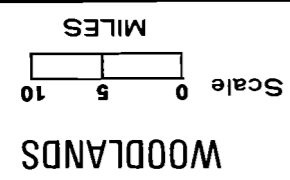




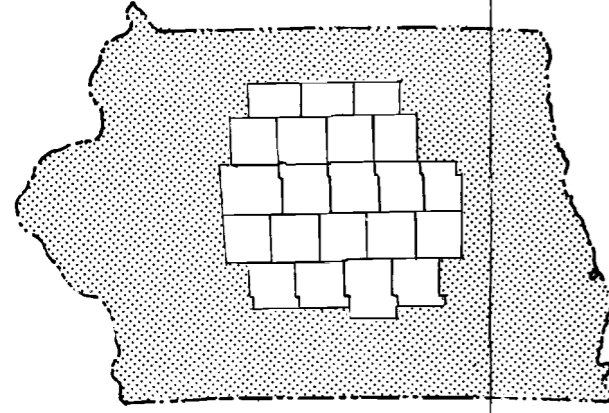
Woods-brushwood - □



Saylorville Lake
 Master Plan
 US Army Corps
 of Engineers
 Rock Island District



WOODLANDS



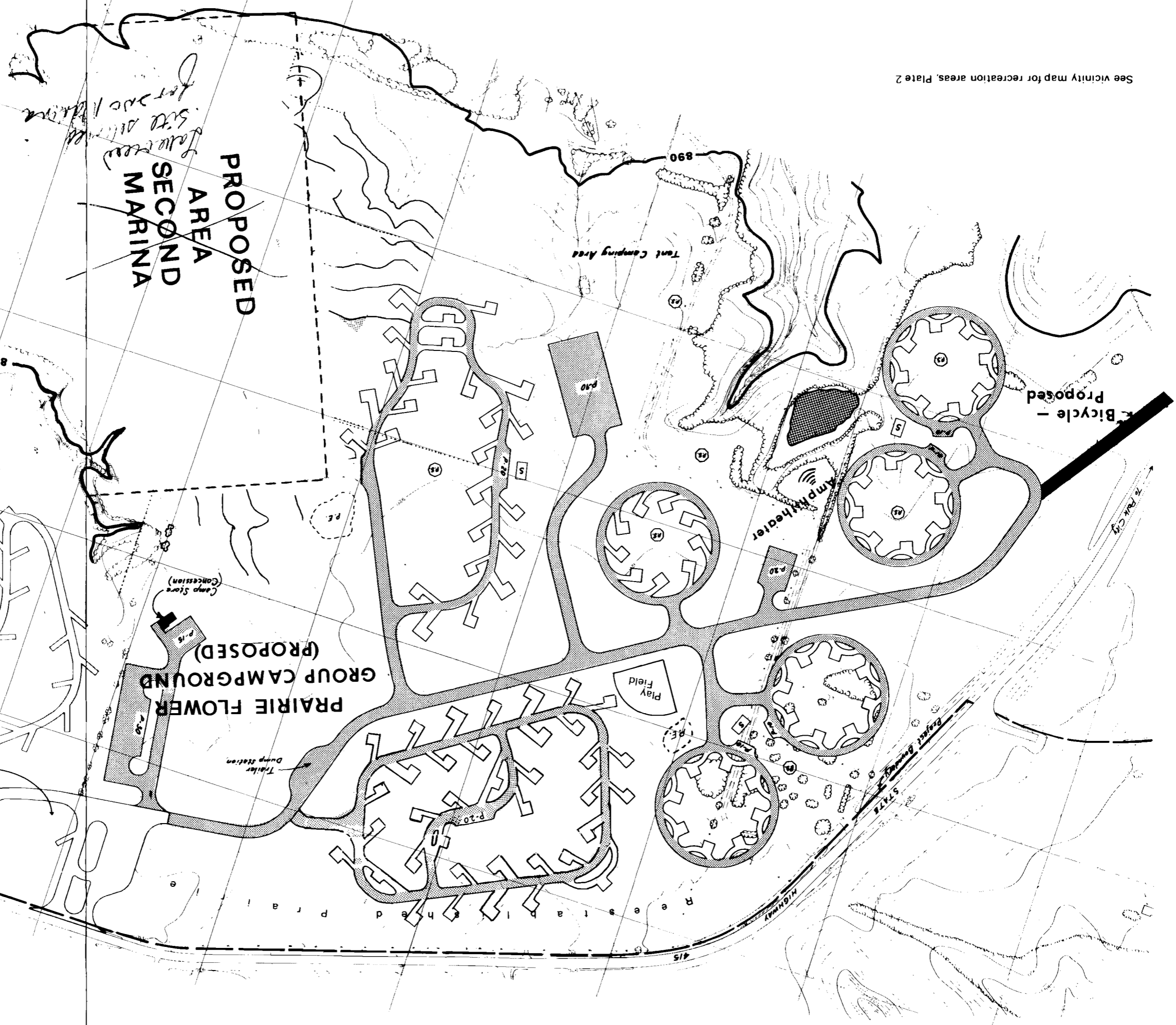
Legend

- Shower Building
- Picnic Shelter
- Playground Equipment
- Parking Units
- Flood Road
- Fire Tower Flood Frequency
- Conservation Point
- Project Boundary

US Army Corps of Engineers
Rock Island District

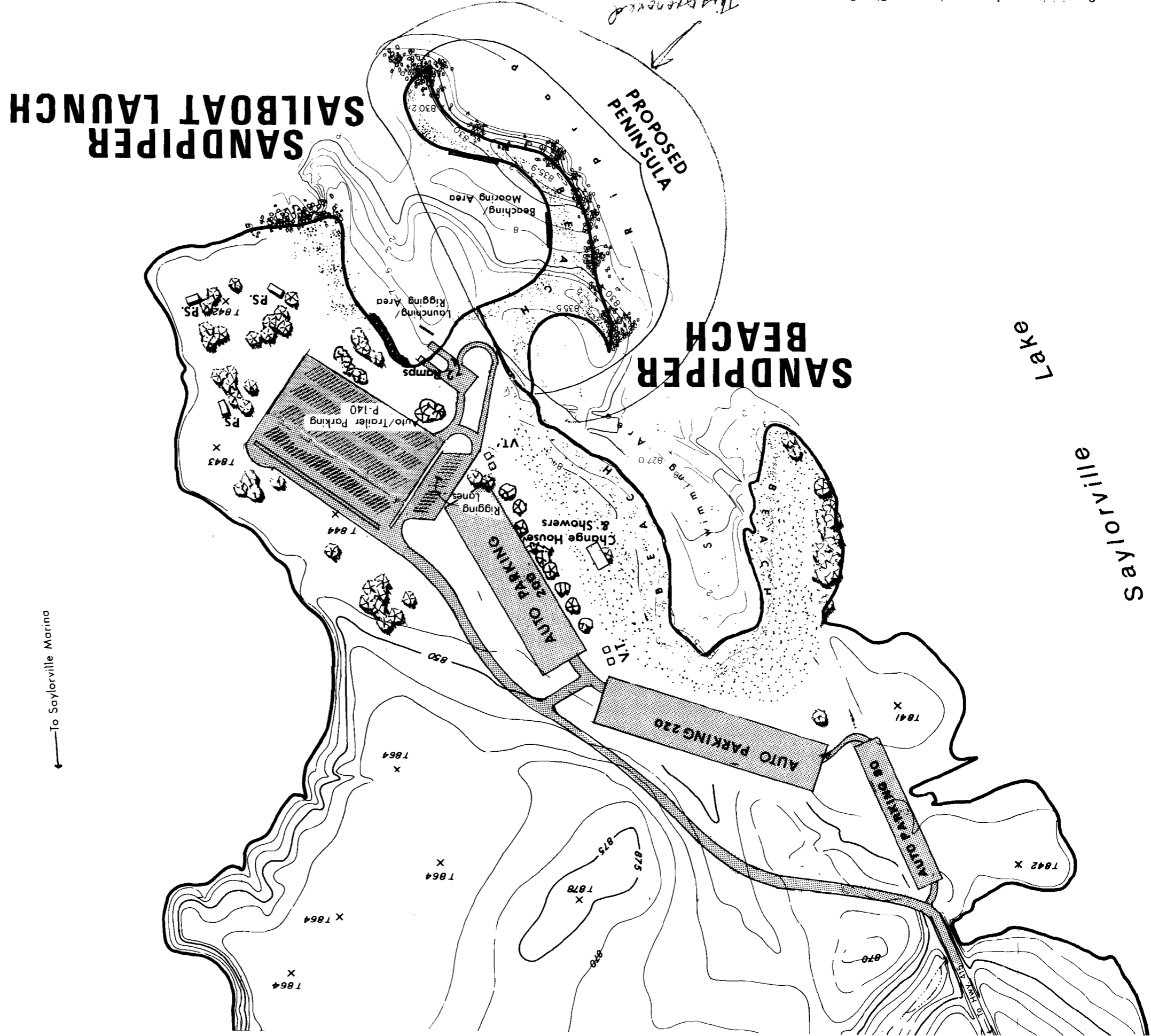
**Saylorville Lake
Master Plan
PRAIRIE FLOWER
GROUP CAMPGROUND
(PROPOSED)**

NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.
See Plate 24



See vicinity map for recreation areas, Plate 2

SANDPIPER SAILBOAT LAUNCH



← To Saylorville Marina

Saylorville Lake

SANDPIPER RECREATION AREA (PROPOSED)

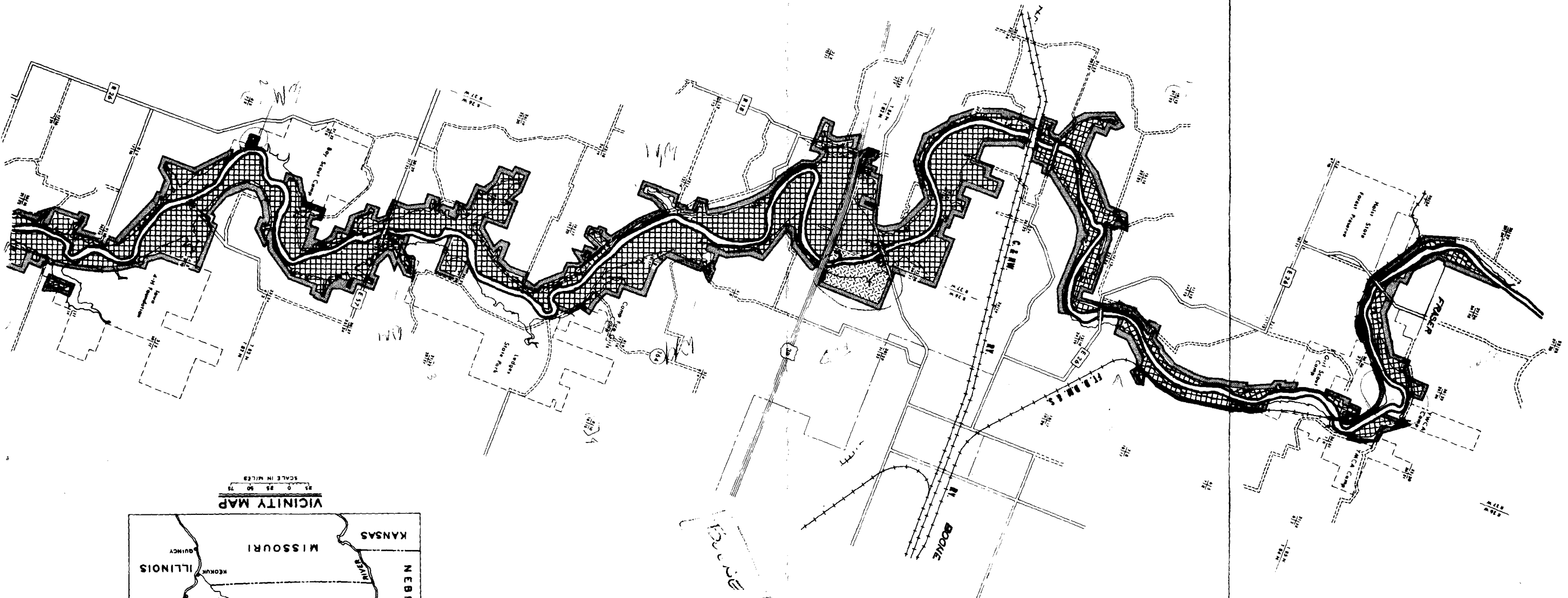
Master Plan
Saylorville Lake
US Army Corps of Engineers
Flood Hazard District

Legend

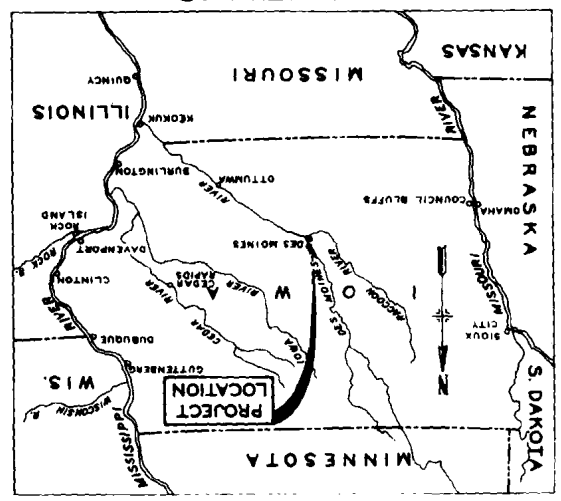
- Project Boundary
- Conservation Pool
- Five Year Flood Frequency
- Flood Pool
- P-10
- P-15
- P-20
- P-25
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- P-990
- P-995
- P-1000

0 100 200

PLATE

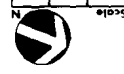


VICINITY MAP
SCALE IN MILES



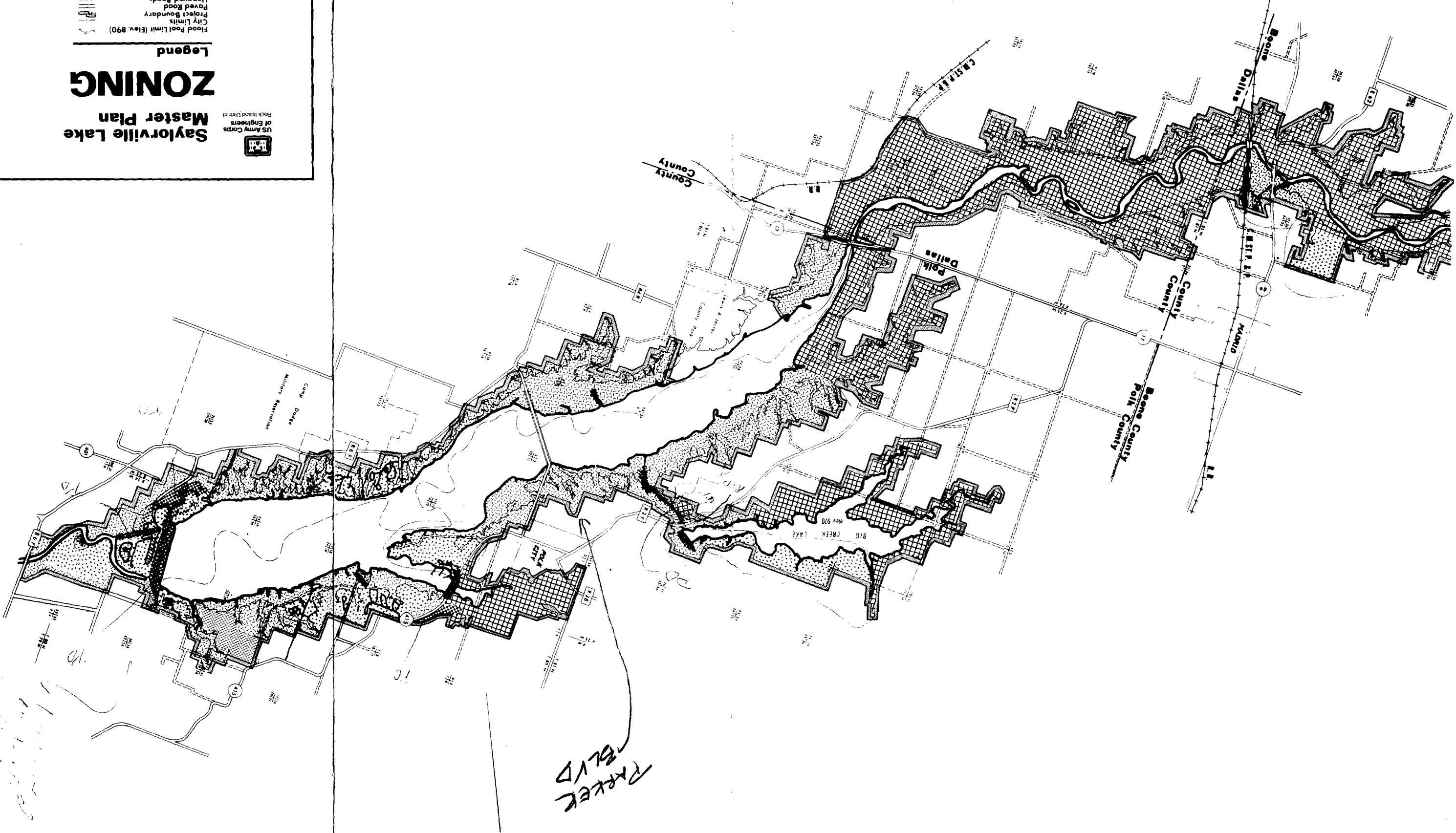
1944

Flood Pool Limit (Elev. 890)
 City Limits
 Project Boundary
 Paved Road
 Unpaved Roads
 Project Operations
 Operations - Recreation/
 Intensive Use
 Operations - Recreation/
 Low Density
 Operations - Wildlife
 Management
 Operations - Natural Area



Saylorville Lake Master Plan ZONING

US Army Corps
 of Engineers
 Rock Island District



PARKE BLVD

DOWNSTREAM CORRIDOR

ZONING Master Plan

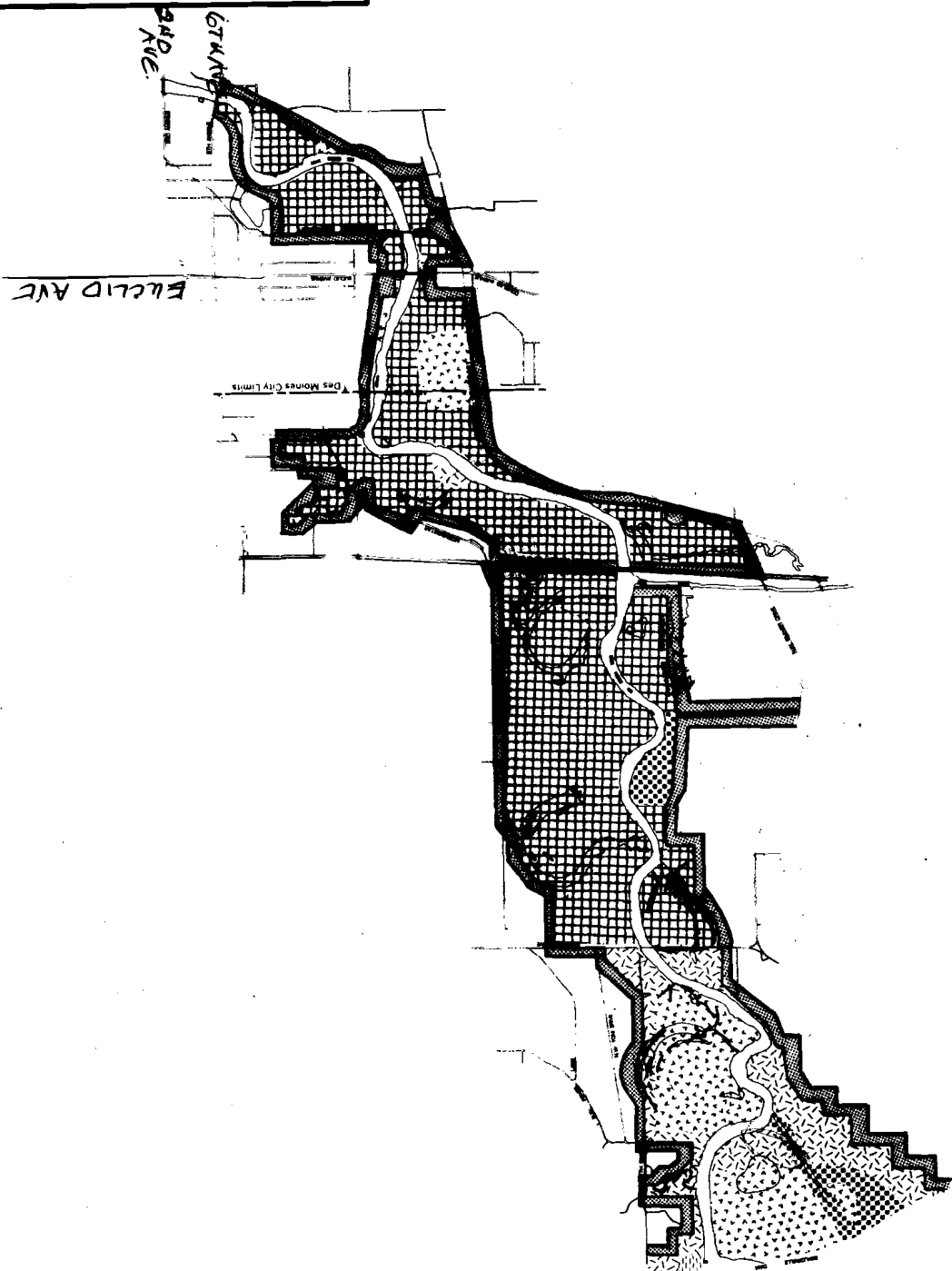
Saylorville Lake

Legend

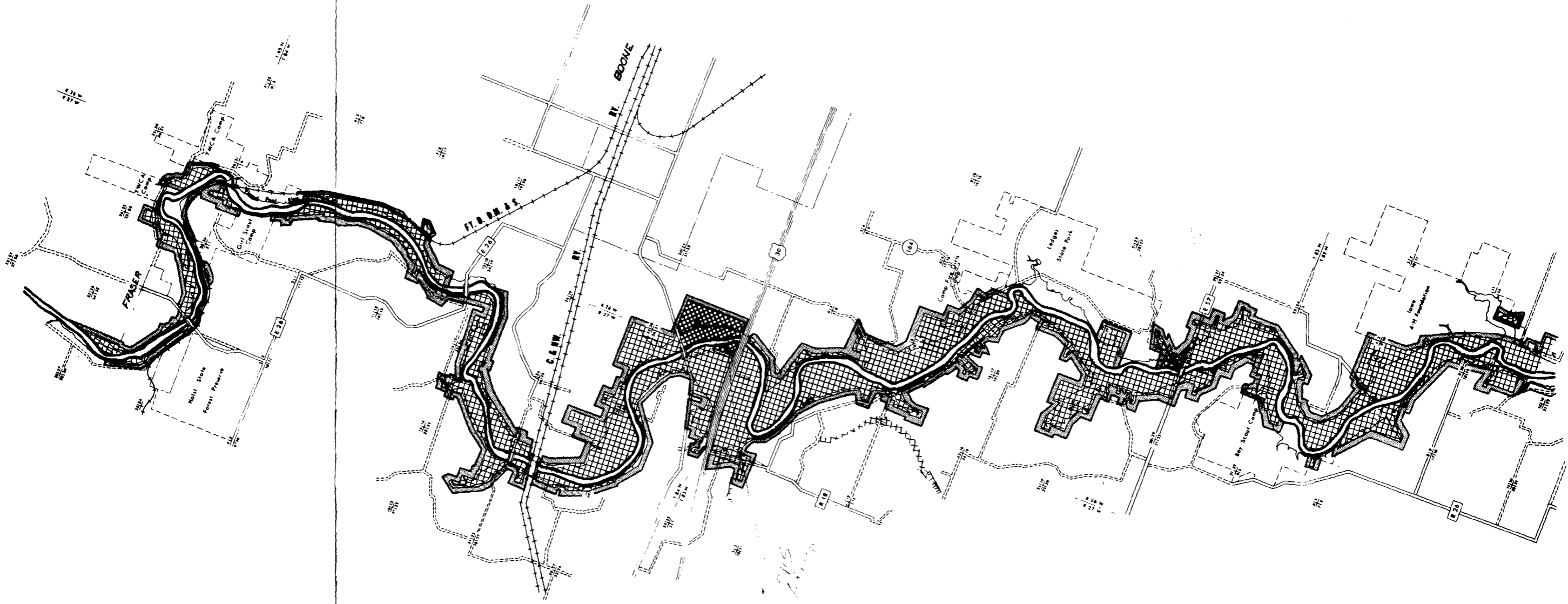
- Project Boundary
- Project Operations
- Operations - Recreation/Intensive Use
- Operations - Recreation/Low Density
- Operations - Resource Forest
- Wildlife Mgmt - Land
- Operations - Natural Area

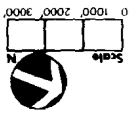
US Army Corps of Engineers
Rock Island District

Scale
0 1000' 2000' 3000'



P-10-70750-C



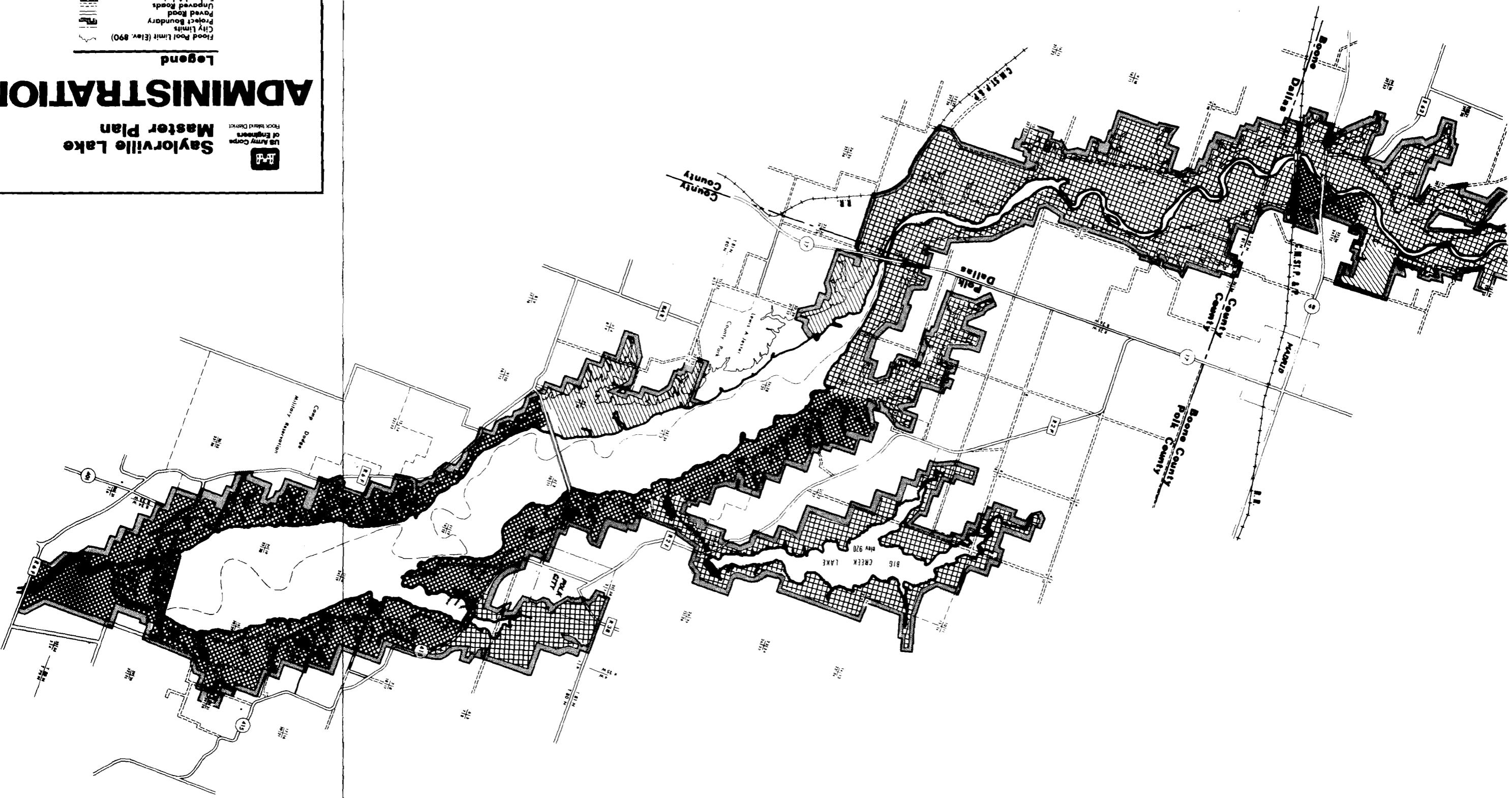


- Flood Pool Limit (Elev. 890)
- City Limits
- Project Boundary
- Paved Roads
- Unpaved Roads
- Federal Admin.
- State Admin.
- County Admin.
- City Admin.

Legend

ADMINISTRATION

Saylorville Lake Master Plan




ADMINISTRATION

Saylorville Lake
Master Plan

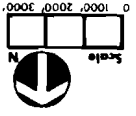
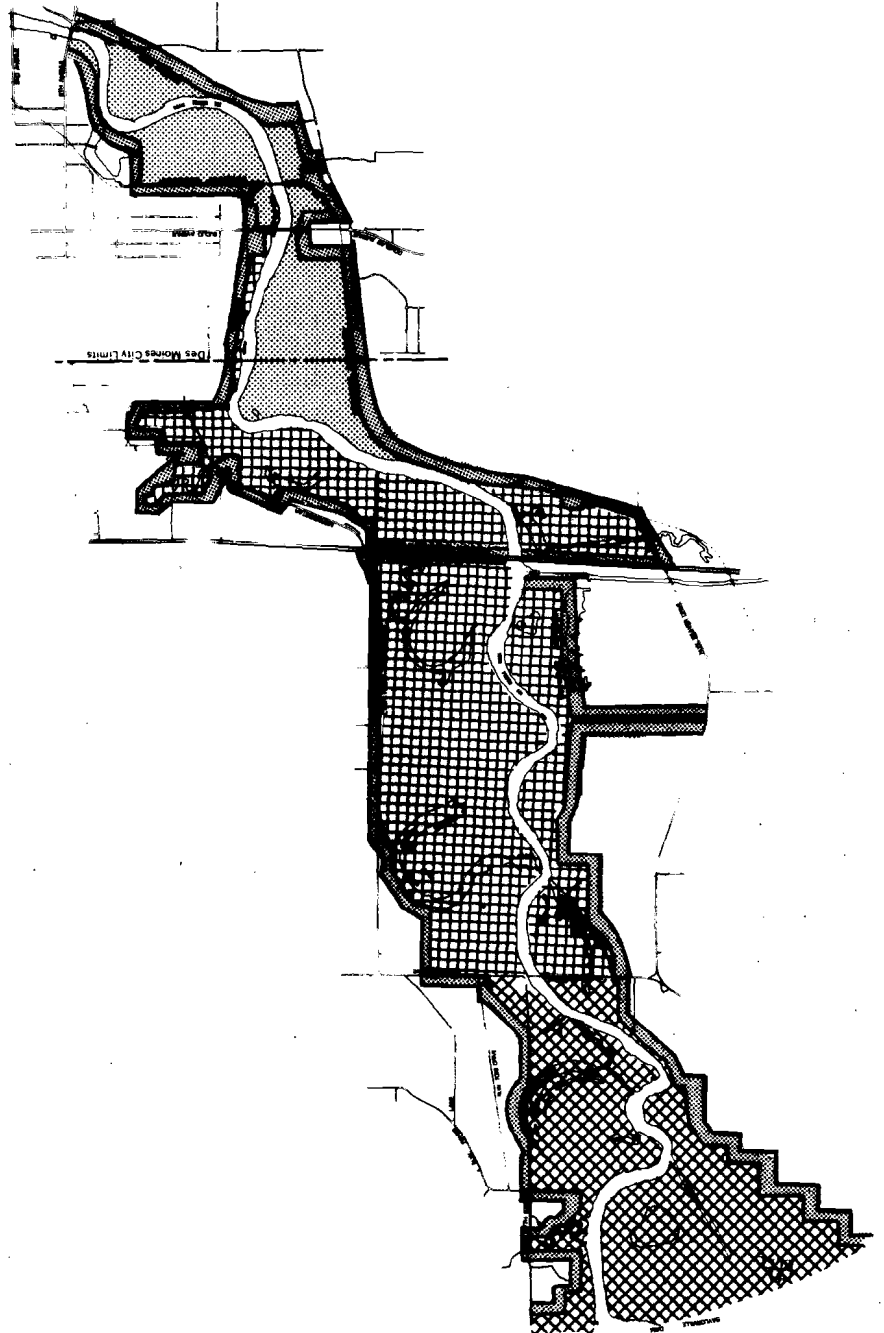
US Army Corps
of Engineers
Rock Island District

Legend

Project Boundary
Federal Admin.
State Admin.
County Admin.
City Admin.



CORRIDOR









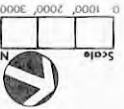
WOODLANDS

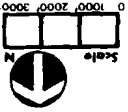
Saylorville Lake Master Plan

US Army Corps of Engineers
Pittsburg District

Legend

-  Flood Pool Limit (Elev. 890)
-  City Limits
-  Paved Road
-  Unpaved Roads
-  Wooded Areas





DOWNSTREAM CORRIDOR

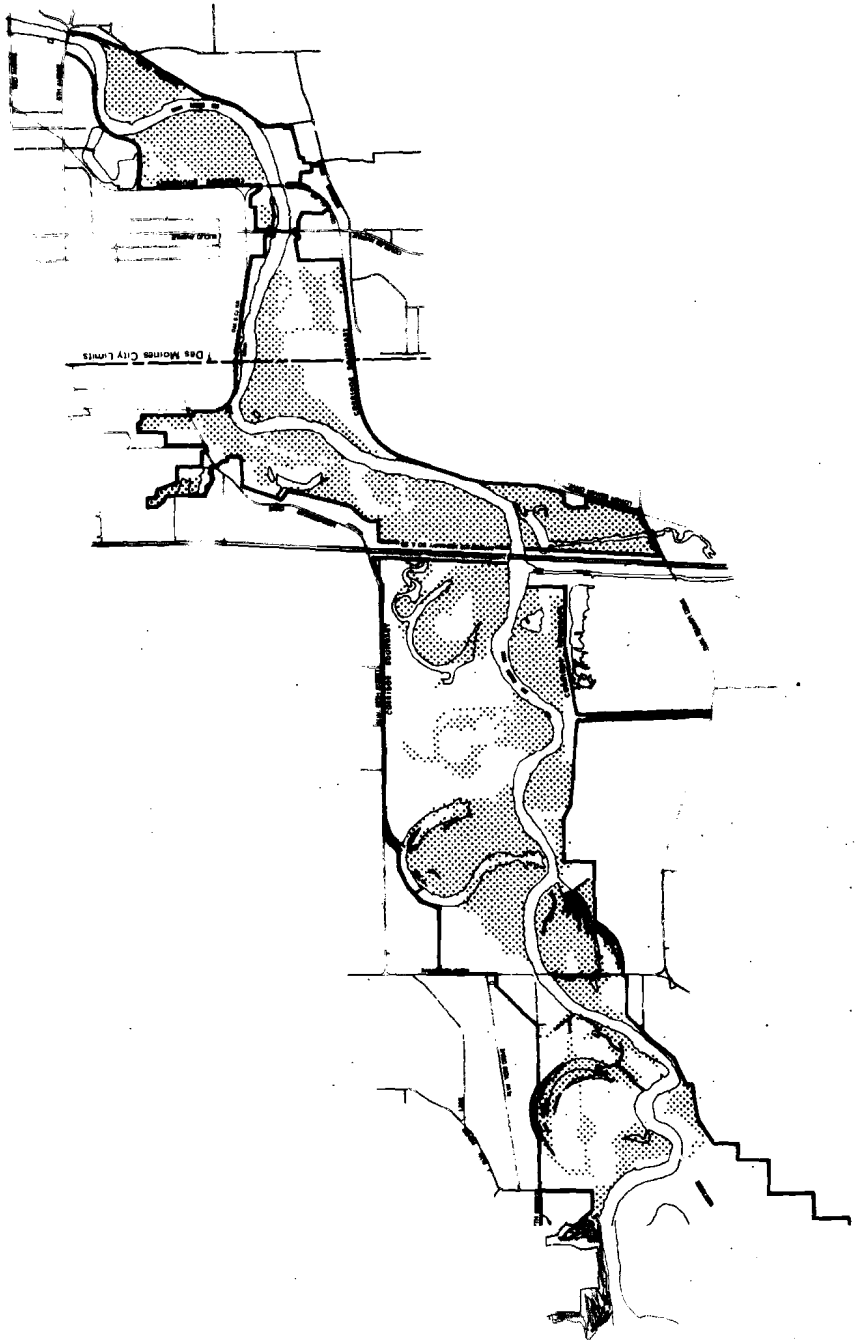
Project Boundary
Woods - brushwood

Legend

WOODLANDS

Saylorville Lake
Master Plan

US Army Corps
of Engineers
Rock Island District



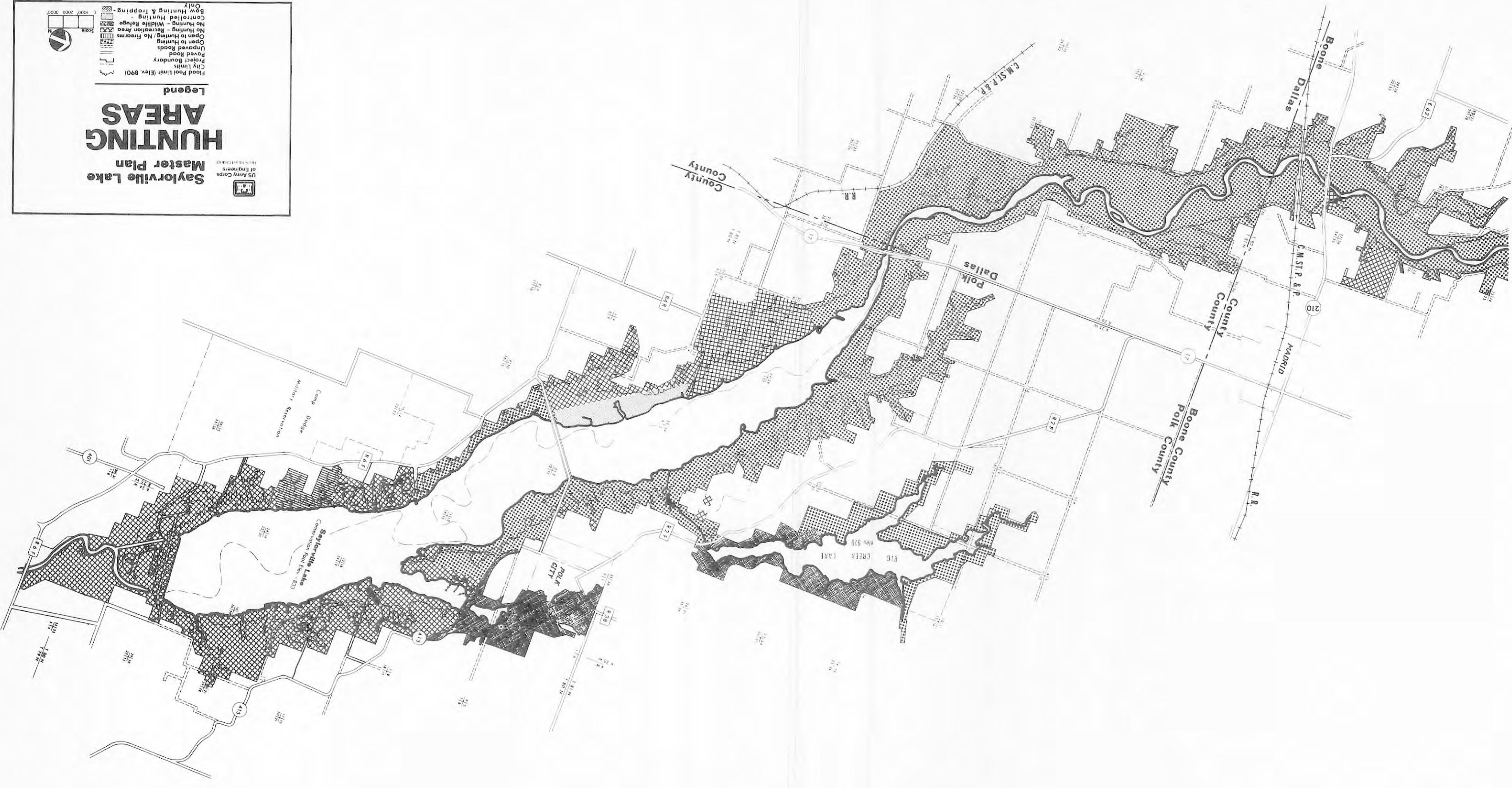
Saylorville Lake Master Plan HUNTING AREAS

US Army Corps of Engineers
of Engineers
of Engineers

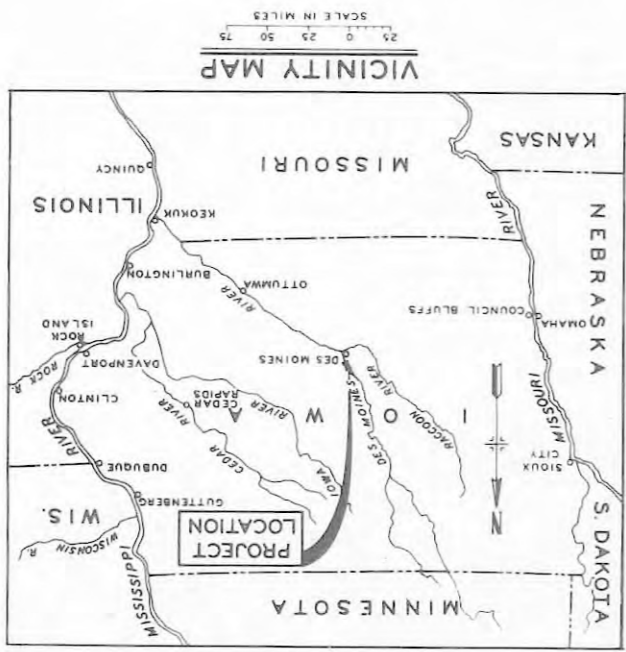
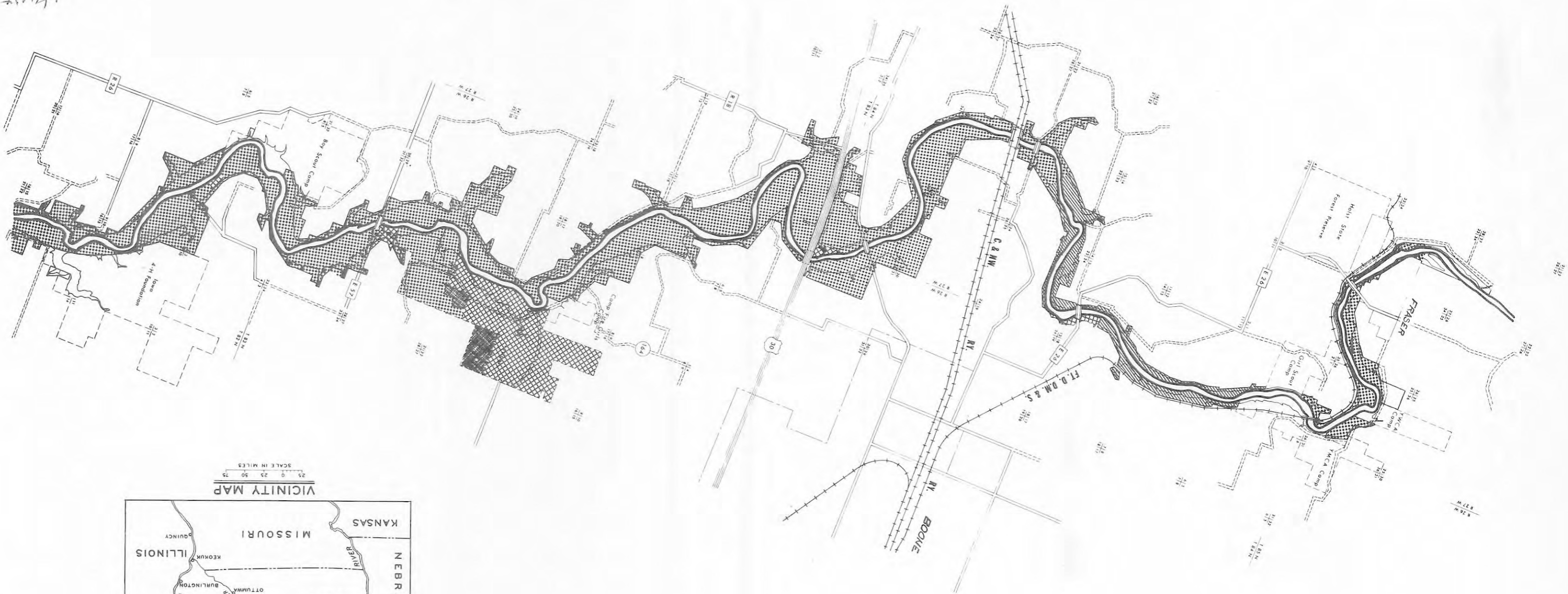
Legend

- Flood Pool Limit (Elev. 890)
- City Limit
- Project Boundary
- Paved Road
- Unpaved Road
- Open to Hunting/No Firearms
- No Hunting - Recreation Area
- No Hunting - Wildlife Refuge
- Controlled Hunting
- Bow Hunting & Trapping Only

Scale: 0 1000 2000 3000



Hunting Areas
PLATE 48



APPENDIX 1

PERTINENT CORRESPONDENCE

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

APPENDIX I

PERTINENT CORRESPONDENCE

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NEWS RELEASE

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

CLOCK TOWER BUILDING, ROCK ISLAND, ILLINOIS 61201
FOR ADDITIONAL INFORMATION PHONE: (309) 788-6361 EXT. 274 or 204

11 February 1980

SAYLORVILLE LAKE REVISED MASTER PLAN WORKSHOP

The Rock Island District, Corps of Engineers, will hold a public workshop on 20 February 1980, at the Des Moines, Iowa, Howard Johnson's (I-80 & I-35, Exit 131 - Merle Hay Road). The purpose of the meeting will be to provide the public an opportunity to make suggestions and comments as to how effectively Saylorville Lake land and water resources are being managed, how they wish to utilize the available lake resources, and what recreation improvements or developments should be considered for construction. This information will be vital in establishing the goals and objectives of the Revised Saylorville Lake Master Plan.

The purpose of the Master Plan is to present a comprehensive development program for achieving optimum utilization of the project land, forest, and water resources. The Master Plan will examine and evaluate existing and proposed recreation facilities, recreation potential, and present user demand. Details of the completed report will establish guidelines as to how Saylorville Lake resources should be conserved, enhanced, developed, and managed.

Workshop sessions will begin at 7 p.m. and consist of displays, formal presentations, and the active exchange of information. All interested persons are invited and urged to be present. This includes representatives of Federal and non-Federal agencies; business, civic, ecological, environmental, recreation, and fish and wildlife organizations; property owners; and other interests.



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

REPLY TO
ATTENTION OF:

NCREd-PB

10 March 1980

Dear Concerned Citizen:

Thank you for your interest in the US Army Corps of Engineers public workshop held in Des Moines, Iowa, on February 20, 1980. Our purpose in holding the workshop was to explain and gather public opinion on existing and anticipated recreation programs at Saylorville Lake. Further, through the workshop, we sought to secure possible guidelines for a Saylorville Lake Revised Recreation Plan.

As you may recall, if you were in attendance during the workshop, each participant was requested to aid in compiling a list of all their Saylorville Lake comments and suggestions and then vote for those issues of greatest concern to them. A result of that workshop voting is found in the attached supplement. It is important to note that while numerous concerns were expressed and listed for voting, many of these received no votes.

The information gathered at the workshop, with emphasis on those issues receiving votes, will be used in drafting the Revised Recreation Master Plan. This report will be produced in late 1980 and copies will be sent to local libraries and agencies. Approximately three weeks after the report is released, another public meeting will be scheduled. We will be sure to send you notification of that meeting.

We request your support in developing the Revised Recreation Master Plan. Please contact us if you have any question concerning the report.

Sincerely,

1 Incl
Supplement

DOYLE W. McCULLY, P.E.
Chief, Engineering Division



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

REPLY TO
ATTENTION OF:

NCREd-PB

24 April 1981

SEE REPORT DISTRIBUTION LIST

Inclosed for your review is the following:

Master Plan, Design Memorandum 6B, Saylorville Lake, Multi-Purpose
Project, Des Moines River Basin, Des Moines River, Iowa.

This document is being circulated for public and agency review. Please
review and return any comments within 30 days of the date of this letter.
Comments will be included in the final Master Plan.

Please send comments to the following address:

District Engineer
US Army Engineer District, Rock Island
ATTN: NCREd-PB-EA
Clock Tower Building
Rock Island, Illinois 61201

Sincerely,

1 Incl
As stated

DOYLE W. McCULLY, P.E.
Chief, Engineering Division



*Review
the Plans !!*

SAYLORVILLE LAKE REVISED MASTER PLAN FINAL PUBLIC MEETING

PURPOSE:

Saylorville Lake has been examined to determine how the project resources should be conserved, enhanced, developed, and managed in the public interest. The study has included an evaluation of existing and proposed recreation facilities, recreation potential, present and projected user demands, and the current master plan.

The purpose of the April meeting is to present the revised master plan recommendations. The master plan report contains recreational proposals including: land use zoning changes, future construction, and changes to existing facilities (for example, trail modifications).

ATTEND:

7:00 P.M.
APRIL 29, 1981
HOWARD JOHNSON'S MOTEL
921 SIXTH AVE.
DES MOINES, IOWA

**WHO IS
INVITED:**

All interested persons are invited and urged to be present. This includes representatives of Federal and non-Federal agencies; businesses; environmental, recreation, and fish and wildlife organizations; property owners; and other interests.

FOR MORE INFORMATION CONTACT:

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61201
309/788-6361, EXT. 6387

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
SAYLORVILLE VISITORS' CENTER
P.O. BOX 38
JOHNSTON, IOWA 50131
515/964-5480

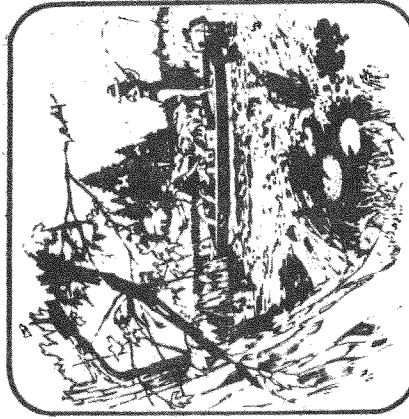


**US Army Corps
of Engineers**
Rock Island District

**SAYLORVILLE
REVISED MASTER
PLAN**

PUBLIC MEETING

April 29 7 p.m.



Howard Johnson's Motel
921 Sixth Ave.
Des Moines, Iowa



**US Army Corps
of Engineers**
Rock Island District

**DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, ROCK ISLAND
CORPS OF ENGINEERS
CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61201
OFFICIAL BUSINESS**

WHAT'S YOUR OPINION ?

Users of the Saylorville Lake project area have a special knowledge of the area's needs and public interests. Please use the space below to list your comments, criticisms, and suggestions on the revised master plan proposals. Make your opinion known!

NAME & ADDRESS (OPTIONAL)

Bring this sheet with you to the public meeting or mail it in prior to April 29, 1981. Comments may be sent to the following address:

US Army Engineer District, Rock Island
ATTN: ED-PB-BP
Clock Tower Building
Rock Island, Illinois 61201

April 29, 1981



United States
Department of
Agriculture

Soil
Conservation
Service

693 Federal Building
210 Walnut Street
Des Moines, Iowa 50309

Statement From the Rolling Hills Audubon Society - Indianola, Iowa:

As a frequent user of the Saylorville compound both as a naturalist and a power boater, I congratulate the Army Corps of Engineers on their fine project. Saylorville has become a wonderful recreation resource area and a wildlife haven, particularly for migrating birds. As I know that the recreationists are well represented, I will speak on behalf of the migrating waterfowl and waterbirds and make one proposal.

During the spring months of March, April and May, and the fall months of September, October and November, Saylorville plays host to large and varied populations of water dependant birds. These include our endangered national symbol, the bald eagle, many various species of ducks and geese, gulls and terns and the magnificent white pelican. These birds have often traveled many miles and Saylorville is a welcome refuge. Unfortunately, the high rate of power boat traffic on the whole of Saylorville permits these birds very little rest. Our proposal is a seasonal bird refuge within the confines of Saylorville lake.

The Audubon Society would like to propose the development of a waterfowl and waterbird sanctuary north of the One Mile Bridge during the three spring and three fall months I previously mentioned. This refuge should be free of power boats so as to afford the maximum protection and rest for the various species. This one regulation would leave open this area to the continued use by the majority of your constituents, the hikers, the sailors, the canoeists and yet still afford the necessary protection for the migratory birds.

Please keep us informed as to the feasibility of this proposal. We realize that certain problems may arise concerning the idea of a refuge, however, we feel that our proposal has the qualifications for careful consideration. Any help the Rolling Hills Audubon Society can offer, such as surveying avian resources or providing labor will be available.

Once again I would like to thank the Corps for being available for public comment. I would respectfully request a response to this proposal and I look forward to hearing from the Corps of Engineers.

Thank you,

Jim Sinclair
President of the Rolling Hills
Audubon Society
1003 W. 3rd #86
Indianola, Iowa 50125

May 7, 1981

District Engineer
US Army Engineer District, Rock Island
ATTN: NCRED-PB-EA
Clock Tower Building
Rock Island, Illinois 61201

Dear Sir:

We have reviewed the Master Plan, Design Memorandum 68, Saylorville Lake dated April, 1981.

We have no comments.

Sincerely,

William J. Brune
State Conservationist



The Soil Conservation Service
is an agency of the
Department of Agriculture

SCS-AS-1
10-79

May 11, 1981

US Army Corps of Engineers
Rock Island, Illinois

We wish to make the following additional comments about the revised Master Plan for Saylorville Lake.

If the Corps of Engineers determines that the boat traffic is too heavy on Saylorville Lake to negate the need for a second marina; a plan should be drawn that will let all boaters who want to use the lake equal access and water time. Just because one has their boat at the present marina, does not give them any water time rights over those who don't.

About Mr. Vernon Eden's comments that another marina be studied until he has 200 more slips, he could already have 200 slips but has not built them. He formerly was quoted in the Des Moines papers that he would not oppose a second marina but now he does. This is self serving at its finest. Also, at a meeting of the Saylorville Boaters' Association in the Spring of 1979, Mr. Eden made an impassioned speech about anyone wanting to have the water level of the lake raised was crazy. At the April 29, 1981 meeting with the Corps, he took you to task for not having the lake twice as large and 10' higher. I often wonder where Mr. Eden will light next.

Again, we want to remind you that there will be many people who will not take their boat to the lake on the busy week-ends when you will be conducting your surveys. These people will be on vacation, at other lakes that have a decent marina and some even will have to work. We believe you should allow those individuals who want to submit a written request to do so. I am enclosing one such letter now. To validate these letters, you can call the person who signs it and discuss what kind of marina they would like.

We continually hear that South Fork Marina at Lake Rathbun is in financial trouble. I would suggest that you move that marina to Saylorville Lake and I will personally guarantee both you and Gary Cowens that I will fill every slip he has as fast as he can get them in the water. Maybe Rathbun can't support two marinas, Saylorville can and will; even the type that Vern Eden operates. The only reason that Saylorville Marina would fail is very gross mismanagement and that is not the fault of the several hundred people who want a decent marina.

Max Allender

Max Allender, President
Saylorville Boaters' Association

IOWA AMERICAN SADDLEBRED ASSOCIATION

TO PROMOTE AMERICAN SADDLEBRED HORSES FOR ALL PURPOSES



page 2

May 14, 1981

PRESIDENT

Mrs. Darlene Dale
RR 2
Ames, IA 50010
Ph (515) 232-4638

VICE PRESIDENT

Larry Gager
RR 1
Hannock, IA 52130
Ph (319) 738-2633

SECRETARY-TREASURER

Ray Wampler Jones
1522 Olive Street
Cedar Falls, IA 50613
Ph (319) 265-3237

DIRECTORS

Miss Helen Larson
Box 473
Council Bluffs, IA 51501
Ph (712) 322-5167

Tom Conway
Mehard, IA 52552
Ph (712) 425-3216

John Hill
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Forest City, IA 52526
Ph (515) 262-3848

Ted Dahlstrom
RR 2
Goldfield, IA 50542
Ph (515) 625-2413

Marcus Patterson
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Potosi, IA 50276
Ph (515) 625-4271

Nobby Vancza
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Marion, IA 52958
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Sharon Gorman
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Ph (515) 748-2249

George Handrickson
206 Third St. SW
State Center, IA 52247
Ph (515) 463-2337

Paul Robinson
RR 1
Scottsbluff, IA 52553
Ph (515) 688-4775

Carl Wright
P.O. Box 847
Mason, IA 51455
Ph (320) 752-7525

Jan Simpson
RR 1
Galena, IA 50111
Ph (515) 688-4278

Elaine Stoffen
243 Locust Dr.
Cowan, IA 52832
Ph (319) 263-3388

Calby Hunter
RR 1
Trenton, IA 52761
Ph (319) 383-0091

Dr. Harry Winton
Fayette, Iowa 52742
Ph (312) 425-3576

US Army Engineer District, Rock Island
Attn. ED-PB-EA
Clock Tower Bldg.
Rock Island, Illinois 61201

Dear Sirs:

I attended the recent Public Meeting on the Revised Master Plan for the Saylorville Lake Project, and spoke for our association in favor of increased development of Horse Trails in the Park and public lands. They said we should send some statistics to this address to support our request.

We have 300 members in our association. We have 45 in our Trailriding club. We are scheduling 6 trailrides this year, with an expected group of 20 to 40 riders participating. However many of our members will use these proposed Horse Trails on a more regular basis in family or small group rides. This is in addition to our large scheduled rides. This is one phase of our association activities which we hope to build up to larger numbers of participants when there is Horse Trails are available closer to home. Many of our riders are from Central Iowa and at the present time, we are having to travel to Stephens Forest 40 miles South of Des Moines, or the Brushy Creek Park in Northern Iowa. Also the Conservation Department recently voted to build a dam in the Brushy Creek Park thereby closing a major share of available Horse Trails in this area.

We feel that the thousands of people who own horses and enjoy horseback riding are being sadly shortchanged in having a share in the recreational facilities being developed on public lands. We were confident that we were included in future plans for trail development and were extremely upset to find out that misinformed environmentalists were forcing their ideas on the rest of us. There is no reason that horse trails and wildlife can not exist together very comfortably, with no detriment to either. If picnic and parking areas are established in the more public area of the park, single file type horse trails can lead through the wilderness areas with no problem to the wildlife. As long as some dense timber areas are maintained for the wildlife to move into during daylight hours, horseback riders and hikers could use trails in the area. Wildlife in Iowa is not that timid.

I can speak with experience on that subject. One of the reasons we are building a new home this spring is that we have had a succession of wildlife who have invaded the crawl space under our house and porches. Skunks, raccoons, woodchucks and rabbits have lived with us very comfortably. The one I took objection to was the skunks. We trapped and killed 10 skunks on our farm. We are not even near the timber and live on a main highway. We had a cattle ranch near Brone and had deer, squirrels, and all other types of wildlife on

it. If you do not permit hunting, wildlife and humans live comfortably together. The conservation department does not want horse trails but they allow hunting seasons. Why is so many facilities being built for every other type sports? Boating, sailing, hiking, bicycling, hunting, swimming, snow-mobiling, birdwatching, Backpacking areas for Sierra Clubs, are all included. Horse lovers get a measly 6 miles of horse trails. It isn't even worth loading your horse in a trailer and going somewhere to ride 6 miles.

Horseback riding is one of the most rapidly growing sports in the nation. Horse owners pay out millions of dollars for hay, grain, & feed which supports the nations farmers who pay the major share of property taxes that support public lands. We deserve a share in these public recreational facilities. We intend to work for that goal. If we can help the Corp of Engineers to plan and work for establishing these horse trails in the Saylorville Lake public lands area, we will be most happy to do so. Please contact me if I can help in any way.

Since rely yours,

Darlene Dale

Mrs. Darlene Dale, President
Iowa Amer. Saddlebred Assoc.

8-1

MAY 21, 1981

COMMANDER
ROCK ISLAND DISTRICT
US ARMY CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS

RECENTLY I ATTENDED A MEETING IN DES MOINES CONCERNING THE SAYLORVILLE LAKE AREA. I WOULD LIKE TO OFFER THE FOLLOWING COMMENTS CONCERNING A NEED FOR A SECOND MARINA.

IN JUNE 1979 I DECIDED TO BUY A BOAT. MY WIFE WAS IN POOR HEALTH AND THE LAKE WOULD OFFER A GOOD FORM OF RECREATION. I TOOK ONE LOOK AT WHAT WAS CALLED A MARINA AND WAS SHOCKED.

I DID NOT CONSIDER THE LUMBER FLOATING IN THE WATER THAT WAS SUPPOSED TO BE DANGEROUS SAFE. I DID BUY A BOAT AND IT IS AT THE MARINA AT LAKE RED ROCK. I WOULD RATHER DRIVE TO RED ROCK THAN USE THE PRESENT MARINA AT SAYLORVILLE.

I PAY FOR YEAR ROUND STORAGE AT LAKE RED ROCK AND WOULD BE WILLING TO TO PAY FOR YEAR ROUND STORAGE AT LAKE SAYLORVILLE. THERE IS A NEED FOR A SECOND MARINA AT SAYLORVILLE, THE PRESENT ONE IS OPERATED IN A POOR MANNER AND CAN NOT MEET THE NEEDS OF THE BOATERS IN THE DES MOINES AREA.

I WOULD BE HAPPY TO DISCUSS THIS MATTER WITH A MEMBER OF THE CORPS.

Charles A Couch
CHARLES A COUCH
327 SE MILLER AVE
DES MOINES, IOWA 50315
PHONE: 515-244-9268

May 21, 1981

United States Army Engineering District, Rock Island
Clock Tower Building
Rock Island, Illinois 61201

Attention: ED-PB-BP

Gentlemen:

On April 29, a number of individuals representing the interest of "day sailors," presented oral testimony on Saylorville's Master Plan. That night, in order to save time, only a few specific individuals gave testimony. However, present were some 20 to 30 sailors who were willing speakers if necessary.

Before I get into my specific comments, I would like to make some general comments which you might want to share with the lake's management. I think I speak for many central Iowans when I say that it is a real privilege to have such a fine facility close at hand. The management has done an outstanding job in maintaining and monitoring the area. Roads, access areas, and camp grounds are in great shape. Most importantly the attitude of the employees has been pleasant and courteous.

Now specifically the Master Plan as presented at the public hearing in its present situation, with all of its congestion at Cherry Glen, presents a real hazard to boaters, both sail and motor boats. As you are aware, there has been only one serious accident in this area. Nonetheless, the potential for more accidents will increase as the number of boaters increase and this area becomes used more.

As was suggested, additional beach area might well ease this overcrowded situation.

There seems to be ample access but limited space to rig boats. Many of the "day sailors" need only a sandy beach area to accomplish their tasks. I am not suggesting that this area be used exclusively by sail boats. On the contrary, it could be used by all boat enthusiasts.

From tours of the area, I have noted ample space to the north of the current area. There is an old road running parallel to the shore line. Obviously, some work to prepare this area would have to be done. A crushed gravel parking lot would be nice as well as a crushed gravel road. Bathroom facilities should also be considered when designing this area. Many of the boaters would be willing to work under the supervision of the Corps in developing this area. It's a free resource at the time when the federal government is cutting back many of its funds for projects like these.

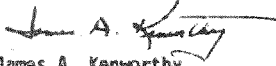
May 21, 1981
United States Army Engineering District, Rock Island
Page two

I urge you to consider these recommendations. We are pleased to have Saylorville available and would like to see it remain a place for boaters.

I, like many of my fellow boaters, would like a response to these issues we have raised; a reply responding to our requests would be greatly appreciated.

Thank you for your time and consideration.

Sincerely,


James A. Kenworthy
2901 Sampson
Des Moines, Iowa 50313

bp

cc: Representative Neal Smith
Senator Charles E. Grassley
Senator Roger W. Jepsen

01-1

May 22, 1981

U.S. ARMY ENGINEER DISTRICT, ROCK ISLAND
Clock Tower Building
Rock Island, IL 61201

Attn: ED - PB - BP

Dear Sirs:

Re: Saylorville Revised
Master Plan.

During the summer of 1980, Rudy Roe and one of his crew members were seriously injured in a boating accident in Windy Harbor at Saylorville Lake. As Rudy skippered his catamaran sailboard towards the sandy shore inside the harbor, a power boat which had just launched turned abruptly toward the lake while accelerating and ran head on into the sailboat. Both boats were found at fault in the accident report.

In an effort to minimize the potential for traffic conflicts between trailerable power boats and trailerable sailboats at Saylorville Lake, we propose that additional facilities be constructed at Public Recreation Area #1 to allow smaller sailboats access to a sandy shore area directly south of the breakwater fill area.

A small sailboat skipper carries only one (1) or two (2) crew members per trip; therefore, many trips to the shore are needed during the day to rest weary bodies and pick up a different crew. At present the sandy shore inside the harbor is ideal for beaching catamaran sailboats and monohull sailboats with kick-up centerboards and rudders. Unfortunately, the sandy shore is ideal for small power boats for the same reasons and at times there is not enough room on the sand for all of the boats.

We would be more than happy to move our sailboats around the breakwater fill area to another sandy shore area and give Windy Harbor back to the power boats. This "PROPOSED AREA #1" as shown on the attached plan should include the following (in priority order):

1. Rock or dirt parking lot with access drive to minimize walking distance. (Many beach and picnic supplies cannot be carried on boats).

2. Courtesy dock for daggerboard and fixed-rudder monohulls (can't beach these).
3. Portable rest room facilities.
4. Rock or dirt drive with turn-around for light-weight sailboat launching (crushed rock surface essential at water's edge for traction, but sloped concrete ramp not needed).

"PROPOSED AREA #2" as shown on the attached plan is simply an alternate site for these separate sailboat facilities located further south of the breakwater fill area.

As you notice, the minimal launching facility has our lowest priority. The existing launch ramps at Windy Harbor are excellent and we will continue to use them, if need be, and simply sail around the breakwater fill area to our sandy shore area.

Our top priority is the parking lot close to this area. Beach and picnic supplies cannot be easily transported on a small sailboat and the walk from the existing parking lot to this new area with these supplies in hand would prove to be overbearing for many people.

Daggerboard and fixed rudder sailboats cannot beach easily. They need to remove their awkwardly heavy daggerboard as well as remove their rudder pins from the tracks on the boat so that nothing sticks in the lake bottom as they approach the shore. This is very difficult to do while trying to maintain control of the boat. Thus, a courtesy dock with tie-up cleats for at least ten boats is our second priority.

Portable rest room facilities are self-explanatory as our third priority.

Please listen to our concerned voices and include these facilities in the Master Plan for Saylorville Lake. If you have any questions and would like to call me during working hours, my telephone number is (515) 283-4045.

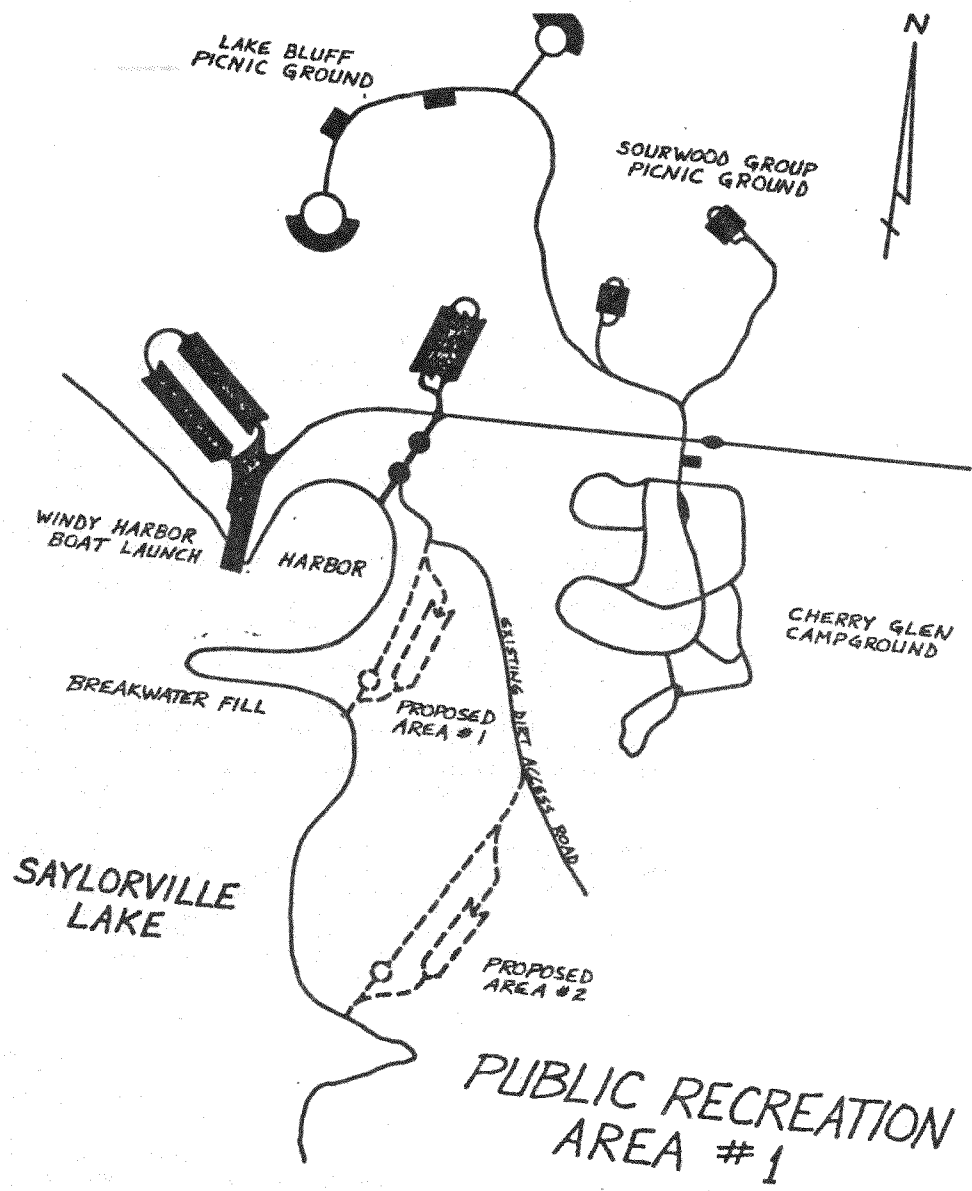
Sincerely,



Ross H. Stafford, P.E.
for Hobie Fleet #84
Central Iowa Sailing Association
& Ames-Big Creek Sailing Society

RS/bjc

1-1-1



1-12

PUBLIC RECREATION
AREA #1

May 22, 1981
61271 Harwood Drive
De Morgan, Iowa 50318

U. S. Army Engineer District, Peck Island
Attn. ED-PB-EA
Clock Tower Building
Peck Island, Illinois 61201

Dear Sir:

I am writing to you in regard to your decision for the master plan of the government area surrounding Taylorville, Peck and the De Morgan River. I am a member of the Iowa American Saddlebred Association, a group of individuals who own Saddlebred horses, a large number of which participate in monthly trail rides. As such we are vitally interested in areas in which to have these trail rides, particularly here in Central Iowa, where so many of us live. I hope that you very seriously consider developing trails in the 26,000 acre tract. The presently considered six miles of trails is hardly adequate.

We have approximately forty riders in our group right now and the number is growing. Horseback riding is one of the fastest growing avocations in the country and we

feel facilities, primarily in the form of dirt trails which is a relatively low cost item, should be developed to fulfill this need.

Thank you for your attention to this matter.

Sincerely,
Bill E. Hood

TO: The Corps of Engineer
FROM: Central Iowa Sierra Club
SUB: Primitive Camping areas - Saylorville lake

In response to your request for a written statement regarding the Central Iowa Sierra Club proposal for the establishment of primitive camping areas to serve back packers in the Saylorville Lake facility, we respectfully submit the following:

1. That these areas be at least $\frac{1}{2}$ mile from an entry point and at least 300 yards off the main trail.
2. That fire rings be established in the designated area to identify specifically where fires are to be built. The number of fire rings being determined by the extent of the identified area, and should not be so close together as to deny privacy to the various camping units.
3. That a toilet, either pit or chemical, be constructed and provided at each identified camping area.
4. That the camping area be located so that no clearing of brush would be needed.

Also the Central Iowa Sierra Club volunteers to provide the labor under the direction of the Corps to Construct these camps and would be willing to work under the Corps to maintain them.

We have also indentified an area for such a camp and would like to show it to the Corps and would promote its immediate use.

Thank you,

Peter Marts - Outings Chairman

Peter Marts

Jack Borg - Conservation Chairman

Jack Borg

We also would like to continue working with the Corp on the construction of the hiking trail around the lake.

IOWA STATE HISTORICAL DEPARTMENT
DIVISION OF HISTORIC PRESERVATION

ADRIAN D. ANDERSON, DIRECTOR
STATE HISTORIC PRESERVATION OFFICER

May 28, 1981

Mr. Doyle W. McCully, Chief
Engineering Division
US Army Corps of Engineers
Clock Tower Building
Rock Island, Illinois 61201

Re: NCRED-PB; Master Plan, Design Memorandum 68, Saylorville Lake, Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa

Dear Mr. McCully:

The opportunity to review and comment on the above referenced document is greatly appreciated. Our several comments are enumerated below.

1. pages 2-5. Reference to the Archeological Resources Protection Act of 1979 would be appropriate to include under the section entitled "Application of Public Laws". The National Historic Preservation Act of 1966 as amended, particularly the 1980 amendments, should also be referenced in this section. Similarly the American Indian Religious Freedom Act applies to the actions of the Corps of Engineers at the project area.
2. page 5. I believe that since the Master Plan time frame is from now to the year AD 2000 it is very safe to assume that shoreline erosion alone will impact numerous presently unknown archaeological sites. The scope of the intent of managing cultural resources in the project area should be integrated thoroughly in the text of the Master Plan.
3. page 24, paragraph 2, line 3. "Archaeological" should read Archeological.
4. page 25, paragraph 2, line 8. "remining" should read remaining. paragraph 3, line 4. delete rest of sentence after "i.e. "Inconclusive analysis".
5. page 26, paragraph 2, lines 3-4. delete "David Benn and Arthur Bettis" and insert Luther College, under the direction of David Benn. paragraph 4, line 2. after "project area, few are" insert known to be. paragraph 4. In our opinion the last six lines should be in section V of the Master Plan.

D. McCully, May 28, 1980

page 2

6. page 28, paragraph 1. Use or development of the Saylorville 5 Mound Group should take into account the American Indian Religious Freedom Act. Also, provision should be included to recognize that cultural site development may include additional sites about which the decisions must await further information gathering, assessment, and consultation.
7. pages 41-42. The first paragraph of section 5.06 is completely inaccurate. The Saylorville Lake project area has been determined eligible for listing in the National Register of Historic Places. Nothing in the project area has been nominated to the NHRP. The remaining paragraphs of this section are inaccurate, or supplement or compliment the previous resource descriptions. "Loganport", on the last line of page 41 should read Logansport. "Great Oasis" and "middle woodland", in the first line on page 42 should be capitalized. The purpose or intent of the last sentence in the first paragraph, is not clear. The last sentence of the third paragraph on page 42 should be rephrased; it may not be appropriate nor desirable to "display" the burial mounds and in addition to other applicable laws and regulations the American Indian Religious Freedom Act should be considered in this regard.
The content of Section 5.06 seems of dubious value in elucidating factors which influence or constrain resource development. This section needs considerable expansion since cultural resources seem to be put in the context of being constraints. This, of course, is the opposite of the intent of the Master Plan.
8. page 57, paragraph 1, last line. Archaeology has not been accorded departmental or agency status at ISU and the language should be changed accordingly. I do not recall that this Master Plan has been coordinated with ISU archaeologists at all (see also page 59).
The Division of Historic Preservation has not been included on the list of coordinating agencies (pages 57 and 58). To not have included the Division is accurate since with the exception of a workshop flyer the Master Plan has not been coordinated at all with the Division.
9. page 70. In addition to the third version of a spelling for "Logan Port Site", it is a complete surprise that these sites have been allocated for preservation, particularly that historical and cultural sites are allocated under natural area operations. I think this section needs extensive revision.
10. pages 108-109. I was unaware that most of the decisions alluded to in this section have been made. We are aware that some of the concerns have been discussed between our respective agencies. The section needs to be rewritten.

D. McCully, May 28, 1981

page 3

In closing I want to make two general comments. First, there should be a section entitled "Cultural Resource Management" and this section should treat cultural heritage resources to the same level of detail and importance as is accorded fish and wildlife, forest management, recreation, and other important areas of project management. I realize fully that the incomplete mitigation of project effects on cultural heritage resources precludes full treatment of such resources in many specific instances at this time. An interim plan is appropriate, expected, and very necessary if the Master Plan is to "present a comprehensive program of development in order to achieve optimum utilization in the public interest of the land, forest, and water resources."

Secondly, in as much as this is the intent of the Master Plan, the document and the actions which it proposes, is subject to the provisions of section 106 of the National Historic Preservation Act as amended and should be coordinated with the Advisory Council on Historic Preservation.

The Division looks forward with anticipation to the consultation necessary to improve the draft Master Plan.

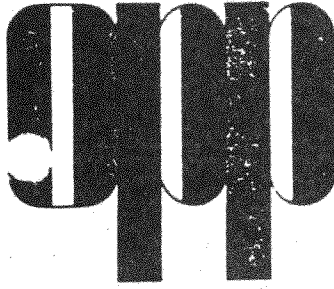
Sincerely,

R. Stanley Ruppel / Deputy SAAS, for

Adrian D. Anderson, Director
State Historic Preservation Officer

cc: Roy Eichhorn, Corps of Engineers
Sharon Conway, Advisory Council on Historic Preservation

1-16



STATE OF IOWA

Office for Planning and Programming

523 East 12th Street, Des Moines, Iowa 50319 Telephone 515/281-3711

ROBERT D. RAY
Governor.

ROBERT F. TYSON
Director

STATE CLEARINGHOUSE

PROJECT NOTIFICATION AND REVIEW SIGNOFF

State Application Identifier: 811274 Date Assigned: April 27, 1981

Review Completed: May 28, 1981

APPLICANT PROJECT TITLE:

Master Plan, Design Memorandum 6B Saylorville Lake

<u>APPLICANT AGENCY:</u>	Department of the Army	Rock Island, Illinois 61201
<u>Address</u>	Rock Island District Corps of Engineers Clock Tower Building	Doyle W. McCully, P.E.

<u>FEDERAL PROGRAM TITLE, AGENCY AND CATALOG NUMBER:</u>	Department of Defense Department of the Army Office of the Chief of Engineers
--	---

AMOUNT OF FUNDS REQUESTED: NA

PROJECT DESCRIPTION:

Master Plan, Design Memorandum 6B for Saylorville Lake Multi-Purpose Project, Des Moines River Basin.

The State Clearinghouse makes the following disposition concerning this application:

- No Comment Necessary. The application must be submitted as received by the Clearinghouse with this form attached as evidence that the required review has been performed.
- Comments are Attached. The application must be submitted with this form plus the attached comments as evidence that the required review has been performed.

STATE CLEARINGHOUSE COMMENTS:

A. Thomas Wallace, Jr.
 Federal Funds Coordinator



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

REPLY TO
ATTENTION CR

NCRED-PB

29 May 1981

NCRED-PB

29 May 1981

Camping and Hiking

There should be additional development of wilderness camping areas, backpacking trails, and cross country ski trails. The Sierra Club volunteered labor for establishing wilderness camping areas. A combination bird sanctuary and non-motorized canoe area should be designated. Some backpackers opposed the use of trails by both hikers and horses.

Horse Trails

Horse owners felt the increased interest in horseback riding as a family activity warranted more than a 6-mile horse trail and said their use of all-purpose trails would not be in conflict with wildlife concerns.

Miscellaneous

- * Statements were made both for and against further development of motorized vehicle trails.
- * Prairie areas should be restored.
- * Preserve historic sites and provide directive signs to those sites.
- * The proposed beach site is too close to the existing beach; young people may feel prompted to try swimming from one beach to the other.
- * Ban the use of firearms and try designating the entire project area as a game reserve.
- * The National Audubon Society offered their assistance in establishing bird watching trails and blinds.
- * The feasibility of Saylorville Dam hydropower generation should be studied. (Note: Such a study is currently underway.)
- * Public phones should be located near boat launch areas.
- * The new beach site should be located across the lake from the existing beach in order to alleviate traffic congestion.

For those who did not complete a comment sheet at the meeting, you are encouraged to send us your suggestions or criticisms on Saylorville Lake development and management. A comment sheet is inclosed and may be submitted no later than June 12, 1981, to:

District Engineer
US Army Engineer District, Rock Island
ATTN: NCRED-PB-BF
Clock Tower Building
Rock Island, Illinois 61201

Thank you for your participation in the April meeting and for your interest in Saylorville Lake.

Sincerely,

DOYLE W. McCULLY, P.E.
Chief, Engineering Division

1 Incl
Comment Sheet

Dear Meeting Attendees,

As you will recall, on April 29, 1981, the Rock Island District, Corps of Engineers, held a public meeting at the Howard Johnson's Motel, Des Moines, Iowa. The purpose of the meeting was to gather public input on the draft Revised Master Plan for Saylorville Lake. This Master Plan establishes guidelines for the effective utilization of the lake and its resources.

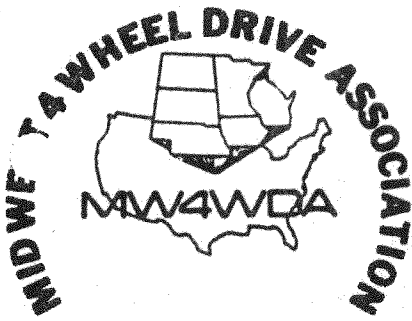
One hundred and twenty members of the public attended the meeting to represent state, local, business, private, and environmental interests.

Corps representatives opened the meeting by outlining anticipated development and management changes. Master Plan proposals include construction of 25 miles of bicycle trails, creating approximately 13 miles of such trails in the corridor. Hiking trails will be added along the lake's east shore from Big Creek to Highway 17, forming a hiking trail system which will loop the entire reservoir area. Motorized vehicle trails have been considered but will not be developed at this time because of the soil erosion problems associated with such trails, competition with wildlife interests and goals, and local residents' complaints that motorized vehicles generate objectionable noises. The site of a possible second marina would be adjacent to the existing Lakeview Boat Launch. Lake administrative offices have been relocated from the lake's east side to the west side. This will permit the addition of a theater to the Visitors Center and an enlargement of the facility's public use space.

Following the Corps' presentation, a question-and-answer session allowed meeting attendees to verbally express their suggestions and criticisms. Comments were predominately within the fields of boating, camping and hiking, and horse trails. A summary of the comments is given in the following paragraphs:

Boating

Comments made by boatowners included: facilities at the present marina should be expanded, particularly slip space and buoys; additional courtesy docks are needed, and launch sites and beachable areas for both sail and power boats should be provided.



June 3, 1981

District Engineer
US Army Engineer District, Rock Island
ATTN: NCRED - PB - BP
Clock Tower Building
Rock Island, Illinois 61201

Dear Sirs,

After reading your summary letter sent to our Mid West 4 Wheel Drive Association Iowa State Director concerning the Sayorville Revised Master Plan for 1981, I was very disappointed to see the lack of recognition for ORV's.

Our club, Central Iowa Four Wheelers, consists of 32 ORV drivers, not to mention the 30 children who enjoy camping and being in the great outdoors. Our members live in: Waterloo, Cedar Falls, La Porte City, New Hampton, Dumont, Hampton, Clarion and Latimer.

We would like to see the Old Bridge Area at Sayorville set aside for ORV recreation use. To control such activities, it would be feasible to have certain regulations for guidelines. For example: a club or group would contact you for a date and time that they would like to use the area, let you know how many vehicles would be involved and be responsible for land use damage.

As an organized club, we belong to Mid West 4 Wheel Drive Association which represents 6 states. And in turn, we also belong to United 4 Wheel Drive Association which represents 4 - Wheel Associations from coast to coast. Thru the Midwest, we carry a half million dollars worth of liability coverage for an Organized Club Event. Enclosed are 2 pamphlets listing guidelines for land use safety and environment protection.

If you need assistance in setting up such an area, please contact our club. We want to cooperate with you.

Sincerely,

Diane Schaack

Diane Schaack
Club President, Central Iowa Four Wheelers
2807 Randolph
Waterloo, Ia. 50702

Dear Mr. McCully.

In my letter there was no comment about so I am writing to correct. I thought it was a very interesting meeting.

In reading through the letter so things showed up I didn't remember. The bonny of firearms is the one I dislike the most. I am a duck hunter and the bonny of hunting on the lake and the upper end areas doesn't make sense. Nobody is using the lake for anything but hunting. Maybe a firearms one in a while.

I don't know if this applies to you or not but here it is.

Could the lake trail be extended ^{to} from Saylerville to the Dam at Red Rock? It would make a nice weekend ride. If speaking of Red Rock can the water level be raised during duck season. I am thinking of 5 or 6 feet to compensate for the silt west of Highway 14 bridge? Thank you for your time.

Sincerely yours

Chuck Long
1510 30th
Des Moines, Iowa
50311



Iowa Director
Donald Hurst
618 West 1st, Cedar Falls, Iowa 50619
319-266-6856

June 5, 1981

Gentlemen:

Responding to your letter pertaining to Saylorville Lake Area Public Meeting/
Under Miscellaneous:

"Statements were made both for and against development of Motorized Vehicle
Trails." Nothing was mentioned that we represented: UNITED FOUR WHEEL
DRIVE ASSOCIATION. As IOWA DIRECTOR of the Midwest Four Wheel Drive Association
we represent thousands of people in Iowa not to mention Nationally.

We like to be recognized as an responsible Organization like (Sierra Club,
Audobon Society, Horseback Riders,)

Four Wheelers Are more of a family Organization than the above groups.
We take our children out on the trails to see Nature at it's best. We Camp
Swim, and Hike together. In a four wheeler four or more people can be seated
not just one. We are together as a FAMILY! WE resent the fact that we the
FOUR WHEELERS are being past over.

In your letter it stated a Comment Sheet was inclosed, to be submitted
not later than June 12, 1981. Well! We didn't get one so this is our Comment
Sheet or Reply.

We like to have the "Old Bridge Area" set aside for ORV. If any assistance
is needed please contact us, we have Clubs more than willing to help.

Sincerely,
Donald A. Hurst
DONALD A. HURST
IOWA DIRECTOR
MIDWEST FOUR WHEEL DRIVE ASSOCIATION

RESPONSIBLE USE OF PUBLIC LANDS THROUGH
CONSERVATION* EDUCATION* SAFETY



Central Iowa Sailing Association

Commodore Sue Ann Hillman
2316 Woodland
West Des Moines, Iowa 50265

June 5, 1981

U. S. Army Corps of Engineers
Engineer District, Attn: ED-PB-8P
Clock Tower Building
Rock Island, Illinois 61201

Dear Sirs:

On behalf of the Board of Directors and members of the Central Iowa
Sailing Association, we thank you for the opportunity provided Central
Iowa residents to attend the open meeting regarding development of the
Saylorville Lake Recreation Area.

We represent small non-motorized boat owners and respectfully request
consideration of the following facilities:

1. One launching ramp near the south end of the lake designated for
sailboats only.
2. A floating dock near that ramp where daysailors or non-motorized
boats can tie up for short periods of time to rig, rest, and
provide access to the shoreline once a sailboat is launched.
3. Addition of a second marina in the area of the Lakeview Boat Launch.
4. Additional floating docks placed in major bays of the lake.
5. Facilities at the marina should include floating storage in open
slips, similar to that at Lake Redrock, to raise sailboats out of
the water for storage - and fenced in dry storage so that sailboats
may be stored rigged.

We feel these requests represent essential facilities for safe and
pleasurable use of Saylorville Lake by small non-motorized boat owners.

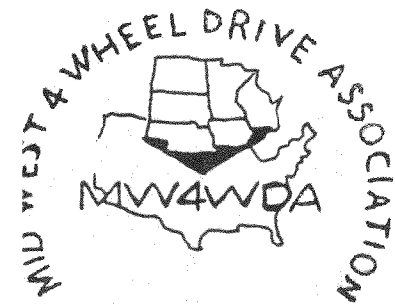
Thank you.

Sincerely,

Sue Ann Hillman

Sue Ann Hillman, Commodore
Central Iowa Sailing Association

SAH:mb



SPORTSMANS 4x4 CLUB, INC.
700 W Ridgeway #736
Waterloo, IA 50701



Dear Sirs:

In answer to your revised master plan proposals for Saylorville Lake Project.

A ORV area is needed at Saylorville Lake. ORV's have few places to go where it is legal in the state of Iowa, since the State Conservation Commission provides no such areas.

If an ORV area is not put in there will be only more illegal use of land by many ORV's. An area for ORV's would mean less trouble, and a beginning to the cure.

We are starting to work with Coralville on there ORV area. I hope we can do the same at Saylorville, and prove how responsible we are.

Thank You
James Chapman
Past President
Sportsmans 4x4 Club
Iowa Committee, land use

Julie Bailey, Secretary
Iowa Horse Industry Council
R.R. 1
Redfield, Iowa 50233

Page 2

May 7, 1981

Saylorville Project
Department of the Army
Rock Island District, Corps of Engineers
Clock Tower Building
Rock Island, IL 61201

Dear Sirs:

The Iowa Horse Industry Council (IHIC) was formed in 1978 and was organized to promote, protect and represent the horse industry in Iowa. The council's primary concern is to act as an "umbrella" organization for the many different activity groups which comprise Iowa's horse industry.

Trail riding is one of the most popular activity groups. It continues to gain in popularity and as it does the IHIC feels it imperative to work on trail development, maintenance and expansion.

Your agency is proposing the elimination of nine miles of horse trails in the Saylorville area, which according to the open public meeting held April 29 in Des Moines, would leave only 6 miles of horse trails. This is a severe blow to the horse people who are interested in taking advantage of the recreational possibilities at Saylorville. Six miles of horse trails could be covered in 1-2 hours by most riders. Very few horsemen would take the time or buy the gas to come to the Saylorville area to ride for only 1-2 hours. Most all-day trail rides are 20-25 miles. The IHIC would like to see at least 25 miles of trails to permit families or groups to come and spend a full day or camp-out and spend the entire weekend.

Recently, the IHIC has been forwarded letters by the Iowa Development Commission and the Iowa Department of Agriculture from people who wish to vacation in Iowa with their horses, but who have no knowledge of places to ride. Currently, the Iowa Conservation Commission lists 14 trail ride areas in Iowa. Most of these areas have limited acreage devoted to horse trails, and at the same time, riding on private lands has been sharply curtailed due to increased transformation of pasture land into crop land. With the horse industry enjoying the tremendous growth that it is, the IHIC feels it vitally important to see public horse trails expanding at a comparable rate.

We appreciate your agency allowing us the opportunity to express our concerns and we sincerely hope we can meet with you to further discuss

this matter. Would it be possible to arrange a one-on-one meeting? Please let us know at your earliest convenience. Thank you.

Sincerely,

Julie Bailey

Julie Bailey, Secretary
Iowa Horse Industry Council

JB

1-23

MEMORANDUM

June 9, 1981

TO: District Engineer, U.S. Army Engineer District

FR: Julie Bailey, Secretary
Iowa Horse Industry Council

Enclosed you will find a copy of a letter dated May 7, 1981 in which the IHIC expressed its concerns to you regarding Saylorville area horse trails.

I received a form letter last week asking me to make suggestions on a comment sheet no later than June 12. There was no comment sheet enclosed and since I have not received a reply to my May 7 letter, I am forwarding a copy of that letter in place of the comment sheet.

Please respond at your earliest convenience. Thank you.

1-24

COMMISSIONERS
CAROLYN T. WOLTER, Chairman — Des Moines
RICHARD W. KEMLER, Vice Chairman — Marshalltown
JOHN C. FIELD — Harcourt
BAXTER FROESE — Malvern
DONALD E. RAUJOSEN — Eagle Grove
MARIAN PIKE — Winterset
RICHARD THORNTON — Des Moines



Larry J. Wilson — Director
Wallace State Office Building, Des Moines, Iowa 50319
515/281-5145

An EQUAL OPPORTUNITY Agency

June 10, 1981

Joseph F. Manzi, Jr., LTC.
Acting District Engineer
U.S. Army Engineer District
Attention NCRED-PB-EA
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Manzi:

Reference to our May 14, 1981, letter, our Wildlife Section expressed some concern over the location of equestrian trails proposed in the draft master plan on lands now under license to this agency. As a result of this letter, a meeting on June 5 between personnel from the Corps of Engineers and staff of our Wildlife Section was arranged.

As a follow-up to this meeting, we would like to express the proposals that were discussed. Enclosed you will find two maps which have been marked with our recommendations for future equestrian trail development. The trail marked in red was a proposed development that we recommend to be deleted. The yellow line is a trail that we proposed that would be acceptable to our Wildlife Section for equestrian trail development. The total distance of this trail would be approximately 11.25 miles, compared to approximately 4 miles for the trail marked in red. Also, the topography along the red route is not suited for good trail development.

We would like to thank you for your prompt attention to this matter and hope that these recommendations will be of value to you in the preparation of the final master plan.

Sincerely


LARRY J. WILSON, DIRECTOR
IOWA CONSERVATION COMMISSION

LJW:DN:rt

Enclosures

cc: Gary Swanson
Ken Varland
Wildlife Section



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

REPLY TO
ATTENTION OF:

September 30, 1983

Planning Division
Flood Plain Management/
Special Studies Branch

Mr. Larry Wilson
Director
Iowa Conservation Commission
Wallace State Office Building
Des Moines, Iowa 50319

Dear Mr. Wilson:

The U.S. Army Corps of Engineers, Rock Island District, is currently updating the Master Plan for Saylorville Lake. The lake is located 11 miles northwest of Des Moines, Iowa (see plate 1). This letter is intended to serve as a coordination letter in compliance with the Fish and Wildlife Coordination Act and Section 7 of the Endangered Species Act.

The purpose of the revised Master Plan will be to provide a comprehensive guide to the sensitive, wise, and orderly use, development, and management of the natural and manmade resources of the Saylorville Lake project over the next 5 years. Evaluation is focused on project lands and their scenic, cultural, recreational, fish and wildlife, and other natural and manmade resource values. The management recommendations and proposed improvements relative to public use and natural resources management are formulated to be in harmony with primary project purposes. The implementation of this plan will be primarily the responsibility of the park manager.

The existing and projected public use of the recreational facilities at the project warrants the construction of additional recreation facilities and the upgrading of existing recreation areas. The overcrowding of existing recreation facilities leads to the deterioration of the natural and manmade resources within the existing recreation areas. Plate 2 shows the location of each proposed recreation area in relation to the overall project. The proposed facilities include the Prairie Flower Group Campground (plate 3), Sandpiper Beach and Boat Launch (plate 4), a second marina (plates 3 and 5), trails (plate 6), a large amphitheatre, outdoor skills area, and a combination archery and skeet range (plate 2).

-2-

The Prairie Flower Group Campground and the Sandpiper Beach and Boat Launch area would require the participation of a non-Federal government entity on a 50/50 cost-sharing basis for construction. The Prairie Flower Group Campground (approximately 75 acres) would be located in an open upland area bordered to the west, south, and north by trees (see photo 1). The soils within the proposed area are loams with a 1 to 9 percent slope. The vegetation in the open area consists of grasses and forbs, and the adjacent upland forests are dominated by oak (*Quercus* sp.) and hickory (*Carya* sp.) trees.

The Sandpiper Beach and Boat Launch areas will be located at the southwest end of a peninsula along the east shoreline of the reservoir (see photo 2). The soils within the proposed areas are loams with a 1 to 5 percent slope and sandy loams with a 5 to 9 percent slope. The area northwest of the proposed sites contains a Lester-Colo complex soil with a 9 to 20 percent slope. The vegetation within both areas is grasses and forbs in various early stages of succession. This is the result of periodic inundation due to fluctuating reservoir pool levels. Plate 4 displays a proposed peninsula that would be constructed between the beach and boat launch area. The proposed peninsula would be approximately 750 feet long and an average of 100 feet in width. The construction of the peninsula would require 12,000 cubic yards of impervious material, 850 tons of riprap, and a layer of topsoil. The substratum within the peninsula area is sand. A Section 404(b)(1) Evaluation is being prepared to address the impacts of the peninsula construction, in addition to an Environmental Assessment which addresses all of the proposed recreation areas.

The second marina, amphitheatre, outdoor skills area, and the combination archery and skeet range would require 100 percent funding by a non-Federal government entity in order to be established. As a result, no specific site plans (plate 2) have been developed for these proposed recreation facilities.

Two sites have been designated for the development of a second marina. A final decision on which site would be developed would be determined by the entity funding the development and management of the facility. The first proposed site is to the northwest of the Prairie Flower Campground (plate 3). The second site is southeast of the Lakeview Boat Launch (plate 5). The proposed Prairie Flower site is in an open upland area that includes a portion of a sloping transition zone to the shoreline. The soils in the upland area are loams with a 2 to 9 percent slope, and the soil in the transition zone is a Lester-Colo complex on a slope of 9 to 40 percent. The sloping area is forested with upland species of predominately oak and hickory trees. Various grasses and forbs are found in the upland area in addition to mowed lawns. The Lakeview site is in an open transition zone bordered by mixed stands of upland hardwood with bottom land tree species southeast of the area. The soils of the

proposed site are loams with a 1 to 14 percent slope. The area is vegetated with mowed lawns as well as grasses and forbs in various early stages of succession. Bottom land tree species adjacent to the area consists of immature silver maple (Acer saccharinum), Chinese elm (Ulmus chinensis), and box elder (Acer negundo) (see photo 3).

The location of the proposed amphitheatre is shown on plate 2. The area is an open transition zone with a ground cover of grasses and forbs. The adjacent upland area is forested with upland species dominated by oak and hickory trees. The upland soils are loams on a slope of 2 to 9 percent, and the open transition area contains clay and Lester-Colo complex soils on a slope of 14 to 40 percent.

Plate 2 displays the proposed location of the outdoor skills area. The site is in an upland open area with a slope of 1 to 9 percent. The area is bordered on the north, east, and south by forested ravines with slopes of 14 to 40 percent. The soils in the upland area are loams and a Lester-Colo complex in the ravine areas. The dominant tree species within the forested ravine area are oaks and hickories with an understory of gray dogwood, locust, cherry, elm, and suppressed oak and hickory trees. The open area is vegetated with grasses and forbs.

The site for the proposed combination archery and skeet range is located adjacent to the existing Big Creek Shoot Area (west of Big Creek Lake) (see plate 2). The site is a flat, open upland area vegetated with grasses and forbs. The soils within the area are loams.

The non-Federal government entities or private individuals who would fund the development and management of the second marina, amphitheatre, outdoor skills area, and the combination archery and skeet range would be responsible for developing site plans for the facilities. These plans would be approved by the U.S. Army Corps of Engineers, Rock Island District, and coordinated with Federal, State, and county government entities for compliance with Government laws before the facility(s) are constructed. If a developer would propose a stationary break-water for the second marina, the requirements of Sections 401 and 404 of the Clean Water Act would be met.

The proposed trails will be established and maintained by the US Army Corps of Engineers (see plate 6). The proposed trails will be carefully located in order to keep the removal of trees and vegetation to a minimum and to avoid erosion. The trails will be wood chipped (the bicycle trail will be paved) and drainage bars and vegetation will be used to avoid compaction and erosion.

The Master Plan also proposes the periodic maintenance and upgrading of various facilities within the existing recreation

areas. The maintenance proposals include rehabilitating campground spurs with gravel and railroad ties, general trail maintenance (wood chips, drainage bars), landscape plantings, landscape maintenance (e.g. mowing, pruning, aerating), and grading, sloping, and seeding to control erosion. The upgrading will include the construction of a sanitary dump station in the Bob Shetler Class A Campground, a handicapped access trail, amphitheatres in the Acorn Valley and Prairie Flower Campgrounds, a picnic shelter and 15-car parking lot in the Cottonwood Picnic Ground, a comfort station in the Walnut Ridge Picnic Ground, a shower building in the Bob Shetler Class B Campground, courtesy docks in the Lakeview and Cherry Glen boat launch areas, erosion control earthwork in the Lakeview and Walnut Ridge Areas, and the replacement of a tile drainage field for an existing comfort station in the Cottonwood Picnic Ground. All of the construction proposals except the handicapped access trail would be established in open, mowed lawn areas of the existing recreation areas. No trees would be removed for the handicapped access trail.

Two federally listed endangered species occasionally occur in the reservoir area: the bald eagle (Haliaeetus leucocephalus) and the peregrine falcon (Falco peregrinus). Bald eagles occur in the reservoir area primarily during the winter months while peregrine falcons are more likely to occur there during the spring and fall migration seasons. The eagles use trees adjacent to the reservoir and outlet structure for perching and open water areas in the winter months for feeding. Perching trees adjacent to the reservoir and outlet structures as well as winter open water areas would not be disturbed by the proposed recreation facilities. There are no recorded sightings of the falcon within the project area but there have been recorded sightings within the region. The project contains a small amount of habitat which would be favorable to the falcon during the migration seasons. This habitat consists of nonforested open areas adjacent to the former river valley. This habitat would not be impacted by the proposed recreation areas and is not utilized for recreation purposes from mid-fall to late spring. Therefore, no significant impact to any federally listed endangered species is anticipated.

We would appreciate any comments you would care to make concerning endangered species in the area or the proposed and upgraded recreation facilities. If comments are not received

within 15 days, it will be assumed that no comments are forthcoming. If you have any questions, please contact Mr. Timothy Toplisek of our Flood Plain Management/Special Studies Branch at 309/788-6361, ext. 6386.

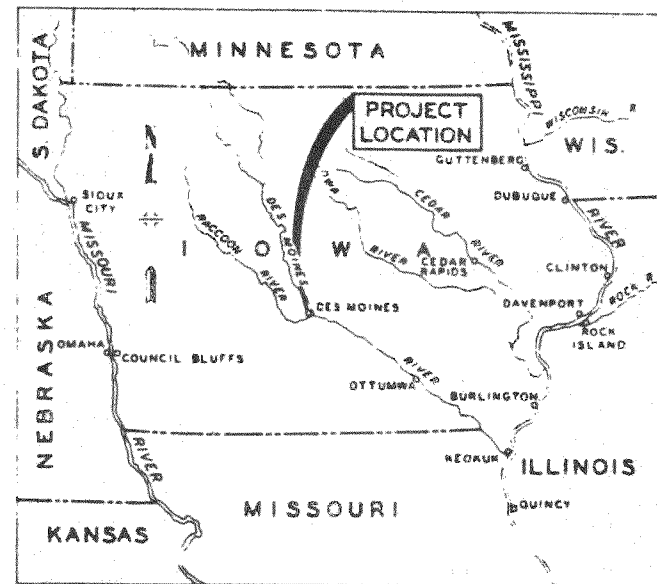
Sincerely,

ORIGINAL SIGNED BY

Arthur J. Klingerman
Chief, Planning Division

Enclosures

1-27



VICINITY MAP



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

PROJECT LOCATION

25 0 25 50 75
SCALE IN MILES



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

October 4, 1983

REPLY TO
ATTENTION OF:

Planning Division
Flood Plain Management/
Special Studies Branch

SEE ASSESSMENT DISTRIBUTION LIST

Enclosed are the Environmental Assessment, Preliminary Section 404(b)(1) Evaluation Report, and a Finding of No Significant Impact (FONSI) for the revised master plan for Saylorville Lake near Des Moines, Iowa.

Please review the assessment and provide comments to the address below within 30 days. No final action to construct the proposed recreation buildings will be taken until the public review process has been completed. When all comments have been evaluated and any conflicts have been resolved, the FONSI will be signed by the District Engineer.

Send comments to:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building
Rock Island, Illinois 61201

Sincerely,

Bernard P. Slofer
Colonel, Corps of Engineers
District Engineer

Enclosures



United States
Department of
Agriculture

Soil
Conservation
Service

693 Federal Building
210 Walnut Street
Des Moines, Iowa 50309

October 11, 1983

Colonel Bernard P. Slofer
District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building
Rock Island, IL 61201

Dear Colonel Slofer:

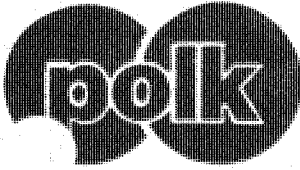
We have received and reviewed your Environmental Assessment, Preliminary Section 404(b)(1) Evaluation Report, and a Finding of No Significant Impact (FONSI) for the revised master plan for Saylorville Lake near Des Moines, Iowa.

We have no comments at this time, but we appreciate the opportunity to review and comment on this proposed work.

Sincerely,

William J. Bruke
State Conservationist





POLK COUNTY PHYSICAL PLANNING DEPARTMENT

October 18, 1983

N.E. 14th Street
Des Moines, Iowa 50313

- Administration
286-3367
- Building Inspection
286-3352
- Planning-Zoning
286-3358
- Real Estate
286-3368
- Environmental
Sanitation
286-3376
- Animal Control
286-3378

1918 Hickman Road
Des Moines, Iowa 50314

Information
286-3757

Medical Examiner
286-2102

Clinic
286-3798

Air Pollution Control
286-3927

Health Education
286-3950

Public Health
Laboratory
286-3929

Preventable
Disease Control
1798

District Engineer
U.S. Army Corps of Engineers
ATTENTION: Planning Division
Rock Island District
Clock Tower Building
Rock Island, IL 61201

RE: Environmental Assessment, Revised Saylorville Lake Master Plan In-
cluding Preliminary Section 404(b)(1), Evaluation, Polk, Dallas and
Boone Counties

Dear Sir:

We have reviewed the District's environmental assessment and can find no indication that future traffic to be generated by the proposed recreation facilities has been taken into consideration. The environmental assessment states "that additional public recreation areas and facilities would be added to the Saylorville Lake, no other public facilities will be affected." This appears to be a direct contradiction to previous history of this facility's impact on highway and road network.

Specifically, the proposal for Sandpiper Beach and Sandpiper Sailboat Launch would be using the existing marina access off Iowa 415. The proposed second marina area on Marina Bay would appear to increase traffic using the existing Prairie Flower Campground access off of Iowa 415. Since a portion of existing Iowa 415 will possibly be transferred to County jurisdiction following the relocation of a segment of Iowa 415, the proposed recreational facilities would have an impact on the future secondary road system within this area. Traffic to be generated by the proposed recreation facilities should be projected and assessed against the existing highway network's ability to accommodate the predicted traffic volumes.

The proposed marina near Lakeview Boat Launch would have access across the Corps of Engineers' dam structure. This would appear to increase traffic around the lake, especially turning traffic at the intersection of N. W. Beaver Drive and the Saylorville Dam access road.

Further consideration is requested on the traffic impacts and financial costs associated with the increased traffic on these highway facilities.

Sincerely,

Gary L. Fryor, Director

GLP/blp
cc: County Engineer

COMMISSIONERS
JOHN C. FIELD — Chairman — Harburg
DONALD E. KRUGER — Vice-Chairman — Eagle Grove
SALTER FREESE — Webster
MARGAN FREE — Wading
RICHARD THORNTON — Des Moines
WILLIAM S. RYDOLY — Eckronville
THOMAS E. SPANN — Outcrop



Larry J. Wilson — Director
Wallace State Office Building, Des Moines, Iowa 50319
515/281-5145

An EQUAL OPPORTUNITY Agency



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ROCK ISLAND FIELD OFFICE (85)
1830 Second Avenue, Second Floor
Rock Island, Illinois 61201

IN REPLY REFER TO:
Commercial: 309-793-1800
TTY: 309-5800

November 1, 1983

October 28, 1983

Col. Bernard P. Slofer
District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building
Rock Island, Illinois 61201

Dear Col. Slofer:

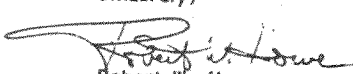
Your letter describing the revised master plan for Saylorville Lake in Iowa was referred to our office by Dr. Dean Roosa, State Ecologist.

We have conducted a search of maps and computer records for the project area and our staff has reviewed the findings. The Iowa Natural Areas Inventory data base contains no records of protected species or significant natural features at the project sites.

Please note that our lack of records by no means assures that significant plants or animals are absent. In most cases, our information is not the result of comprehensive field surveys and should not be considered a substitute for on-site investigations.

I hope this report will be useful to you.

Sincerely,


Robert W. Howe
Program Coordinator
Iowa Natural Areas Inventory

RWH/sdd

Colonel Bernard P. Slofer
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Slofer:

This is reference to the Environmental Assessment, Preliminary Section 404(b)(1) Evaluation Report, and a Finding of No Significant Impact (FONSI) for the revised master plan for Saylorville Lake near Des Moines, Iowa. Although we indicated we had no objections (letter dated 10/13/83) to construction of the proposed marinas as identified in Public Notice WCR0D-S-C70-0X6-1-111280, we have reviewed more thoroughly the entire revised plan and would like to make additional comments.

The proposed developments will impact up to 255 acres of grass and forb habitat, 7 acres of upland hardwood habitat, and an unknown quantity of shallow aquatic habitat. The Environmental Assessment indicates that native prairie grasses could be planted in designated sections as buffer areas. It infers mitigation but does not commit to it or identify potential mitigation areas. Without adequate mitigation, the proposed projects may significantly affect fish and wildlife resources. In this regard, we cannot concur with the Finding of No Significant Impact. We recommend that you develop a mitigation plan in conjunction with the Iowa Conservation Commission that will adequately address all habitat losses of the proposed recreation improvements. Potential alternatives such as buffer zones and enhancement of existing wildlife management areas should be investigated.

This letter provides comment under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act of 1969 and the Endangered Species Act of 1973, as amended. If you have any questions, do not hesitate to contact me.

Sincerely,


Thomas M. Groutage
Field Supervisor



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
324 EAST ELEVENTH STREET
KANSAS CITY, MISSOURI - 64106

November 3, 1983

Colonel Bernard P. Slofer, USA
District Engineer
U.S. Army Engineer District, Rock Island
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Slofer:

We have reviewed the Environmental Assessment, Preliminary Section 404(b)(1) Evaluation Report and the Finding of No Significant Impact for the revised master plan for Saylorville Lake near Des Moines, Iowa.

Since these reports address the addition of recreation areas to the lake area, we have no comments on the reports. Thank you for the opportunity of reviewing them.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Charles H. Hajirian".

Charles H. Hajirian
Chief, Environmental Review Branch



REPLY TO
ATTENTION OF:

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

November 8, 1983

Planning Division
Flood Plain Management/
Special Studies Branch

SUBJECT: Environmental Assessment, Revised Saylorville
Lake Master Plan, Including Preliminary Section
404(b)(1) Evaluation, Polk, Dallas, and Boone
Counties

Mr. Gary L. Pryor
Polk County Physical
Planning Department
5897 Northeast 14th Street
Des Moines, Iowa 50313

Dear Mr. Pryor:

Thank you for your letter of October 18, 1983,
regarding increased traffic loads from recreation areas
proposed in the revised Saylorville Lake Master Plan.
Increased future traffic loads and associated financial
cost are not items that are addressed in environmental
assessments. Traffic loads and the associated economic
impacts of construction are typically analyzed in
subsequent detailed project documents. The following
information is provided to address your concerns.

In October of 1976, the Iowa Department of
Transportation published a Final Environmental Impact
Statement and location study report for the relocation
of a portion of Iowa Highway 415. The report states
that the old portion of Highway 415, near the Prairie
Flower Campground, had a projected daily vehicle count
of 2,500 vehicles a day in 1980 and has a projected
vehicle count of 4,000 vehicles per day in 2000. Upon
completion of the current construction on Highway 415,
the only users of the old portion of 415 will be
recreation visitors and local residents. The existing
and proposed recreation facilities in the Prairie Flower
Recreation Area would generate a traffic load of less
than 2,500 vehicles a day which we feel would not over-
load the old portion of Highway 415.

-2-

McBride Drive is the designated access road for
the proposed Sandpiper Recreation Area. If the area
is developed, the road would be upgraded and maintained
by the Corps as funds become available.

Before the proposed marina near the Lakeview
Recreation Area is developed, access will be investigated
to determine if there are any limitations.

We hope that this letter has resolved your concerns.

Sincerely,

Signed By
J. T. SCHERRE

Arthur J. Klingerman
Chief, Planning Division

IOWA STATE HISTORICAL DEPARTMENT
OFFICE OF HISTORIC PRESERVATION

November 22, 1983

ADRIAN D. ANDERSON, Executive Director
STATE HISTORIC PRESERVATION OFFICER

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building
Rock Island, Illinois 61201

RE: Revised Environmental Assessment of Saylorville Lake Master Plan including
Preliminary Section 404(b)(1) Evaluation

Dear Sir:

We have reviewed the revised Master Plan for Saylorville Lake, and make the following comments and recommendations.

The Master Plan provides a useful summary of all the archaeological work that has been completed to date at Saylorville Lake, and it clarifies the Corps' intent to complete development plans with respect to known and presently unknown archaeological sites in the Saylorville Lake district.

The Historic Preservation Office recommends approval of the revised Master Plan, with the following provisions:

1. All areas proposed for development must be intensively surveyed. Any identified sites must be tested, and mitigated if necessary, before construction begins. SHPO must receive and review report of archaeology before construction may begin.
2. Geomorphological investigations of the valley upstream from the dam must be completed in order to put the archaeological sites in context.
3. If, after the archaeological investigations are to have been completed, additional construction is proposed in areas that have not been completely investigated, appropriate archaeological action should be taken to insure that no significant sites are unnecessarily destroyed without proper documentation.
4. Since buried archaeological sites were not considered for the bulk of the survey that has been conducted in Saylorville, should construction and development be proposed in areas where buried sites are likely to occur (based on the geomorphological investigations conducted at Saylorville to date), the areas must be surveyed for buried sites using those methods appropriate to ascertain the presence or absence of such sites.

Revised Environmental Assessment of Saylorville Lake Master Plan (continued)

If we can be of assistance to you in your archaeological endeavors associated with Saylorville development, please do not hesitate to contact our office.

Sincerely,

Mary Ann McBride /for

Adrian D. Anderson, Executive Director
State Historic Preservation Officer

ADA/MAM/slh



STATE OF IOWA

Office for Planning and Programming

523 East 12th Street, Des Moines, Iowa 50319 Telephone 515/281-3711

TERRY E. BRANSTAD
Governor

EDWARD J. STANEK, PhD
Director

December 7, 1983

Col. Bernard P. Slofer
Department of the Army
Rock Island District, Corps of Engineers
Clock Tower Bldg.
Rock Island, IA 61201

RE: IA 841006-109
Environmental Assessment -
Saylorville Lake

Dear Col. Slofer:

The State Clearinghouse has completed the review of the Environmental Assessment. Agencies and individuals that may have an interest in it have had the opportunity to examine and comment upon its contents. As no objections, recommendations or statements of support were received concerning the information contained in it were received, the Clearinghouse has completed its review and has no comments concerning the Environmental Assessment.

A copy of this letter should accompany the document when it is forwarded to the federal agency as evidence that the State of Iowa has had the opportunity to examine it.

Sincerely,

A. Thomas Wallace
Federal Funds Coordinator

ATW/sb

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THOMAS E. SPANAN - Dubuque



Larry J. Wilson - Director
Wallace State Office Building, Des Moines, Iowa 50319
515/281-5145

An EQUAL OPPORTUNITY Agency

Colonel Bernard P. Slofer
December 20, 1983
Page 2

Item D, Page 3--Trails

The Commission strongly endorses the provision of additional multipurpose trail facilities (including snowmobiles) downstream from Highway 17. Such trails will require planning and coordination to assure that all interests are protected. While there will be requirements for caution in laying out such trails and the need for maintenance and enforcement to assure safe and proper use, these facilities could serve a variety of users and enhance public benefits to be derived from the project. In order to avoid one major potential source of conflict, any snowmobile trails located in lands open for public hunting north of Highway 17 should not be opened for snowmobile use until after the close of the shotgun deer season each year, typically around mid-December. Ultimately, a trail might run to Highway 30. However, a trail through the wildlife management area would have to be developed with special considerations of location, time of use, and funding for development, management, and enforcement responsibilities.

Prairie Flower Group Campground

The following is an excerpt from the Conservation Commission unit biologist's comments. We urge you to consider these comments and to continue to coordinate with the unit biologist and this office as any plans proceed toward implementation.

"...negative impacts were significant at the Prairie Flower Group Campground. Expansion of the campground would mean that 50 acres of idle grasses, forbs, and shrubs will be converted to mowed grass, roads, parking areas, and camping pads. High use periods during summer will disturb wildlife to the point that its value as a nesting area or brood-rearing area will be very limited. In addition, a possible second marina site could potentially be placed to the west and northwest of the Prairie Flower Campground and this will reduce the habitat base even more in this area (25 acres).

"The Prairie Flower site is an open, upland site which is currently dominated by daisy fleabane, bluegrass, and encroaching multiflora rose. It is currently nesting and brood-rearing habitat for pheasants, quail, and various songbirds (i.e. catbird, common yellowthroat, dickcissel, field sparrow, grasshopper sparrow, meadowlark, goldfinch, etc.). Although its quality as pheasant nesting habitat is not outstanding, it does provide the type of undisturbed site that some birds will use. This type of site is particularly valuable on the Saylorville area because most of it is of high elevation and will not flood.

"Corps personnel advise that portions of the site probably will have new land management practices applied to it that will benefit wildlife even more. Their plans are to try to control the encroachment of multiflora rose by the establishment of small corn fields and hay fields. This could improve the area for game species such as pheasant and quail by providing food and nesting cover. However, even this would be lost if the area was converted to a campground.

December 20, 1983

Colonel Bernard P. Slofer
U.S. Army Corps of Engineers
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Slofer:

We appreciate the opportunity to provide comments on the Environmental Assessment, Revised Saylorville Lake Master Plan. As we reviewed the assessment, a more thorough review of the Master Plan itself took place. In the process there arose some uncertainties, pointed out below in our specific comments, that force us to qualify our comments to the extent that if additional site-specific knowledge is provided, we might wish to make additional inputs. Certainly as any planning progresses toward implementation, it will be essential that coordination between the Corps and the State be maintained.

Specific comments are as follows:

Item B, Page 2--Sandpiper Recreation Area

The Conservation Commission does not agree that a largely single-purpose sailboat launching facility is the proper route to take, and would not be supportive of a 50-50 cost-shared facility of this type. As a more desirable alternative, we would recommend the provision of a sailboat docking area and dry storage facility located just north of the one proposed in Plate 3. Existing nearby ramps could serve the needs of all boaters with the provision of rigging lanes, thereby greatly reducing the costs associated with peninsula construction, additional ramps, etc.

Item C, Page 2--Second Marina

The Conservation Commission prefers the site southeast of the Lakeview Recreation Area for a second marina site. This alternative would provide increased ease of access to the lake for more area residents and would avoid additional congestion anticipated if a second marina were located in such close proximity to the existing one. If a second marina is deemed necessary, it would seem appropriate that the Corps provide the usual road, ramp and parking facilities, and that the developer would incur the usual costs for buildings, docks, utilities, etc.

Colonel Bernard P. Slofer
December 20, 1983
Page 3

"The tract where the Prairie Flower Group Campground is proposed is 80+ acres (50 acres of which is proposed for campground development). Remaining acreage (approximately 34 acres) will be treated with wildlife habitat improvements such as "buffer" prairie grass seedings, tree and shrub hedge rows, etc. These will improve the area for wildlife but still do not adequately mitigate for the loss of a 50-acre chunk of habitat."

Again, thank you for providing this opportunity for comment.

Sincerely,



LARRY J. WILSON, DIRECTOR
IOWA CONSERVATION COMMISSION



NOTE TO
ATTENTION OF:

Planning Division

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

February 29, 1984

-2-

Mr. Larry J. Wilson
Director
Iowa Conservation Commission
Wallace State Office Building
Des Moines, Iowa 50319

Dear Mr. Wilson:

On December 20, 1983, the Iowa Conservation Commission submitted a review comment letter to the Rock Island District concerning the environmental assessment for the revised Saylorville Lake Master Plan. The letter referenced some uncertainties that the Commission has in regard to some of the proposed recreation facilities and habitat impacts in the proposed Prairie Flower Group Campground. The intent of this letter is to provide additional information to clarify the Commission's concerns. In addition, the District is also requesting a sign off on the environmental assessment for the revised Master Plan in order that we may resolve concerns with the U.S. Fish and Wildlife Service.

Specific comments are as follows:

Proposed Recreation Facilities

Sandpiper Recreation Area

The proposed launching facility is designed for all types of non-motorized craft (i.e., canoes, rowboats, sailboats, etc.). In recent years, approximately 45 percent of the boats using Saylorville Lake are non-motorized craft. Therefore, the decision to establish non-motorized launching facilities is based on:

a. A desire to reduce conflicts between motorized and non-motorized craft at the existing launching facilities.

b. Increasing the safety around the existing and proposed facilities by separating the two types of boating due to their differences in launching and docking requirements.

c. Providing a facility to accommodate the existing use.

It will be noted in the report that the Iowa Conservation Commission would not be supportive of participating in a 50-50 cost-sharing agreement.

Second Marina

Two proposed sites have been chosen for the development of a second marina. The first site is located to the northwest of the Prairie Flower Campground and southeast of the existing marinas. The second proposed site is located in the southeast portion of the Lakeview Boat Launch Area. The B/C ratio for the Federal portion of a 251 slip marina is 1.02 and the 251 slip marina with 62 dry storage spaces is 1.09.

The B/C ratios referenced above are based on a level of a marginally profitable marina operation. Therefore, it would be more important for a potential developer to determine financial feasibility or return on investment rather than benefit-to-cost ratios. The final mix of goods and services offered at the second marina could be such that slip rental is a relatively small portion of total income. As a result, it would be irrational to base total financial feasibility on slip rentals. Since there are so many options available in starting a marina (goods and services offered), only a brief financial analysis could be performed for this study.

The Federal Government should enter into a cost sharing agreement for the construction of the facility only if the available information indicates that the facility would be profitable. Available information indicates it is possible that a developer could incorporate additional goods and/or services (i.e., restaurant) into his development plan to make the proposed marina profitable.

In the future, the Corps will make an advertisement for development proposals from prospective developers for the second marina. The developers will be supplied with a demand analysis for the second marina, Corps engineering requirements and standards, and a list of required facilities and services. Proposals submitted will be required to include site plans, engineer drawings, cost estimates, a listing of fees for goods and services, and an analysis of the financial feasibility for the proposed development

and operation of the facility. The District will establish a committee to review the proposals and determine which offeror is most qualified to provide the facilities and services required and if that offeror's development proposal will utilize the site most effectively to provide the facilities and services required to meet the public's needs. The lease will be awarded to the offeror furnishing the best overall proposal.

If there are no developers interested in a second marina after a reasonable period of time, the existing operator will be offered an opportunity to expand his operation to any combination of slips and buoys totaling 841. The existing marina operator would also be allowed to increase his dry storage facility. These proposals would require the existing lease to be rewritten and the existing lease boundaries to be extended. It will be noted that the Commission prefers the Lakeview site for the development of a second marina.

Trails

On December 9, 1980, representatives from the Commission and Corps met at Saylorville Lake to discuss trail development at the project. According to Mark Schorer (Assistant Manager - Saylorville Lake) the two agencies agreed not to develop snowmobile or ATV trails on Corps lands leased to the ICC for wildlife management purposes.

The ICC letter of December 20, 1983, reflects a change in the Commission's viewpoint concerning ATV and snowmobile trails on Corps lands leased to the ICC for wildlife management purposes. Under current Corps of Engineers policy concerning P.L. 89-72, the Corps would not be able to provide funds for construction, maintenance, and enforcement for this type of trail. However, if the ICC desires to establish and maintain a snowmobile trail from Big Creek Lake to U.S. Highway 30, the Corps would be required to review and approve the plan. In addition, if the trail was established on Corps land, the ICC would need to obtain a lease from the Corps.

Environmental Assessment

Background

In a meeting with the U.S. Fish and Wildlife Service on November 7, 1983, the Service recommended that the Rock Island District meet with the Iowa Conservation

Commission concerning the proposed recreation facilities described in the revised Saylorville Lake Master Plan. The intent of the meeting was to view and address possible impacts to habitat and possible resolutions. The FWS stated that the resolution between the ICC and NCR would rectify Service concerns expressed in a review letter of November 1, 1983.

On November 21, 1983, Mr. Ken Varlin (Iowa Conservation Commission) and three representatives from the Rock Island District met at Saylorville Lake to discuss U.S. Fish and Wildlife concerns. Mr. Varlin was shown the proposed recreation sites and habitat improvement measures that have been completed and proposed at the project (see table 1). It was pointed out to Mr. Varlin that these existing and proposed habitat improvement measures were not required as part of previous mitigative actions.

ICC Review Letter

In the Commission's review letter of December 20, 1983, there are various environmental concerns regarding habitat improvements in the area of the proposed Prairie Flower Group Campground. This proposed area was included in the original Saylorville Lake Master Plan and the impacts of the recreation facilities contained in the plan were evaluated in the Saylorville Lake Environmental Impact Statement. Both documents were approved by the Iowa Conservation Commission and the U.S. Fish and Wildlife Service. In addition, the review letter of the ICC addressing the original master plan (June 19, 1973) states: "The proposed recreation development will have little adverse impact on the environmental quality of the project if resource management plans dealing with forestry, fish and wildlife, and fire protection are given high priority in the implementation schedule of the overall project."

In reference to the previous paragraph, it is the District's opinion that we are in compliance with the National Environmental Protection Act. Various sites were evaluated for the proposed Prairie Flower Group Campground. It was determined that if the proposed sites were developed, impacts would be minor in nature. This opinion is based on the fact that project resource management plans dealing with forestry, fish and wildlife, and fire protection have been and continue

to be given high priority as shown in table 1. The existing and proposed habitat improvements (1359.5 acres) exceed the 50 acres of habitat the ICC is concerned about in the Prairie Flower Group Campground area. However, if the ICC has any recommendations on the proposed habitat improvements listed on table 1, please include them in the Commission's response letter. Additional information concerning the habitat improvements can be found in the Saylorville Lake Forestry, Fish and Wildlife Management Plan (Appendix B and D to the Master Plan). ICC review comments were incorporated into the appendix.

In summary, we request a sign off letter concerning the Environmental Assessment, and any recommendations the ICC has concerning habitat improvements at Saylorville Lake. If we do not receive a letter within 3 weeks from the ICC concerning this matter, we will assume that this letter has resolved your concerns and that the ICC has signed off on the Environmental Assessment concerning the revised Master Plan.

If you have any questions or wish to further discuss the assessment or proposed recreation areas, contact Mr. Tim Toplisek at 309/788-6361, Ext. 6386, or write to the following address:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building
Rock Island, Illinois 61201

Sincerely,

Signed By
J. T. SCHNERRE

Arthur J. Klingerman
Chief, Planning Division

Enclosure

1-40

TABLE 1
HABITAT IMPROVEMENTS AT SAYLORVILLE LAKE

1977 - 1981	
Practice	Acres
Tree and Shrub Hedgelow Plantings	18.5
Reforestation - Seedlings	144.0
Native Prairie Planting	125.0
Landscaping Trees and Shrubs (1602 Plantings)	
Total	287.5 Acres

1982	
Practice	Acres
Reforestation Above 870NGVD	82
Prairie Restoration	110
Nursery Development	5
Screening	7
Hedgerow	8
Wildlife Plantings	19
Interpretive Area Planting	4.5
Pond Development and Survey	4 Ponds
Food Plot Planting	14.5
Total	250 Acres

1983 - 1984	
Practice	Acres
Reforestation	50
Prairie Restoration	100
Nursery Development	5
Screening	8
Hedgerow	10
Wildlife Management	60
Interpretive Area Planting	4.5
Pond Management	5 (Ponds)
Food Plot Planting	30
Shoreline Planting	40
Landscaping	80
Songbird Houses/Woodduck Boxes	30 (Houses)
Lowland Management Below 870NGVD	28.5
Pothole Development	2 (1 Acre)
Total	418 Acres

1985 - 1986	
Practice	Acres
Prairie Restoration	.00
Pond Survey	5 (Ponds)
Landscaping	50
Songbird Houses/Woodduck Boxes	30
Timber Stand Improvement	100
Food Plots	30
Wildlife Survey	80
Hedgerows	10
Pothole Development	4 (2 Acres)
Total	404 Acres

Total 1977 - 1986 1359.5 Acres

COMMISSIONERS

JOHN D. FIELD, Chairman — Hamburg
DONALD E. KNUDSEN, Vice-Chairman — Eagle Grove
AXTER FREESE — Wellman
MARIAN PIKE — Whiting
RICHARD THORNTON — Des Moines
WILLIAM B. RIDOUT — Estherville
THOMAS E. SPAHN — Dubuque



Larry J. Wilson — Director
Wallace State Office Building, Des Moines, Iowa 50
515/281-5145

An EQUAL OPPORTUNITY Agency

March 21, 1984

Colonel Bernard P. Slofer
U.S. Army Corps of Engineers
ATTN: Planning Division
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Slofer:

The time and effort spent by you and your staff in the consideration of our comments of December 20, 1983, relative to the environmental assessment for the Saylorville Lake Master Plan are appreciated.

While most of the remarks in your letter of February 29, 1984, do not require a response on our part, I do want to stress two points:

1. Our comments of December 20, 1983, made no reference to ATV's. While we feel a well-designed, managed, and enforced snowmobile trail could be considered, it should be clearly understood that ATV's are considered incompatible with the primary purpose of wildlife management areas.
2. As documented in your letter of February 29, 1984, the Corps has done a noteworthy job of wildlife habitat enhancement on project lands. Comments in our letter of December 20, 1983, were intended only to point out the fact that development of the Prairie Flower Group Campground will have a detrimental effect on habitat as it exists there now. It is my hope that cooperation and coordination between the Corps and the Conservation Commission will result in continued enhancement of the Saylorville Area for all legitimate recreational users.

Again, my thanks for the thoughtful consideration of our comments. "Signing off" has an air of finality that is not in accord with my intentions to cooperate and coordinate our efforts at Saylorville. Therefore, while the Commission officially signs off on the environmental assessment, it will be my intention to monitor closely the proposed developments at Saylorville relative to our comments of December 20, 1983, and to assure the continued cooperation of my staff at all levels in working with the Corps to implement the master plan.

Sincerely,



LARRY J. WILSON, DIRECTOR
IOWA CONSERVATION COMMISSION



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

REPLY TO
 ATTENTION OF:

16 APR 1984

-2-

Planning Division

Mr. Thomas M. Groutage
 U.S. Fish and Wildlife Service
 Rock Island Field Office
 1810 Second Avenue
 Rock Island, Illinois 61201

Dear Mr. Groutage:

On November 7, 1983, representatives from the U.S. Fish and Wildlife Service, Rock Island Field Office, and the U.S. Army Corps of Engineers, Rock Island District, met to discuss an FWS letter dated November 1, 1983, (enclosed) concerning the environmental assessment for the Revised Saylorville Lake Master Plan. The FWS comment letter stated the assessment did not provide enough information addressing habitat impacts concerning proposed recreation facilities. As a result, the FWS did not concur with the Corps of Engineer's Finding Of No Significant Impact.

In the November 7, 1983, meeting, the FWS recommended that the Rock Island District meet with the Iowa Conservation Commission to determine what mitigation should be done in regard to wildlife habitat since the area is within the jurisdiction of the ICC. The FWS stated at the meeting that a resolution between the ICC and Rock Island District would rectify service concerns expressed in the November 1st, letter.

Through an onsite meeting (November 21, 1983) and subsequent correspondence, the District has obtained a signoff letter (enclosed) (March 21, 1984) from the ICC concerning the environmental assessment addressing the revised master plan. In reference to the previous statement, we believe we are in compliance with NEPA and the FWS request of November 7, 1983.

Therefore, we request a letter of concurrence from the FWS concerning this matter for our records in order to demonstrate compliance if questioned in the future.

Sincerely,

Signed By
J. T. SCHNERRE
 Arthur J. Klingerman
 Chief, Planning Division

Enclosures

1-42



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ROCK ISLAND FIELD OFFICE (ES)
1830 Second Avenue, Second Floor
Rock Island, Illinois 61201

IN REPLY REFER TO:

Commercial: 309-793-5800
FTS: 386-5800

April 18, 1984

Lt. Colonel Arthur E. Miller
Acting District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Miller:

This is in reference to Mr. Klingerman's letter of April 16, 1984, regarding the environmental assessment for the Revised Saylorville Lake Master Plan. We previously objected to the Finding of No Significant Impact (FONSI) because appropriate mitigation was not incorporated specifically into the proposed plan. Based on information provided by your staff, we understand that adequate mitigation measures have been discussed with and accepted by the Iowa Conservation Commission. These measures include habitat improvement measures such as prairie restoration, timber stand improvements, and pothole development.

We can now concur with the FONSI with these measures incorporated into the proposed plan. This letter provides comment under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act of 1969 and the Endangered Species Act of 1973, as amended.

Sincerely,

Gail A. Peterson
Acting Field Supervisor

cc: FWS/AH

IOWA STATE HISTORICAL DEPARTMENT
OFFICE OF HISTORIC PRESERVATION

ADRIAN D. ANDERSON, Executive Director
STATE HISTORIC PRESERVATION OFFICER

September 27, 1983

Henry G. Pfiester, P.E.
Chief, Operations Division
Department of the Army
Rock Island District COE
Clock Tower Building
Rock Island, Illinois 61201

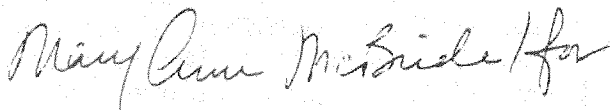
Re: NCROD-S-070-OX6-111280

Dear Mr. Pfiester;

We have received and reviewed the environmental assessment of the Sandpiper Recreation Area at Saylorville Lake. The assessment acknowledges the effect of the reservoir and related development on cultural resources, and the need to offset that effect by excavations, preservation or stabilization. As long as the development of the recreation area follows the revised Master Plan, giving due consideration to the impact on cultural resources and allowing sufficient time to mitigate that impact, we recommend project approval.

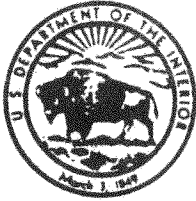
If you have any questions or if I can be of assistance to you, please do not hesitate to contact this office.

Sincerely,



Adrian D. Anderson, Director
State Historic Preservation Officer

ADA/crv



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ROCK ISLAND FIELD OFFICE (ES)
1830 Second Avenue, Second Floor
Rock Island, Illinois 61201

IN REPLY REFER TO:

Commercial: 309-793-5800
FTS: 386-5800

October 13, 1983

Colonel Bernard P. Slofer
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Slofer:

The U.S. Fish and Wildlife Service has reviewed the project plan(s) advertised by the public notice(s) on the following list. Based on the information provided, the U.S. Fish and Wildlife Service has no objection to the issuance of the related permit(s). This letter provides comment under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act of 1969 and the Endangered Species Act of 1973, as amended.

<u>Notice No.</u>	<u>Date</u>	<u>Applicant</u>	<u>Due Date</u>
NCROD-S-070-OX6-111280	09-19-83	U.S. Army Corps of Engineers	10-12-83

Sincerely,

Thomas M. Groutage
Field Supervisor

cc: IDOC (Lutz)
USEPA (Beno)
IEPA (Yurdin)



Iowa

department of water, air and waste management

November 15, 1983

Cecil Dietrich
Rock Island District - Corps of Engineers
Clock Tower Building
Rock Island, IL 61201

RE: REQUEST FOR STATE CERTIFICATION
U.S. Army Corps of Engineers - Rock Island District (COE #111280)
Development of the Sandpiper Recreation Area peninsula and launch ramp
Saylorville Lake T-80N, R-25W, Section 13

Dear Mr. Dietrich:

We have reviewed the request for State certification of the above-referenced project as requested for the Corps of Engineers construction permit which has been applied for under Section 404 of the Clean Water Act.

This letter certifies, subject to the following condition, under provision of Section 401 of the Federal Water Pollution Control Act, that this Department as the State Water Quality Agency has determined that there is reasonable assurance the proposed activity will be conducted in a manner which will not violate water quality standards of the State of Iowa.

Condition:

The fill material used for constructing the peninsula shall be physically contained during construction. Containment of the fill material must incorporate the use of cofferdams or sheet piling. Methods of containment, other than those specified above, must be submitted to this Department for review and approval.

Sincerely,

PROGRAM DEVELOPMENT DIVISION

Monica M. Wnuk

Monica Wnuk
Environmental Specialist
Water Resources Development Branch

MW:nsv/WR/W318Q08.01

APPENDIX 2

SECOND MARINA
ECONOMIC ANALYSIS

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

APPENDIX 2

SECOND MARINA
ECONOMIC ANALYSIS

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MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

APPENDIX 2

SECOND MARINA
ECONOMIC ANALYSIS

INTRODUCTION

Problems with flooding and insufficient water supply prompted Congress to authorize construction of Saylorville Dam in 1958. Though primarily a flood control project, most of the project lands are utilized for recreation and wildlife management. The 1982 season experienced 3 million recreation days of use.

Boating on the lake is quite popular. Although the existing marina has space for approximately 600 boats, there have been indications that additional facilities are needed; there is a waiting list of approximately 200 boaters. This analysis will investigate the economic feasibility of adding a second marina to the recreational facilities currently available at Saylorville Lake.

THE STUDY AREA

Initial estimates of recreational use of Saylorville Lake were based on those of three similar projects as directed by ER 1120-2-403, the accepted method at the time the analysis was completed. The primary zone of influence was established as 1-hour driving time. Observation has shown that visitors come from an area larger than originally anticipated. The zone of influence includes portions of 21 counties within a 50-mile radius as shown on plate 35. The greatest percentage of users comes from the Des Moines Standard Metropolitan Statistical Area (SMSA), which includes a large portion of the lake within its boundaries.

According to the 1980 census, 827,900 persons reside in the study area. Less than 4 percent of these people are minorities or of Spanish origin (2.53 percent black, .21 percent Indian, and .86 percent Spanish). The population is stable. The average growth for the 1970 to 1980 period was 6.9 percent. The largest share of the population is employed in retail trade followed by people in education and agriculture. Income levels are generally higher than the national average.

RECREATION RESOURCE

Saylorville is a highly developed recreation area providing many types of outdoor activities. Although there are numerous city, county, and State parks in the study area, Saylorville Lake is one of the two lakes providing such a wide range of recreation experience. The other lake is Lake Red Rock, which is also a Corps of Engineers reservoir and which provides recreational opportunities for the residents of central Iowa. It is a 1-hour drive from the Des Moines SMSA, compared to a few minutes' drive from Des Moines to Saylorville Lake.

The existing "Saylorville Marina" has facilities to harbor 590 boats. There is a showroom for sales of new and used boats. Services available to boaters include sale of fuel, repairs, and a snack bar area.

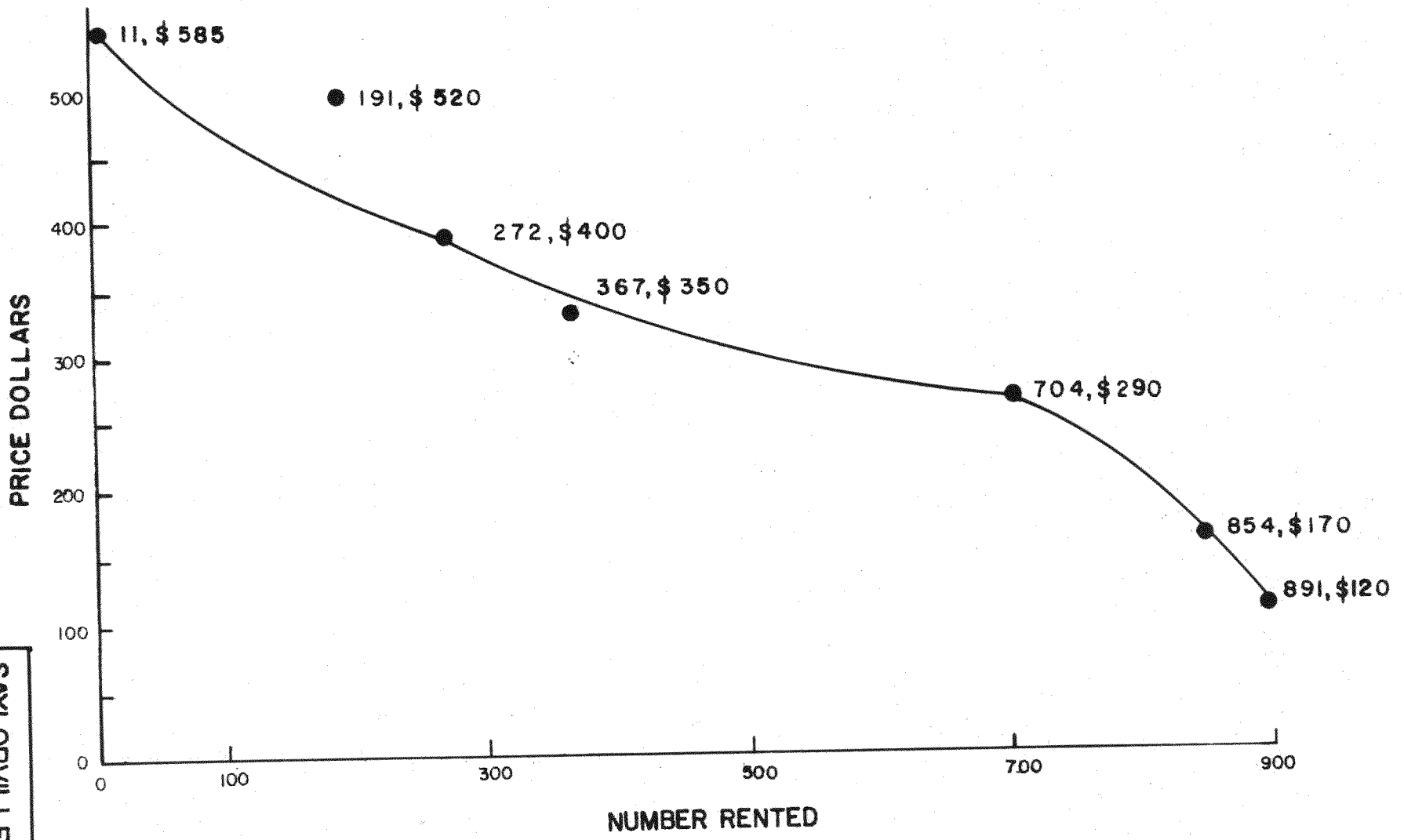
POTENTIAL RECREATION USE

In order to assess the potential use of a second marina at Saylorville Lake, a survey of current boat owners in the study area was conducted during the summer of 1981. This survey asked boat owners about their willingness to pay for changes in the quantity of facilities at the Saylorville Lake site. A study of ramp users was also undertaken. The values in the 1981 survey were updated to reflect October 1982 prices.

The mailed questionnaire was sent to a stratified sample of registered boat owners having sailboats and powerboats larger than 15 feet long. Of the total population of 19,971 registered boats, 4,678 (23 percent) were sent surveys. After two followup mailings, 2,795 (60 percent) were returned and analyzed. Demand curves were calculated for each of the four types of facilities which are currently provided at the existing marina.

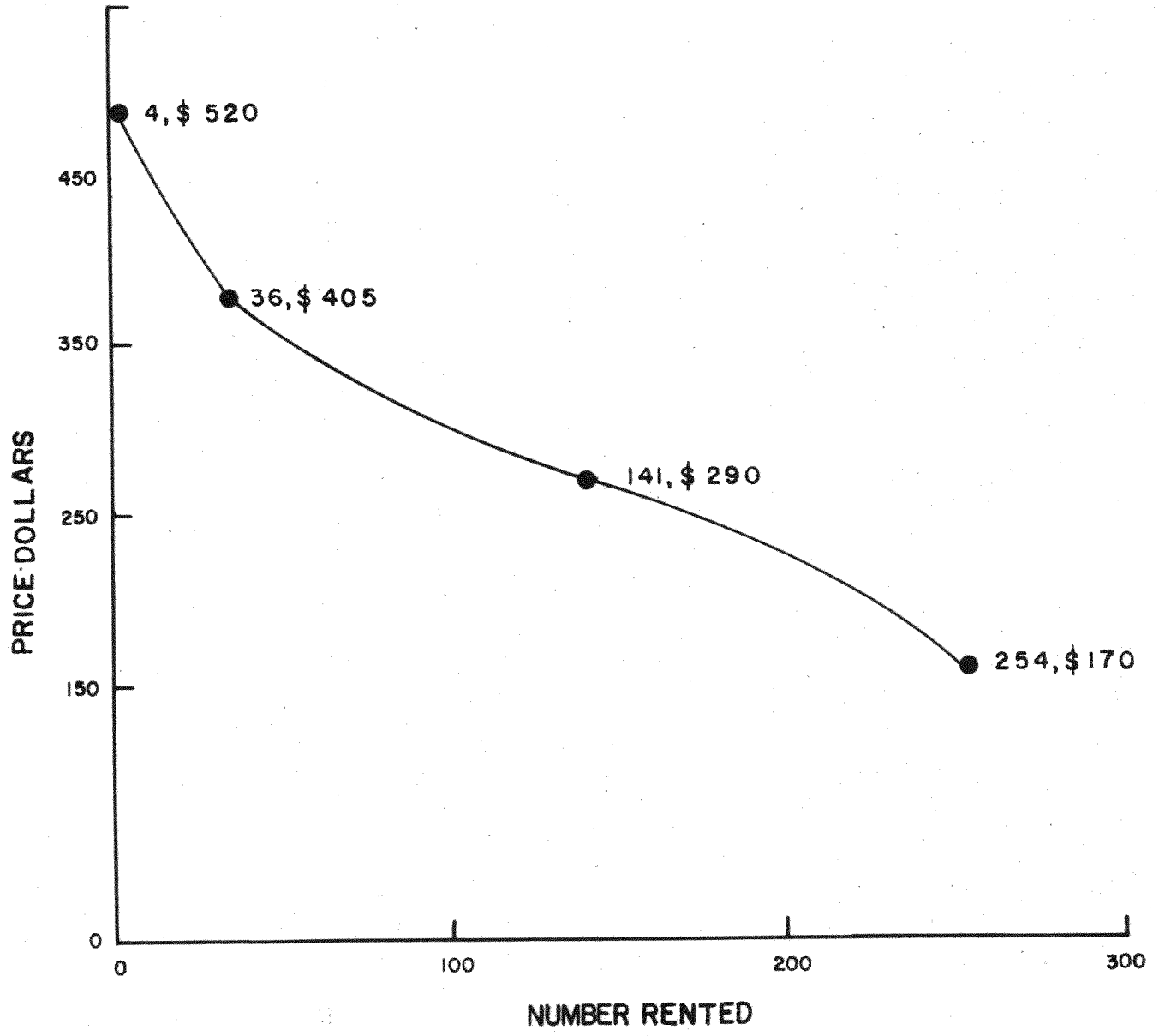
Demand curves are estimated in the following way. If each consumer will take only one unit of product, then each point on the demand curve represents the total number of consumers who will pay at least that price for the goods. With few exceptions, marina slips are a one-to-a-customer kind of product. Thus, to produce a demand curve, one first determines the maximum willingness to pay a low amount (which includes all those willing to pay higher amounts). These are plotted on the bottom of the graph and those willing to pay a higher amount are plotted above. Finally, a curve is fitted to these points. The curve is a demand curve; each point on the curve represents the maximum quantities of slips that could be rented at the prices indicated.

The data necessary to generate demand curves are statements of the maximum each potential customer will pay rather than not be able to keep his or her boat at Saylorville.

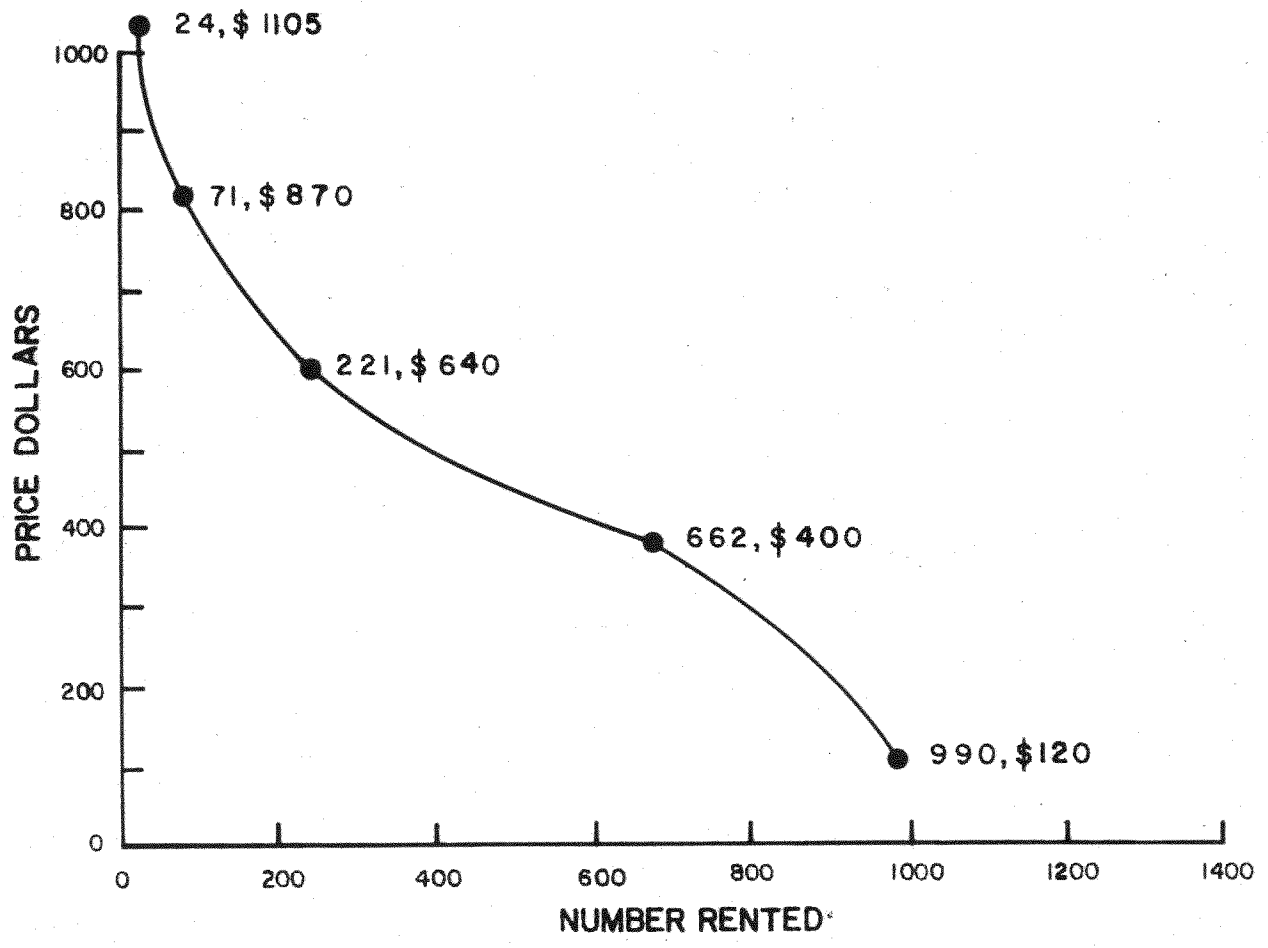


SAYLORVILLE LAKE
DEMAND OPEN SLIPS

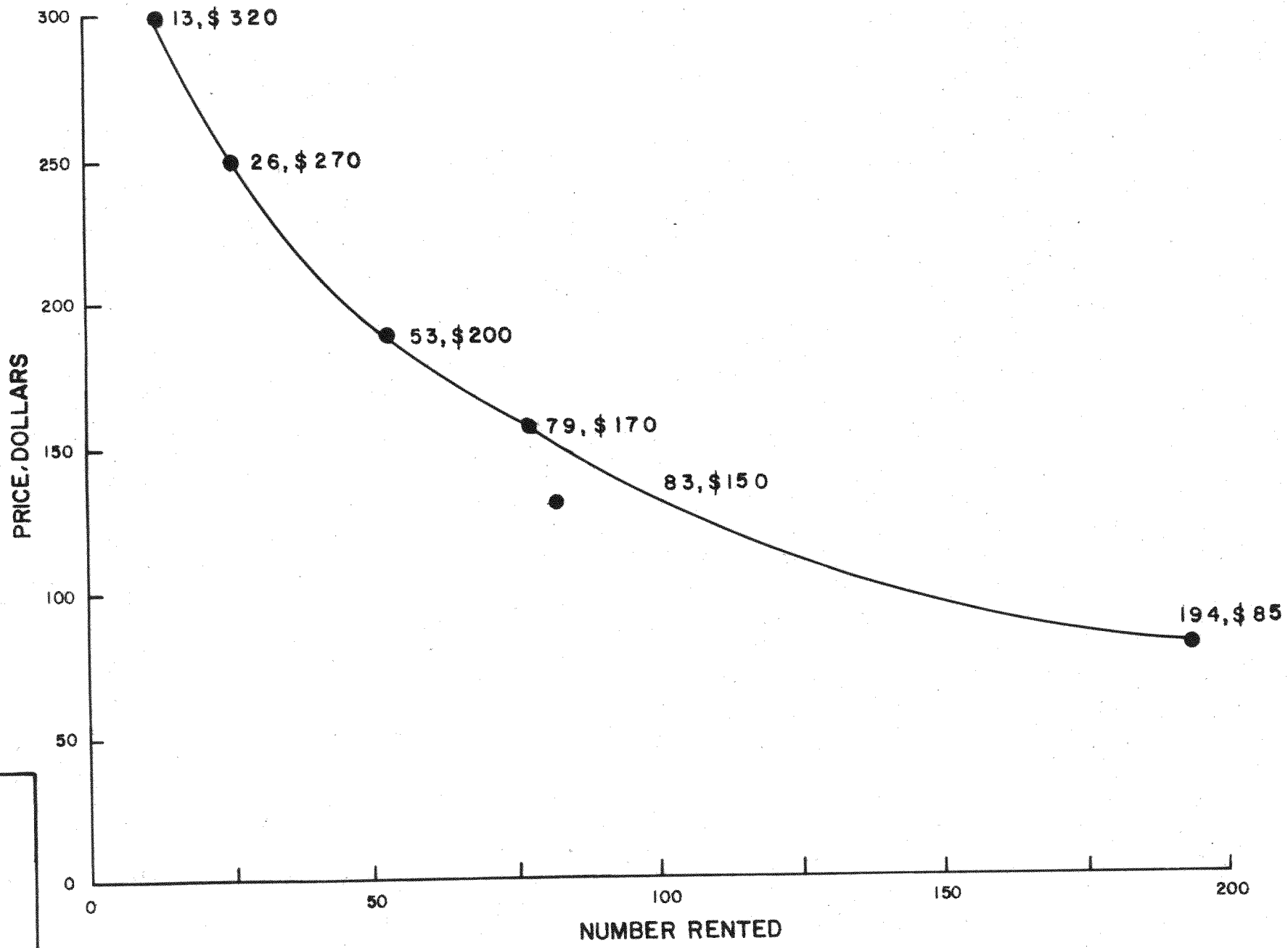
APPENDIX F1-1



SAYLORVILLE LAKE
DEMAND BUOYS



SAYLORVILLE LAKE
DEMAND COVERED
SLIPS



SAYLORVILLE LAKE
DEMAND DRY
STORAGE

APPENDIX FI-4

Survey results expanded to the general population of boat owners show that there are over 2,000 boat owners who would consider renting a space for their boat at Saylorville at some price. At the prices charged in 1981 at the existing marina, demand for spaces was approximately 685 spaces. Demand curves are shown on figures F1-1, F1-2, F1-3, and F1-4.

The numbers in the demand curve figures represent population estimates generated by expanding the sample results to the boating population in the surveyed counties. They represent estimates of actual number of boaters who could be persuaded to rent at those prices. An adjustment to this total must be made for potential users from outside the surveyed counties. Several studies have indicated that as much as 85 percent of users usually come from within a radius of 50-75 miles of the facilities, with essentially all users coming from a 100- to 150-mile radius. Thus, marina markets tend to be localized.

To maximize efficiency in data collection, a radius of 75 miles was selected for surveyed potential users with several counties within this radius excluded because of their proximity to competitive facilities at other projects. Responses to the questionnaire, however, indicate significant demand for marina facilities still exists from counties at the perimeter of the sampled area. Over 15 percent of the respondents who indicated they would rent at some price reside in these perimeter counties.

Three counties with large populations immediately outside the sampled area could contribute significantly to potential demand. These counties are Linn, Johnson, and Wapello. If their level of demand is similar to that identified in Black Hawk County, a county at the perimeter of the sampled area also with a large population center, an additional 425 persons would indicate a desire to rent at some price. This would increase the total number of persons who would rent at some price by over 14 percent. It is therefore assumed that the demand from the surveyed counties represents approximately 85 percent of the total potential. The estimate of 704 persons from the surveyed counties noted above who would pay \$290 per season for an open slip would be expanded ($\times 0.85$) to 828 persons as an estimate of total demand.

Demand curves for each type of storage were estimated using only the individual respondent's preferred type of storage. Thus, demand can be added across the four types to yield an estimate of the total demand at given prices. For example, if a buoy rented for \$290 per season, about 165 buoys (140×0.85) might be rented. If open slips rented for \$350 per season, about 430 (365×0.85) might be rented. If covered slips rented for \$690 per season, about 175 (150×0.85) might be rented. If dry storage rented at \$150 per season, about 95 (80×0.85) might be rented. At these prices, total demand for marina space would be estimated at about 865 rentals.

Current prices charged at the Saylorville Marina vary by boat type and boat length for each type of moorage. Although a single price is not available by moorage type, a weighted average price can be constructed by comparing observations of existing moorages with the established fee schedule. Currently these weighted seasonal rates are approximately: \$290 for buoys, \$450 for open slips, \$690 for covered slips, and \$160 for dry storage.

Estimates of total demand at these prices can be derived by obtaining estimates of the demand by moorage type for the surveyed counties from figures 1-2 through 1-5, dividing these estimates by 0.85, and then summing over all moorage types. For current prices, the approximate estimates of demand would be 165 buoys (140 - 0.85), 290 open slips (245 - 0.85), 260 covered slips (220 - .085), and 95 units of dry storage (80 - 0.95) for a total demand of 810.

Current prices, however, are not necessarily the best prices to charge. For example, a 10-percent reduction in price for each moorage type would result in the following total estimates of demand: 200 buoys, 325 open slips, 405 covered slips, and 100 units of dry storage, or a grand total of 1,030 units. A 10-percent reduction in price results in a 27-percent increase in the number of facilities demanded. Likewise, if sufficient space were available, 780 covered slips could be rented at \$405 as opposed to 260 at \$640. The optimum price depends on the operator's cost as well as demand.

Obviously the number of slips, buoys, and dry storage that might be rented depends on the prices the concessionaire decides to ask for each. It should be noted, also, that the demand expressed in figures F1-1 through F1-4 is demand for marina space on the lake as a whole and not for a new marina. Existing use will have to be subtracted.

The ultimate distribution of rentals among marinas would depend on a number of variables, including relative prices, location, and quality of services and developments.

VALUE OF USE

Additional marina facilities would be considered economically feasible if the benefits generated by that investment exceed the benefits of any other use for the money and other resources. Because the marina will be commercially operated, two kinds of benefits are important: potential revenue for a commercial operator and the consumer surplus.

Potential revenue can be estimated by multiplying the price an operator will charge by the number of slips boaters would rent at that price. Consumer surplus is the benefit renters experience in excess of the benefit paid for. For example, if a boater pays \$160 per season for a mooring buoy but would continue to rent even if the price were up to \$240 per season, that renter is experiencing \$80 of consumer surplus per season.

Both potential revenue and consumer surplus can be estimated from demand curves. A demand curve describes the relationship between the range of prices that could be asked for a good or service, such as marina slips, and quantity of these goods or services the public will take. Figure F1-5 is a hypothetical demand curve which illustrates both potential revenue and consumer surplus.

PRICE THAT
MAYBE CHARGED
FOR SLIPS

CONSUMER SURPLUS

POTENTIAL REVENUE: THE PRICE TIMES THE NUMBER
OF SLIPS RENTED

PRICE OPERATOR
CHARGES

B

NUMBER OF SLIPS PEOPLE WOULD
RENT AT THAT PRICE

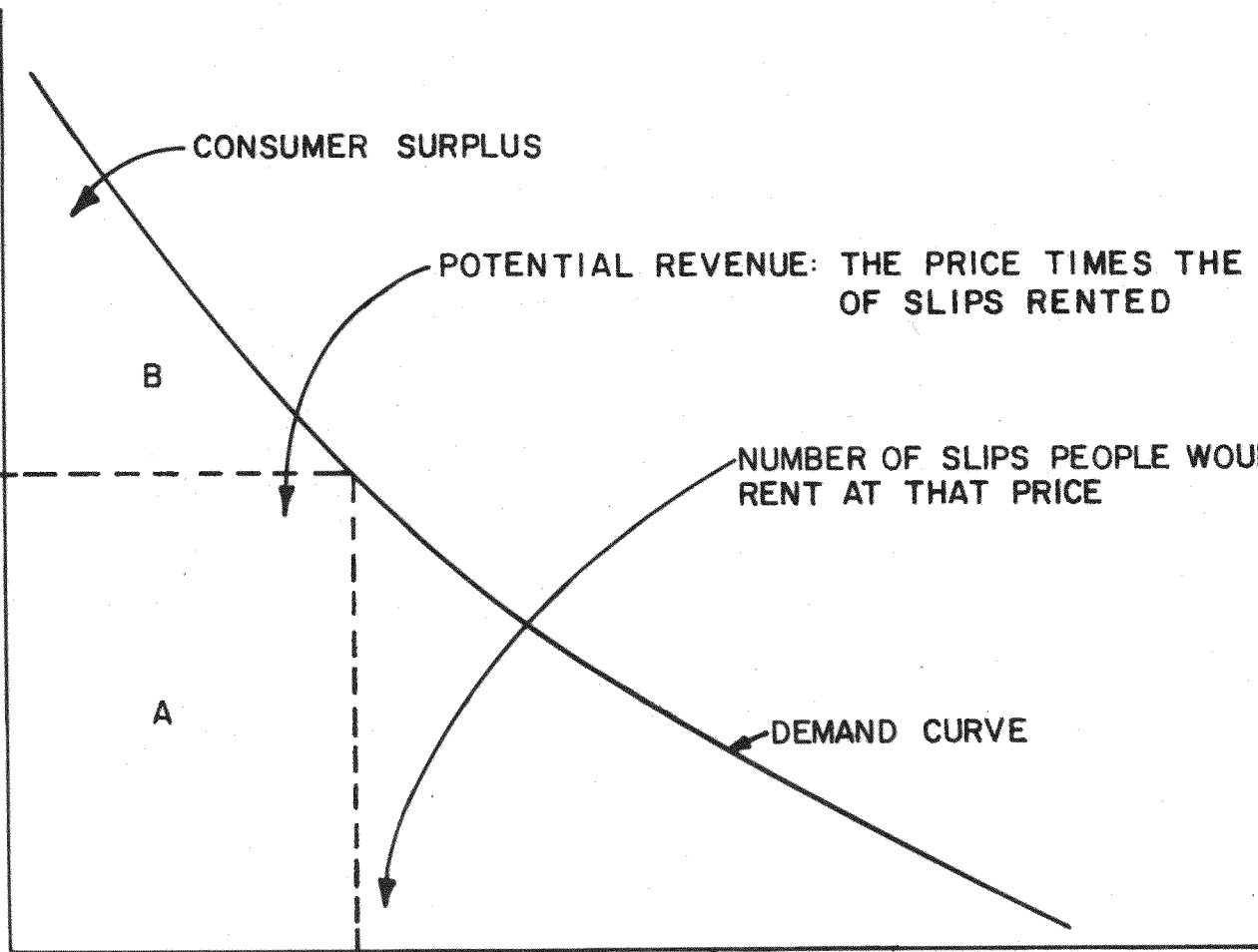
A

DEMAND CURVE

NUMBER OF SLIPS THAT MIGHT BE RENTED

SAYLORVILLE LAKE
CALCULATION OF
CONSUMER SURPLUS

FIGURE FI-5



Potential revenue is area A (price times quantity taken at that price). The potential revenue will change with the price charged. A higher price does not always mean greater revenues. The effect of price increases on revenue depends on the shape of the demand curve in the vicinity of that price.

The minimum price will depend upon the operator's variable costs of providing a slip. Usually, only the operator will be able to provide that information. The demand curves enable operators to determine what the potential revenue is likely to be and whether that revenue is sufficient to warrant provision of facilities and services. Thus, the demand curves can be provided to potential concession operators as part of the information they need to make accurate proposals.

Consumer surplus is Area B on the hypothetical demand curve in figure F1-5. Consumer surplus cannot be completely captured by the operator. However, consumer surplus represents real value provided to the public and can be considered by the Corps of Engineers in deciding the level of investment to make in marina and harbor construction. The extent of consumer surplus will be determined by the price which the operator ultimately charges.

A demand curve shows the maximum quantities that consumers will buy or rent per unit time at the various prices indicated on the vertical axis. One can predict the number of open slips that might be rented at a price of, e.g., \$200 per season by reading horizontally across from the \$200 point of the vertical axis to the demand curve, then vertically down to the quantity on the horizontal axis. The quantity that will be rented at any other price can be estimated in the same way.

Demand curves can be estimated from consumer expressed willingness to pay. One way to collect willingness to pay data is with contingent valuation methods (CVM).

In contingent valuation, potential consumers are asked to state or select (in personal interviews or questionnaires) the maximum amount they would be willing to pay rather than do without. There are several ways of formulating the CVM questions.

Useful willingness to pay estimates require that the respondent understand the nature of the product and the market. The possibility of exclusion must be real. All of these conditions are easily met by the marina expansion question at Saylorville Lake.

Statements of maximum willingness to pay may be subject to strategic behavior. That is, the respondent may overstate or understate his or her real willingness to pay in hopes that by doing so, the decision to provide services can be influenced. If the respondent feels the results will be used to determine what rents to charge, it might appear to be to his or her advantage to state a lower willingness to pay. If, on the other hand, the respondent thinks the results will be used to decide whether or not to offer a service and, once offered, the price charged will not be related to the survey, it may appear to be to his or her advantage to overstate willingness to pay.

Although strategic behavior seems to be real, the little research information on the method seems to indicate it is not as serious a problem as was once thought.

The travel cost method is not an alternative way to estimate the demand for the possible expansion of marina services. The travel cost method could be used to estimate demand for boating at Saylorville Lake. However, the demand for boating and the demand for marina services are not equivalent. Demand for marina services will be a part of the demand for boating in general.

The value of the marina space to the individual boat owner depends upon the boat owner's willingness to pay for a space in the marina. Value per individual ranges from \$85 for dry storage space to \$1,105 for a covered slip.

RECREATION USE DIMINISHED

Provision of additional marina facilities at Saylorville would not lessen recreation use at Saylorville, but consideration should be given to the effects on the use of other resources. These effects cannot be strictly measured, but the magnitude of possible shifts can be estimated from information about the use of alternatives by those who would consider renting at Saylorville. Table T1-1 shows where boat owners who say they would rent at Saylorville boated most often in 1980.

TABLE T1-1

Where Boat Owners Who Say They Would Rent
Boated Most Often in 1980*

<u>Boating Resources</u>	<u>Boat Category</u>		
	<u>Powerboats 15-20 Feet Percent</u>	<u>Powerboats 21 Feet or More Percent</u>	<u>Sailboats 15 Feet or More Percent</u>
Saylorville Lake	52.11	60.55	55.46
Lake Rathbun	9.39	8.26	5.88
Big Creek Lake **	5.16	-	17.65
Mississippi River	-	6.42	-
Des Moines River	-	6.42	-
Lake Okoboji	-	-	5.04
Lake Red Rock	-	-	7.56

* Only boating resources mentioned by 5 percent or more of respondents are reported in the table.

** Adjoins Saylorville Lake, but is not accessible by water.

In all categories of boats sampled, the majority of those who indicated they would consider renting boated most often at Saylorville Lake. Lake Rathbun was the most visited for a much smaller fraction, although Big Creek appears to be an important resource among sailboaters.

Lake Rathbun and Big Creek Lake appear more predominately as alternatives to Saylorville when looking at the next most often used resource (table T1-2).

TABLE T1-2

Where Boat Owners Who Say They Would Rent
Boated Second Most Often in 1980*

<u>Boating Resources</u>	<u>Boat Category</u>		
	<u>Powerboats 15-20 Feet Percent</u>	<u>Powerboats 21 Feet or More Percent</u>	<u>Sailboats 15 Feet or More Percent</u>
Saylorville Lake	17.36	24.49	31.25
Lake Okoboji	6.25	-	-
Lake Rathbun	20.14	12.25	10.94
Lake of the Ozarks	7.64	8.16	-
Des Moines River	8.33	-	-
Clear Lake	-	8.16	-
Mississippi River	-	8.16	-
Big Creek Lake **	-	10.20	18.75

* Only boating resources mentioned by 5 percent or more of respondents are reported in the table.

** Adjoins Saylorville Lake, but is not accessible by water.

These data are for only those who indicated they would consider renting at Saylorville if space were available; they do not reflect the distribution of use among all boaters sampled. They do determine the location of potential competition for marina facilities at Saylorville.

Table T1-3 is generated from responses of those boaters who said they would consider renting at Saylorville and who now rent elsewhere. The numbers are weighted estimates. They represent estimates of the actual numbers of boaters in the sampled area who would move boats to Saylorville. No assumptions were explicitly made regarding relative prices. The actual relocation may be less, but is unlikely to be more unless price differences are considerable or marketing is specifically directed to boaters already renting at other boating resources.

TABLE T1-3

Estimated Numbers of Boaters Who Would Move From Selected
Other Marinas to Saylorville Lake if Marina Space
Were Available at Saylorville Lake

To	From	Clear Lake	Mississippi River	Lake Rathbun	Lake Red Rock	Des Moines River	Lake Panorama	Leech Lake	Lake Okoboji	Lake of the Ozarks	Rock Creek Lake	Don Williams Reservoir
Saylorville Lake		23	29	41	47	48	9	9	5	5	5	5

Of those who reported they would not consider renting at Saylorville Lake, important numbers in the larger powerboat and sailboat categories said they would rent elsewhere. These data illustrate again the importance of Lake Rathbun as an alternative boating resource to Saylorville. The Mississippi River is important for powerboaters who would rent elsewhere and Red Rock is important for sailboaters who would rent elsewhere (table 1-4).

TABLE T1-4

Percentages of Boat Owners Who Say They Would Not Rent
at Saylorville But Who Would Rent Elsewhere *

Boating Resources	Boat Category		
	Powerboats 15-20 Feet Percent	Powerboats 21 Feet or More Percent	Sailboats 15 Feet or More Percent
Would Rent at Another Lake or River	7.08	36.15	12.08
Of Those Who Would Rent Elsewhere, Percentages Who Would Rent At:			
Clear Lake	14.82	-	9.38
Mississippi River	26.85	37.50	-
Lake Rathbun	10.19	20.83	28.13
Lake Red Rock	8.33	-	37.50
Big Creek Lake **	-	-	6.25
Rock Creek Lake	-	-	6.25

* Only locations reported by 5 percent or more of respondents are listed in the table.

** Adjoins Saylorville Lake, but is not accessible by water.

VALUE OF USE DIMINISHED

Saylorville Lake appears to be preferred to other boating resources by some respondents. This might be a result of greater response among those who like Saylorville, or it may represent a true superior evaluation for the lake. That cannot be determined from the data collected in the survey.

If there is a shift in use from one facility to another, the gross benefit can be accounted for with the existing procedures. A person who transfers will be receiving more consumer surplus at one facility than another. If the open space can be filled by someone on a waiting list, the net change is the change in consumer surplus. If the space is not filled, the loss is equivalent to the change in concession revenue. Since there is generally a shortage of facilities in the study area, it is assumed that all open spaces will be filled and that there will be a net benefit from a shift.

POOL LEVEL CHANGE

The RID Corps of Engineers has conducted a study which deals with raising the conservation pool level of Saylorville Lake. An agreement between the State of Iowa and the Corps of Engineers has been reached, and conservation pool elevation is scheduled to be raised from elevation 833 to 836 NGVD* in October 1983. This will result in approximately 400 more surface acres available for recreation. See section IX of this report for additional information. Since demand is a function of tastes and preferences, the response to this elevation change will depend upon the boating population perceptions of the desirability of the lake. It is possible that willingness to pay may increase substantially when more recreation space is available. However, most of the added surface acres will lie upstream of the S&V Bridge. Currently this area is used primarily by fishermen. A conservative estimate of changed demand would be an increase of 5 percent.

UNADDRESSED DEMAND

The survey which was conducted during the summer of 1981 was sent to a relatively small sample of the boating population. While the results are certainly valid, the predicted demand should be considered as being conservative. Owners of boats less than 15 feet were not surveyed. Although these boats are easily trailerable, if there was marina space available, these people might feel that it was worthwhile to purchase a larger craft. Likewise, the general nonboat-owning populace was not sampled and surveyed. Although interest in renting a slip may not be as widespread as among the current boat owners, lack of available slips may have been a major deterrent to the purchase of a larger craft.

NET PROJECT BENEFITS

As shown in the previous sections of this appendix, demand exceeds supply by a significant amount. It is estimated that 200 to 250 additional rentals could be accommodated at current or slightly lower prices.

Benefits are measured in terms of consumer surplus. It is the real value to the public above the price currently charged and as such, it is ultimately dependent on the price the operator charges. For the purposes of this analysis, it was assumed that all costs incurred by both the operator and the Federal Government are reflected in the current rental rates. This means that at current prices, costs are equal to or less than benefits; therefore, any consumer surplus experienced is a net benefit.

* National Geodetic Vertical Datum of 1929, used in lieu of feet, mean sea level.

The demand curves are adjusted outward to take into account the demand outside the study area and increased demand from the pool change. Consumer surplus is determined by integration for each of the demand curves using current rates and then summed to calculate the total net benefit of \$65,300. Table T1-5 below shows the consumer surplus for each type of marina space desired.

TABLE T1-5

Net Benefits From Consumer Surplus

A Type Space	B <u>1/</u> Current Price (\$)	C <u>2/</u> Demand Number From Survey	D <u>3/</u> Demand 15% Outside Survey Area	E <u>4/</u> Demand 5% From Pool Change	F <u>5/</u> Total Demand	G <u>6/</u> Existing Number	H <u>7/</u> Number Needed	I <u>8/</u> Consumer Surplus
Buoy	\$290	140	25	8	173	195	0	-
Open Slip	450	245	45	15	305	338	0	-
Covered Slip	640	220	40	13	273	22	251	\$58,000
Dry Storage	160	<u>62</u>	<u>15</u>	<u>5</u>	<u>100</u>	<u>38</u>	<u>62</u>	<u>7,300</u>
Total		685	125	41	851	593	313	\$65,300

1/ Weighted prices based on current prices charged for space at the existing marina.

2/ Demand at current price from the demand curves determined from the survey.

3/ Empirical studies show that 15 percent of demand comes from areas outside the 75-mile radius of the study area $(C \times .15) = D$.

4/ The change in the pool level will increase demand due to changes in perception of the facilities. A conservative estimate is 5 percent. $(C + D)(.05) = E$.

5/ $C + D + E = F$.

6/ Estimated spaces existing at current marina.

7/ $F - G = H$.

8/ Calculated from demand curves: Area under the curve less total revenue.

It has been established that a conservative estimate of demand for marina space at Saylorville Lake is 851 spaces. There are 590 existing spaces, leaving an unfilled demand for 313 spaces. It should be noted in table T1-5, column H, that provision of more buoys and open slip does not decrease demand for covered slips.

While it is unreasonable to expect a concessionaire to have a viable operation with less than 100 slips, provision of 200 to 300 spaces should offer a reasonable opportunity to a concessionaire.

EVALUATION OF ALTERNATIVES

Three alternatives are considered in this analysis: no change in existing conditions; expansion of the existing facility; and construction of a second marina. While the current operator has repeatedly stated that he has no plans to expand, examination of past history shows that the operator has added open slips and/or buoys to his existing offering almost annually. There is no reason to expect that this behavior will not continue unless the current operator's lease line is not extended. Thus, the first two alternatives are the same. The most probable future is that the existing operator will continue to expand. However, the demand is for covered slips and dry storage, not open slips and buoys.

The reason the present marina operator is not converting open slips to covered slips is unknown. Perhaps the operator does not perceive that the demand is there or perhaps the operator does not feel that covered slips yield a reasonable return on his investment. A buoy costs very little to install and therefore can offer a good return on investment. There will be no direct Federal cost in expansion of the existing operation.

Construction of a second marina will cost approximately \$2 million as shown in table T1-6 for provision of a 200-slip marina. Provisions of 51 more slips will increase the cost to \$2.2 million. Satisfying full demand by adding 62 dry storage spaces brings the cost to about \$2.6 million. Under a traditional financing arrangement, Federal funds would provide a safe harbor site for development in addition to access and utilities. Under the proposed financing arrangement, the new marina operator would pay for the cost of all improvements. It is not known for certain if there is sufficient local interest for a sponsor to make an acceptable proposal for development. According to NCD Real Estate personnel, that level of interest cannot be determined until request for proposals are sent out. If a new concessionaire will build 200 covered slips, a consumer surplus or benefit of \$33,000 will be realized. This is the area under the demand curve for 200 additional covered slips. If a new concessionaire built 251 covered slips, the consumer surplus will be \$58,000. Consumer surplus for total demand is \$65,300. Since the operator cannot capture these benefits, it is more important to the operator to determine financial feasibility or return on investment rather than the benefit-to-cost ratio. However, since there are so many options in starting a new business, only a brief financial analysis can be performed at this time. The final mix of goods and

services offered at the second marina could be such that slip rental is really a very small portion of total income. Thus, it would be irrational to base total financial feasibility upon slip rentals. Based upon the current operator's sales, approximately \$525 per slip is spent for goods.

SENSITIVITY ANALYSIS

The rental rate for a marina space is assumed to reflect the investment cost of the operator. In a monopoly situation, this may not necessarily be the case. This analysis used current fees as a starting point to measure demand. The sensitivity to price changes will depend on the shape of the demand curve in the area of the equilibrium point. A 10 percent increase in costs would reduce demand by 25 percent for covered slips using a price of \$640 per slip as the starting point. However, the demand curve bids were most likely based on the bidder's perceptions of the existing marina offerings. The new marina services may be significantly different. In addition, people's tastes and preferences may change and they may be willing to pay more for a service that is more aesthetically pleasing.

TABLE T1-6

Estimated Marina Costs
Prairie Flower Site
(Traditional Financing)

<u>Item</u>	<u>200 Slips</u>		<u>251 Slips</u>		<u>251 Slips & 62 Dry Storage</u>	
	<u>Federal</u>	<u>Non-Federal</u>	<u>Federal</u>	<u>Non-Federal</u>	<u>Federal</u>	<u>Non-Federal</u>
Site Preparation:						
Roadway	83,500	-	83,500	-	83,500	-
Parking Lots	216,400	-	216,400	-	216,400	-
Service Road	18,000	-	18,000	-	18,000	-
Revetment	223,400	-	223,400	-	223,400	-
Seeding	2,600	-	2,600	-	2,600	-
Sidewalks	12,100	-	12,100	-	12,100	-
Dry Storage Lot	-	-	-	-	33,100	-
Excavation	29,400	-	29,400	-	29,400	-
Other Construction:						
Landscaping	-	15,000	-	15,000	-	15,000
Office Building	-	80,000	-	80,000	-	80,000
Dry Storage Building	-	-	-	-	-	240,000
Ramp	-	32,400	-	32,400	-	32,400
Slip Cost	-	800,000	-	1,004,000	-	1,004,000
Contingencies (10%)	<u>58,500</u>	<u>92,700</u>	<u>58,500</u>	<u>113,100</u>	<u>61,900</u>	<u>137,100</u>
Subtotal	643,900	1,020,100	643,900	1,244,500	680,400	1,508,500
Engineering & Design (9%)	58,000	91,800	58,000	112,000	61,200	135,800
Supervision & Administration (9%)	<u>58,000</u>	<u>91,800</u>	<u>58,000</u>	<u>112,000</u>	<u>61,200</u>	<u>135,800</u>
Total First Cost	759,900	1,203,700	759,900	1,468,500	802,800	1,780,100
Combined Total	1,963,600		2,228,400		2,582,900	

TABLE T1-6 (Cont'd)

Estimated Marina Costs
Lakeview Site
(Traditional Financing)

<u>Item</u>	<u>200 Slips</u>		<u>251 Slips</u>		<u>251 Slips & 62 Dry Storage</u>	
	<u>Federal</u>	<u>Non-Federal</u>	<u>Federal</u>	<u>Non-Federal</u>	<u>Federal</u>	<u>Non-Federal</u>
Site Preparation:						
Roadway	141,700	-	141,700	-	141,700	-
Parking Lots	216,100	-	216,100	-	216,100	-
Service Road	N/A	-	N/A	-	N/A	-
Revetment	130,000	-	130,000	-	130,000	-
Seeding	1,300	-	1,300	-	1,300	-
Sidewalks	6,600	-	6,600	-	6,600	-
Dry Storage Lot	-	-	-	-	36,000	-
Excavation	104,300	-	104,300	-	104,300	-
Other Construction:						
Landscaping	-	15,000	-	15,000	-	15,000
Office Building	-	80,000	-	80,000	-	80,000
Dry Storage Building	-	-	-	-	-	240,000
Ramp	-	9,200	-	9,200	-	9,200
Slip Cost	-	800,000	-	1,004,000	-	1,004,000
Contingencies (10%)	<u>60,000</u>	<u>90,400</u>	<u>60,000</u>	<u>100,800</u>	<u>63,600</u>	<u>134,800</u>
Subtotal	660,000	994,600	660,000	1,219,000	699,600	1,483,000
Engineering & Design (9%)	59,400	89,500	59,400	109,700	63,000	133,500
Supervision & Administration (9%)	<u>59,400</u>	<u>89,500</u>	<u>59,400</u>	<u>109,700</u>	<u>63,000</u>	<u>133,500</u>
Total First Cost	778,800	1,173,600	778,800	1,438,400	825,600	1,750,000
Combined Total	1,952,400		2,217,200		2,575,600	

BENEFIT-TO-COST RATIO

Expansion of the existing facilities involves no Federal expense, and so does not have to be evaluated by this method. Construction of a second marina can be evaluated for the traditional cost-sharing method. Annual costs are based on an interest rate of 7-7/8 percent and a project life of 50 years. Table T1-7 shows a comparison of costs and benefits for alternatives considered. A Federal investment for a marina with 251 slips or a 251 slip marina with 62 dry storage spaces appears justified provided that a developer can be found to provide the mix of services and rental rates that would assure a profitable operation.

FINANCIAL EFFECTS ON EXISTING MARINA

Construction of a second marina would not appear to further jeopardize the viability of the first operation. Financial stability cannot be guaranteed for any business, but it seems that there is a large enough demand and sufficient willingness to pay on the part of the boat-owning populace that the existing marina will not suffer. A careful examination of table T1-7 will show that financial feasibility for a new marina is dependent upon the new operator's ability to minimize operation and maintenance and other costs in order to maximize return on investment.

SENSITIVITY TO PRICE LEVEL CHANGES

Costs and benefits have been evaluated at October 1982 price levels. These costs and benefits are subject to change based on increasing construction costs and changes in the Federal interest rate.

SUMMARY

This analysis was prepared in response to the public's demand for a second marina. Its purpose was to determine whether there was a reasonable demand for marina spaces at existing or slightly higher prices. It has been determined that this demand exists. Elsewhere, it has been determined that a reasonable site exists and that a second marina is technically feasible. An initial estimate of investment needed has been made.

TABLE T1-7

Benefit-to-Cost Ratios

<u>Alternative</u>	<u>200 Slips</u>			<u>251 Slips</u>			<u>251 Slips & 62 Dry Storage</u>		
	<u>Federal</u>	<u>Non-Federal</u>	<u>Total</u>	<u>Federal</u>	<u>Non-Federal</u>	<u>Total</u>	<u>Federal</u>	<u>Non-Federal</u>	<u>Total</u>
BENEFITS									
Consumer Surplus <u>1/</u>	53,000	-	53,000	58,000	-	58,000	65,300	-	65,300
Slip Revenue <u>2/</u>	-	125,500	125,500	-	157,500	157,500	-	167,100	167,100
Sales Revenue <u>3/</u>	-	103,800	103,800	-	130,300	130,300	-	162,600	162,600
Lease Revenue <u>4/</u>	<u>3,700</u>	-	<u>3,700</u>	<u>4,600</u>	-	<u>4,600</u>	<u>5,100</u>	-	<u>5,100</u>
Total	36,700	229,300	266,000	62,600	287,800	350,400	70,400	329,700	400,100
COSTS FOR PRAIRIE FLOWER ALTERNATIVE:									
Annual First Cost	61,200	97,000	158,200	61,200	118,300	179,500	64,700	143,400	208,100
Operation & Maintenance <u>5/</u>	-	148,500	148,500	-	148,500	148,500	-	148,500	148,500
Replacement <u>6/</u>	-	29,400	29,400	-	36,900	36,900	-	36,900	36,900
Other Costs <u>7/</u>	-	<u>23,100</u>	<u>23,100</u>	-	<u>29,000</u>	<u>29,000</u>	-	<u>36,100</u>	<u>36,100</u>
Total	61,200	298,000	359,200	61,200	332,700	393,900	64,700	364,900	429,600
Benefit-to-Cost Ratio	.60	.78	.74	1.02	.87	.89	1.09	.90	.93
COSTS FOR LAKEVIEW ALTERNATIVE:									
Annual First Cost	62,700	94,600	157,300	62,700	115,900	178,600	66,500	141,000	209,500
Operation & Maintenance <u>5/</u>	-	148,500	148,500	-	148,500	148,500	-	148,500	148,500
Replacement <u>6/</u>	-	29,400	29,400	-	36,900	36,900	-	36,900	36,900
Other Costs <u>7/</u>	-	<u>23,100</u>	<u>23,100</u>	-	<u>29,000</u>	<u>29,000</u>	-	<u>36,100</u>	<u>36,100</u>
Total	62,700	295,600	358,300	62,700	330,300	393,000	66,500	362,500	429,000
Benefit-to-Cost Ratio	.59	.78	.74	.99	.87	.89	1.06	.91	.93

1/ Determined from demand survey.

2/ Number of slips x \$640 and number of dry storage spaces x \$160.

3/ Number of slips x \$525.

4/ Operator's rent paid to Government estimated from graduated rental system using \$525 per slip for sales.

5/ Determined from a comparison with current concessionaire's operating expenses.

6/ Total replacement of slips every 15 years.

7/ Cost of sales and interest expense.

TABLE TI-8

Physical Carrying Capacity of the Lake
and Its Boating Facilities

GENERAL BOATING USE ^{1/}

<u>Boating Type</u>	<u>Number Boats ^{2/} During Peak Use Period</u>		<u>Surface Acreage Requirements</u>
Waterskiing	1279 ÷ 12 = 107	x	10 ac./boat = 1,070
Powerboating	2877 ÷ 9 = 320	x	5 ac./boat = 1,600
Fishing	617 ÷ 4 = 154	x	1 ac./boat = 154
Non-Powerboating	2775 ÷ 9 = 308	x	5 ac./boat = 1,540
TOTAL	889 boats		4,364ac.

^{1/} Reference Table 38, Section V, of Master Plan.

^{2/} 1990 boating attendance on average summer weekend day divided by number of people per boat and turnover rate for each boating use.

- Waterskiing - 4 people/boat x turnover of 3 = 12
- Powerboating - 3 people/boat x turnover of 3 = 9
- Fishing (boat) - 2 people/boat x turnover of 2 = 4
- Non-Powerboating - 3 people/boat x turnover of 3 = 9

MARINA BOATING USE

It is assumed that 75 percent of the total boat storage (dry and wet) capacity in a marina facility would be used on an average summer weekend day.

<u>Facility</u>	<u>Total Storage Capacity</u>		<u>Per Weekend Day Use</u>
Existing Marina	593	x	.75 = 445
Proposed Marina	313	x	.75 = 235
Total Boats	906		680

<u>Boating Type</u>	<u>Number Boats ^{3/} During Peak Use Period</u>		<u>Surface Acreage Requirements</u>
Waterskiing	680 x .20 = 136 ÷ 3 = 46	x	10 ac./boat = 460
Powerboating	680 x .25 = 170 ÷ 3 = 57	x	5 ac./boat = 285
Fishing	680 x .10 = 68 ÷ 2 = 34	x	1 ac./boat = 34
Non-Powerboating	680 x .45 = 306 ÷ 3 = 102	x	5 ac./boat = 510
TOTAL	239 boats		1,289ac.

^{3/} Percentage of use for boating types is based on estimated observations by project personnel. This result was divided by turnover rate for each type to determine number of boats during a peak use period on an average summer weekend day.

Table TI-8 (Cont'd)

Estimated Projected Peak Use Period Carrying Capacity for 1990.

<u>Boating Source</u>	<u>Number Boats During Peak Use Period</u>	<u>Surface Acreage Requirements</u>
General	889	4,364
Marinas	239	1,289
TOTALS	1,128 boats	5,653 acres

AVAILABLE LAKE CAPACITY 4/

Lake Surface Acreage - 5,950 (elev. 836 NGVD)

<u>Boating Type</u>	<u>Surface Acreage By Percentage of Use <u>5/</u></u>	<u>Number of Boats/Acre</u>
Waterskiing	5,950 x .20 = 1,190	- 10 ac./boat = 119
Powerboating	5,950 x .25 = 1,490	- 5 ac./boat = 298
Fishing	5,950 x .10 = 595	- 1 ac./boat = 595
Non-Powerboating	5,950 x .45 = 2,675	- 5 ac./boat = 535
TOTAL		1,547 boats

4/ This estimate based on present boating use patterns that are observed (estimated) at the project. Therefore, stated capacity would vary with changes in these patterns. This approach also assumes that all boating type useage is during the same time occurrence (peak use period) of the day. The analysis is provided for only relative comparison purposes of demand and supply estimations, and is not a true indicator of the lake's physical carrying capacity for overall boating interests. Such evaluation cannot be made based on available data.

5/ See footnote 3 on page 2-19.

APPENDIX 3

ENVIRONMENTAL ASSESSMENT

FINDING OF NO SIGNIFICANT IMPACT

Having reviewed the information contained in this environmental assessment, I find that the proposed recreation areas discussed in the Revised Saylorville Lake Master Plan will have no significant effects on the environment. Therefore, these proposed recreation areas do not constitute the preparation of an Environmental Impact Statement (EIS). This determination may be re-evaluated if warranted by later developments.

Factors that were considered in making this determination that an EIS is not needed were:

a. There will be no significant impacts to water quality as discussed in the attached 404(b)(1) Evaluation Report.

b. Aquatic resources within the area of the Sandpiper peninsula and the breakwater for the second marina will be enhanced.

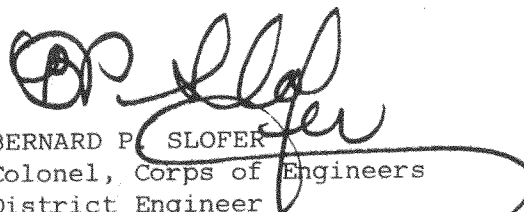
c. Any negative impacts which would occur from the construction of the recreation areas are minor and/or are temporary in effect; positive impacts on recreation are long-term in nature. The effects of these minor and temporary impacts will be more than offset by proposed habitat enhancement measures described in the Saylorville Lake Forestry, Fish and Wildlife Management Plan (Appendix B and D to the Master Plan) and by implemented improvements that were not required as mitigative actions in the past.

d. Wildlife resources will not be harmed by the proposed recreation areas.

e. No significant environmental, social, economic, or cultural impacts are anticipated as a result of the action.

21 DEC 83

Date


BERNARD P. SLOFER
Colonel, Corps of Engineers
District Engineer



REPLY TO
ATTENTION OF:

NCRPD-F

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

ENVIRONMENTAL ASSESSMENT

REVISED SAYLORVILLE LAKE MASTER PLAN
INCLUDING PRELIMINARY SECTION 404(b)(1) EVALUATION

POLK, DALLAS AND BOONE COUNTIES, IOWA

OCTOBER 1983

ENVIRONMENTAL ASSESSMENT
 REVISED SAYLORVILLE LAKE MASTER PLAN
 POLK, DALLAS, AND BOONE COUNTIES, IOWA

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Finding of No Significant Impact

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Attachment:
Section 404 (b)(1) Evaluation*

* Not included, see Exhibit 3.

ENVIRONMENTAL ASSESSMENT
REVISED SAYLORVILLE LAKE MASTER PLAN
POLK, DALLAS AND BOONE COUNTIES, IOWA

I. Purpose and Need for Action. Saylorville Lake is located in central Iowa, approximately 11 miles northwest of Des Moines, Iowa. The Saylorville Lake project is a main unit of a comprehensive plan for flood control in the Upper Mississippi River Basin. Saylorville Lake (placed in operation in 1977), provides flood protection to cities, towns and agricultural lands within the lower Des Moines River Valley and along the Mississippi River below Keokuk, Iowa (see plate 1). The project was authorized for flood control in the Flood Control Act of 3 July 1958. This authorization was based upon recommendations established in Senate Document No. 9, 85th Congress, 1st Session.

The revised Saylorville Lake Project Master Plan replaces the Master Plan approved on 4 February 1974. The purpose of the revised Master Plan is to provide an up-to-date, comprehensive guide to the sensitive, wise, and orderly use, development, and management of the natural and manmade resources of the Saylorville Lake project over the next 5 years.

The existing and projected public recreational use at the project warrants the construction of additional recreation facilities and the upgrading of some existing facilities. If new and upgraded facilities are not established, the existing facilities will continue to be overcrowded. If this situation continues, the natural and manmade resources within these facilities will deteriorate. In addition, adjacent natural resources will be vulnerable to negative impacts. In order to circumvent these potential negative impacts, additional recreation facilities and the upgrading of some existing facilities have been proposed in the plan. The proposed facilities include the Prairie Flower Group Campground (plate 2), Sandpiper Recreation Area Beach and Sailboat Launch (plate 3), a second marina (plates 4 and 5), trails (plate 6) and a large amphitheatre, outdoor skills area and a combination archery and skeet range (plate 8), and an additional picnic area (see plate 7). Plate 8 shows the location of each proposed recreation area in relationship to the overall project.

The proposed upgrading of existing facilities includes the rehabilitation of existing campground spurs, erosion control earthwork, the construction of a trailer dump station, two campground amphitheatres, one comfort station, one shower building and one picnic shelter, in addition to general trail maintenance and the addition of courtesy docks at launching ramps.

II. Project Description. The proposed and upgraded recreation facilities for the project are described in the following paragraphs.

A. Prairie Flower Group Campground. The proposed site for the campground is located to the northeast of the existing Prairie Flower Campground. Access would be provided by an extension of the existing access road between the existing campground and Highway 415. The campground will contain seven paved loop roads with a total of 103 campsites. In addition, an open field will be provided for tent camping.

Supporting facilities for the proposed facility will include 4 shower buildings, 10 parking lots with 235 spaces, 2 playgrounds, 1 playfield, 1 amphitheatre, 1 fee collection station, and 1 dump station (see plate 2). The area would be constructed under a 50/50 cost-sharing agreement with the participant assuming all management and maintenance costs.

B. Sandpiper Recreation Area. The proposed site for the beach and sailboat launch facilities is located at the southwest end of a peninsula along the east shoreline of the reservoir. The area is approximately 1/2 mile southwest of the existing marina. Access to both facilities would be provided by using Highway 415 and McBride Drive. The recreation area would be developed under a 50/50 cost-sharing agreement with a non-Federal government entity. The participating partner would assume all management and maintenance costs.

The sailboat launch will contain two paved ramps which will be functional to 840 NGVD. The ramps would be protected by a proposed peninsula approximately 750 feet long, 100 feet wide, and 5 feet in height. The peninsula will require approximately 12,000 cubic yards of impervious material and 850 tons of riprap to protect the structure from wind and wave action. The supporting facilities for the sailboat launch would include a parking lot with 140 spaces, a rigging area with 15 lanes, 2 courtesy docks, 3 picnic shelters and 1 set of vault toilets (see plate 3).

The beach will be approximately 200,000 square feet in size (sand surface) and would be functional to approximately 842 NGVD. The beach will be in a cove area which is bordered to the northwest by a small natural peninsula and to the southeast by the proposed peninsula for the sailboat launch. Supporting facilities for the beach would include one change house, two sets of vault toilets, zoning buoys to provide a defined area for swimming, two sets of trash receptacles and three parking lots with 500 spaces.

C. Second Marina. There are two proposed sites for the second marina; only one of the two sites would be developed. The first site is located to the northwest of the existing Prairie Flower Campground (see plate 5). Access to the area would be provided by Highway 415 and an extension of the existing Prairie Flower access road (see plate 5). The second site is located directly southeast of the Lakeview Recreation Area. Access to this area would be provided by Northwest Beaver Drive and the existing access road to the Lakeview Recreation Area (see plate 4).

The facility could contain a maximum of 251 slips and 62 dry-storage spaces. Site plans for the proposed facility have not been developed. This facility would require 100 percent construction funding by the developer as well as the facility maintenance and administration cost. If a developer would decide to establish a facility at one of the two sites, the site plans would be coordinated with the appropriate Federal, State, county, and local government entities for their review and comments prior to construction. In addition, a separate environmental assessment, a Section 404 report, and 401 certification would be developed and coordinated before construction would take place. The natural resources of both sites are discussed in this assessment and the attached 404 evaluation report.

D. Trails. There are four types of trails for which extensions are proposed. The proposed extensions include approximately 16.25 miles of foot trails, 10 miles of cross-country ski trails, 7 miles of bicycle trails and 6.5 miles of snowmobile trails. The proposed extensions to these trails are displayed on plate 6. The 10 miles of cross-country ski trails are part of the 16.25 miles of proposed foot trails. The 6.5 miles of proposed snowmobile trails are flagged trails similar in nature to the existing 10 miles of seasonal flagged snowmobile trails. The 7 miles of proposed bicycle trails will also be used as snowmobile trails during the winter season. The cost of establishing and maintaining these proposed trails will be funded by the Corps of Engineers. In addition, a 1/4-mile paved handicapped access trail is proposed to the northwest of the Visitors Center. The trail would be used for interpretive programs and nature study oriented to benefit handicapped persons.

E. Outdoor Recreation Skill Area, Skeet Range and Archery Field, Amphitheatre. These proposed recreation facilities can be classified as being constructed dependent upon a latent demand. At the present time there is a small need for these types of recreation facilities at Saylorville Lake which could become more pronounced as time progresses. These types of recreation areas and services are not customarily provided by the Corps. In order to be constructed, these proposed areas would be totally (100 percent) funded by a non-Federal government entity for the construction, maintenance and management of these facilities. Since the development of these facilities is dependent upon future demand and funding by a non-Federal government entity, no site plans have been developed. The proposed site locations are shown on plate 8. If a non-Federal government entity agrees to fund any or all of these three facilities, the site plans, an environmental assessment and a Section 404 evaluation (if needed) will be coordinated for review and comment with the appropriate Federal, State, county, and local government entities. A brief description of the desired character of each area is explained in the following paragraphs.

The outdoor recreation skill area (see plate 8) would provide a practice and instructional area for such activities as cross-country skiing, hand gliding, rock climbing, etc. This area would be a concession site and the concessionaire would be permitted to provide instructions and rent equipment.

Recently, the Iowa Conservation Commission developed a shooting range on land adjacent to Saylorville Lake project land. In the future, that facility could be complemented (if needed) by establishing an archery field and a skeet range on Corps land adjacent to the ICC facility (see plate 8).

In the Des Moines metropolitan area, there has been a renewed interest in concerts, plays, etc. It is possible that in future years there will be a shortage of facilities for these types of activities if the interest continues to grow. A revetment near the Saylorville Lake Barrier Dam could be easily developed into a large outdoor amphitheater which would be utilized during the summer months for various types of performances (see plate 8).

F. Bob Shetler Picnic Area. The proposed site for the picnic area is located in the tailwater area south of the existing Bob Shetler Class A

Campground (see plate 7). Access to the area would be provided by using NW 78th Avenue. The recreation area would be developed under a 50/50 cost sharing agreement with a non-Federal government entity. The participating partner would assume all management and maintenance costs.

The picnic ground would contain 85 picnic tables, 5 shelters, 1 playground, 5 parking lots with spaces, short access trails, and open lawn areas for additional play areas.

G. Upgrade Existing Facilities. The periodic maintenance and upgrading of various facilities within existing recreation areas is necessary to preserve the quality of the natural and manmade resources in those areas. This type of maintenance involves such actions as:

1. Rehabilitating and defining existing campground spurs by outlining the limits of the spur with railroad ties and placing additional gravel in the spur area.
2. Grading, sloping, and planting portions of recreation areas with erosion and/or compaction problems.
3. The periodic placement of wood chips and drainage bars on trails in order to prevent erosion and compaction and the patching or resurfacing of paved trails in order to maintain their function and enhance safety.
4. The placement of landscape plantings to be utilized for buffers, aesthetics, define borders, and control erosion.
5. Landscape maintenance which would include mowing, pruning, the removal of damaged trees and shrubs, seeding, aerating, fertilizing and topsoil replacement.
6. The repaving of existing paved roads within the recreation areas of the project.
7. The maintenance of project buildings which would include preventative maintenance as well as the replacement of broken, vandalized or outdated items.
8. The preventative and replacement maintenance of project utility lines (e.g. water, electric, sewage).

The revised master plan contains maintenance proposals within existing recreation areas to rehabilitate the camping spurs in the Prairie Flower Campground (134 spurs) and the west side of the Bob Shetler Class B Campground (10 spurs), place wood chips and drainage bars on the project trails to control compaction and erosion, establish additional landscape plantings for control, aesthetic and erosion purposes, and lastly, erosion control earthwork to the east of the Lakeview comfort station and adjacent to a picnic shelter in the Walnut Ridge Picnic Ground. In addition, other periodic maintenance takes place at the project which is of a preventative and/or unscheduled nature as in numbers 5, 6, 7, and 8 above.

The revised master plan also contains proposals to construct additional supporting facilities within various existing recreation areas. These construction proposals include the construction of a trailer dump station in the Bob Shetler Class A Campground, a 1/4-mile paved handicapped access trail northwest of the Visitors Center, an amphitheatre in the Acorn Valley and Prairie Flower Campgrounds, an additional picnic shelter and 15-car parking lot in the Cottonwood Picnic Ground, an additional comfort station in the Walnut Ridge Picnic Ground, a new tile drainage field for a comfort station located off of the southeast access loop of the Cottonwood Picnic Ground, a shower building in the Bob Shetler Class B Campground and additional courtesy docks at the Cherry Glen and Lakeview Boat Launch Areas. All of the construction proposals except the handicapped access trail would be established in open, mowed lawn areas of the existing recreation areas. The handicapped access trail would be carefully placed in a wooded area to the northwest of the Visitors Center. As a result, no trees would be removed from the area.

III. Alternatives.

A. No Action. The future demands for certain types of recreation activities cannot be supported by the existing facilities. If no action were taken to satisfy this demand, these facilities would be overused. As a result, the natural and manmade resources of these facilities would be damaged. The economic and environmental impacts associated with this damage would continue to escalate over time as the resources of the existing facilities deteriorate from overuse. In addition, the existing and future recreation needs of the general public would not be met by taking a "no action" alternative.

B. Other Designs and Locations. The designated sites for the proposed facilities will be located in areas where environmental impacts would be held to a minimum and where the natural resources are capable of supporting the facilities and their use. The designs that were developed for those facilities that will be cost-shared were developed to keep impacts to a minimum. The philosophy of developing site plans that keep environmental impacts to a minimum will be stressed during the design and review of those plans for facilities that will be 100 percent funded for construction and maintenance by a non-Federal government entity.

IV. Affected Environment.

A. Terrestrial Environment. The affected terrestrial environment for each of the proposed recreation areas and the upgrading of existing facilities is briefly described in tables EA-1 and EA-2.

B. Aquatic Environment. The proposed Sandpiper Recreation Area and the Second Marina, if established, would have an impact on a small amount of aquatic habitat.

TABLE EA-1

Terrestrial Environment of the Proposed Sites

Site	Topography	Vegetation	Soils and Slope
Prairie Flower Group Campground	Open upland area	Open area consists of grasses and forbs bordered by upland forest dominated by oak and hickory trees	Loams on the open upland area with a slope of 1-9 percent
Sandpiper Beach and Sailboat Launch	Open transition zone between upland and bottom land areas	Grasses and forbs in early stages of succession due to periodic inundation	Sandy loams and loams on the transition zone with a slope of 1-5 percent and 5-9 percent, respectively
Second Marina Lakeview Site	Open transition zone between upland and bottom land areas	Open area consists of mowed lawns, grasses and forbs bordered to the southeast by a bottom land forest	Shallow loam soil over a layer of bedrock with a slope of 1-14 percent
Prairie Flower Site	Open upland area and a sloping transition zone	Open area consists of grasses and forbs and the transition zone is vegetated with an upland forest dominated by oak and hickory trees	Loams on the open upland area with a slope of 2-9 percent; Lester-Colo complex on the transition zone with a slope of 9-40 percent
Amphitheatre	Open transition zone and small open upland area	Open transition zone vegetated in grasses and forbs with the upland area covered in an upland forest dominated by oak and hickory trees	Loams on the upland area with a slope of 2-9 percent clay and Lester-Colo complex soils on the transition zone 14-40 percent
Outdoor Skills Area	Open upland area bordered on the north, east, and south by ravines	Open area consists of grasses and forbs and the ravines are forested with upland species dominated by oak and hickory trees	Loams on the upland area with a slope of 1-9 percent; Lester-Colo complex on the ravines with a slope of 14-40 percent

The proposed peninsula area for the Sandpiper Recreation Area has a benthic habitat which is thought to be almost totally sand (alluvial) 3 to 4 feet thick covered by a layer of silt 6 to 12 inches thick. This theory is based upon the fact that prior to inundation the soils within this area contained large amounts of sand. In addition, the upper portion of the reservoir has had a layer of silt deposited in the north portion of the reservoir area. The principal game fish within the reservoir are the northern pike, crappie, largemouth bass, channel catfish, bluegill and walleye.

A developer for the Second Marina would have the option of establishing a breakwater if so desired. The two proposed sites for the marina are thought to both have a benthic habitat of 3 to 4 feet of alluvial clay over a layer of alluvial sand which is over shale. This type of benthic habitat is not conducive to supporting a large population and species diversity of invertebrates.

V. Environmental Consequences of Preferred Action. This discussion of environmental impacts will focus on the generalized impacts of the proposed and upgraded recreation areas on the natural and manmade resources of the Saylorville Lake project. The 404(b)(1) evaluation (attachment 1) specifically addresses impacts to the aquatic environment.

A. Social Impacts of the Preferred Action.

1. Noise. Heavy machinery such as dump trucks, bulldozers, etc. will generate a temporary increase in noise during construction. When completed, the proposed recreation facilities would have a minor, if any, effect on noise levels.

2. Displacement of People. No people will be displaced as a result of the proposed and upgraded recreation areas.

3. Aesthetics. The overall aesthetics of the project will not change significantly. The supporting facilities for the proposed recreation areas and the upgraded recreation areas will be placed in open upland areas. A basic theme for the supporting facilities will be followed which will represent a combination of aesthetics, maintenance, security and function. The roof style and the materials used in the buildings and supporting facilities will be uniform and compatible with each other and the surrounding natural resources.

The proposed peninsula for the Sandpiper Recreation Area and the breakwater for the second marina (to be constructed at the discretion of the developer) would require riprap for wind and wave protection. Weathering and water-tolerant vegetation will cause the rock to blend in with the surrounding natural resources over time.

4. Desirable Community Growth. The proposed and upgraded recreation areas could have a minor positive effect on community growth.

5. Recreation. Establishing the proposed recreation areas and the upgrading of existing facilities would have a positive effect on recreation at Saylorville Lake by providing additional recreation opportunities. These additional areas and facilities would enhance the

recreation experience by fulfilling the recreation needs of the public, reducing overcrowding, and reducing the damage to the natural and manmade resources at existing recreation facilities attributed to overuse.

6. Community Cohesion. The project will not affect community cohesion.

B. Economic Impacts of Preferred Action.

1. Property Value. Property values will not be affected.

2. Tax Revenue. Tax revenues will not be affected.

3. Public Facilities. Additional public recreation areas and facilities would be added to the Saylorville Lake Project. No other public facilities will be affected.

4. Public Services. The additional recreation areas and facilities would help to fulfill the recreation needs of the general public within the Greater Des Moines and outlying areas.

5. Regional Growth. There will be no effect on regional growth.

6. Employment/Labor Force. During the construction of the proposed recreation areas and facilities there would be a minor positive effect on the local labor force.

7. Business and Industrial Activity. Other than minor short-term positive interactions with construction, business and industrial companies, the proposed recreation areas and the upgraded facilities in existing areas will have no long-term effects upon these companies. The proposed areas could provide business opportunities for the non-Federal government entity who develops and maintains the area(s) or the lessee who maintains and manages the proposed recreation area(s).

C. Environmental Impacts.

1. Manmade Resources. The addition of the new recreation areas and upgraded facilities in existing areas would reduce the excessive wear to the manmade facilities which can be attributed to overuse above the designed carrying capacity.

2. Natural Resources.

a. Terrestrial Resources. In the immediate area of the proposed recreation areas and the upgraded recreation facilities in existing areas there will be minor temporary adverse impacts caused by construction. Construction machinery will generate noise and dust and create a temporary unfavorable environment for terrestrial species. If all of the proposed recreation areas are established, approximately 245 to 255 acres of grass and forbs and 6 1/2 to 7 acres of trees will be impacted. Table EA-2 provides information concerning how many acres of grass and forbs each proposed

TABLE EA-1 (Cont'd)

Terrestrial Environment of the Proposed Sites

<u>Site</u>	Topography	Vegetation	Soils and Slope
Archery and Skeet Range	Open flatland	Open area with forbs and grasses	Loams on the open upland area with a slope of 1-9 percent; Lester-Colo complex on the ravines with a slope of 14-40 percent
<u>Existing Recreation Areas</u>			
Bob Shetler Class B Campground-Rehabilitate campground, spurs, and shower building	Open bottom land area	Developed grass lawns and grass and forbs in open areas	Alluvial fill on a slope of 0-2 percent
Prairie Flower Campground - Rehabilitate campground, spurs, and amphitheatre	Open upland area bordered by sloping transition zones	Developed grass lawns, open areas of forbs and grasses	Loams with a slope of 1-5 percent
Bob Shetler Class A Campground-Trailer dump station	Open bottom land area	Developed grass lawns and grass and forbs in open areas	Alluvial fill on a slope of 0-2 percent
Visitors Center-Handicapped Access Trail	Forested upland area	Upland forest dominated with oak and hickory trees	Loams with a slope of 1-5 percent
Acorn Valley Campground, Amphitheatre	Open upland area	Developed grass lawns	Loams with a slope of 1-9 percent
Cottonwood Picnic Ground - Picnic Shelter, and 15-car Parking Lot, Tile Drainage Field	Open bottom land area	Developed grass lawns	Alluvial sand on a slope of 0-2 percent

TABLE EA-1 (Cont'd)

Terrestrial Environment of the Proposed Sites

Existing Recreation Areas	Topography	Vegetation	Soils and Slope
Walnut Ridge Picnic Ground, Comfort Station, Erosion Control Earthwork	Open upland area	Developed grass lawns	Loams with a slope of 5-9 percent
Lakeview Boat Launch-Courtesy Dock, Erosion Control Earth- work	Open transition zone	Grass and forbs. Anchor system will be placed in this area - partially developed grass area	Shallow loam with a slope of 1-14 percent
Cherry Glen Boat Launch - Courtesy Dock	Open transition zone	Grass and forbs. Anchor system will be placed in this area	Loams with a slope of 1-5 percent

recreation area will impact. If all of the proposed upgraded facilities are constructed in the existing recreation areas, approximately 2 acres of developed open area vegetated in grasses and forbs would be impacted. Table EA-3 provides information concerning the amount of acreage each proposed upgrade will impact.

TABLE EA-2

Proposed Recreation Area Acreages

<u>Proposed Recreation Area</u>	<u>Acreage</u>
Prairie Flower Group Campground	50
Sandpiper Recreation Area	100
Second Marina	
Prairie Flower Site	25
Lakeview Site	15
Trails	15
Outdoor Recreation Skills Area	15
Skeet Range and Archery Field	10
Amphitheatre	5
Bob Shetler Picnic Ground	30

TABLE EA-3

Upgraded Facilities In Existing Recreation Areas

<u>Area</u>	<u>Facility</u>	<u>Affected Acreage</u>
Bob Shetler Class B Campground	Rehabilitate Camping Spurs	No new acreage
Prairie Flower Campground	Rehabilitate Camping Spurs	No new acreage
Bob Shetler Class A Campground	Add Dump Station	1/4
Visitors Center	Add Handicapped Access Trail	1/3
Acorn Valley Campground	Add Amphitheatre	1
Prairie Flower Campground	Add Amphitheatre	1
Cottonwood Picnic Ground	Add Picnic Shelter/15-car Parking Lot	2
Walnut Ridge Picnic Ground	Add Comfort Station	1
Bob Shetler Class B Campground	Add Shower Building	1
Lakeview Boat Launch	Add Courtesy Dock	No acreage
Cherry Glen Boat Launch	Add Courtesy Dock	No acreage
Lakeview Recreation Area	Erosion Control Earthwork	2
Walnut Ridge Picnic Area	Erosion Control Earthwork	1/4

In addition, a small amount of resloping and grading will take place in some of the proposed recreation areas for drainage purposes. The contractor(s) for the proposed recreation area(s) will be required to follow practices to reduce the potential of erosion during construction according to guide specifications (CW-01430 July 1978). This would involve

the use of gravel, grasses, mulches, and temporary berms. Erosion control features of a permanent nature will be introduced into the construction areas as soon as possible. These features would include the extensive use of mulching, seeding, and sodding.

Aside from temporary adverse effects, the proposed recreation areas and additions in the existing areas could benefit terrestrial resources directly and indirectly. The potential for damage to the grasses and forbs in the existing recreation facilities (attributed to overuse) will be reduced by redistributing a portion of this use into the proposed recreation areas. In addition, native prairie species (sideoats grama, sand lovegrass, compass plant, wild bergamont, etc.) could be planted in designated sections of the proposed recreation areas as buffer zones.

b. Aquatic Resources. Two of the proposed recreation areas (the Sandpiper Recreation Area and the Second Marina) could potentially have temporary adverse impacts caused by construction. Construction machinery and motor vessels will generate noise and turbidity. These impacts will create a temporary unfavorable impact for aquatic and semi-aquatic organisms. The placement of 12,000 cubic yards of impervious material and 850 tons of riprap for the peninsula at the Sandpiper Recreation Area will temporarily increase water turbidity. A similar situation would arise if a developer would construct a breakwater for the second marina.

The construction of the peninsula and the breakwater would provide some benefit to the aquatic habitat within the aquatic areas of the proposed recreation areas. The riprap will add diversity to the existing substrate which could increase invertebrate populations. This should also benefit fisheries by providing food, possible spawning sites and/or nursery areas, and additional habitat for certain species of fish.

3. Air Quality. Other than exhaust emissions and dust from construction equipment, the project will have no effect on air quality.

4. Water Quality. The water quality of Saylorville Lake will not be impacted by the proposed recreation areas. A temporary increase in turbidity will occur during the construction of the peninsula and breakwater. Additional information concerning water quality is discussed in the attached Section 404(b)(1) evaluation. The Rock Island District has applied for 401 certification with the Iowa Department of Water, Air, and Waste Management for the proposed peninsula at the Sandpiper Recreation Area. A separate 404 evaluation report and 401 certification will be developed at a later date for the breakwater of the second marina.

5. Water Conservation. The project will have no effect on water conservation.

6. Endangered Species. Two federally listed endangered species may occasionally occur in the reservoir area, the bald eagle (Haliaeetus leucocephalus) and the peregrine falcon (Falco peregrinus).

Bald eagles occur in the reservoir area primarily during the winter months. The eagles use trees adjacent to the reservoir and outlet structure for perching and open water areas in the winter months for feeding. Perching trees adjacent to the reservoir and outlet structures as well as winter open water areas would not be disturbed by the proposed recreation areas.

The peregrine falcon may be present in the project area during the spring and/or fall migration periods. There are no recorded sightings of the falcon within the project area but there have been recorded sightings within the region. The project contains a small amount of habitat which would be favorable to the falcon during the migration seasons. This habitat consists of nonforested open areas adjacent to the former river valley. This habitat would not be impacted by the proposed recreation areas and is not utilized for recreation purposes from mid-fall to late spring. The U.S. Fish and Wildlife Service was consulted and have concurred that no adverse impacts will occur to these endangered species (see the attached telephone conversation record).

7. Archaeological/Cultural Resources. The more than 450 archaeological sites encompassed by the Saylorville Lake Archaeological District constitute a significant cultural resource which has been and is being adversely affected by project-related actions (which include the proposed recreation areas). Work is continuing in accordance with the Memorandum of Agreement to mitigate the effects on the resource through intensive investigation and analysis. Current plans call for this work to be completed by 1984. Preservation and stabilization of significant resources will be handled on a site-by-site basis.

VI. Environmental Impacts of Nonpreferred Alternatives. If the proposed areas and the upgrading of existing facilities were not established, damage to the environmental resources of the existing recreation areas would happen from overuse. This would occur if the physical and designed carrying capacity for the existing recreation area(s) were exceeded over a given period of time. In addition, the existing and projected future recreation demands of the public cannot be supported by the existing facilities.

The designated sites for the proposed recreation areas and the upgraded recreation facilities in existing areas have been chosen because these sites would have a minimal amount of environmental impacts if facilities were established on them. The natural resources of the sites are capable of supporting recreation facilities and activities. The proposed cost-shared recreation areas have been designed to keep impacts to a minimum. This philosophy will be stressed during the development and review of plans for those areas that will require 100 percent funding by a non-Federal government entity for construction and maintenance.

VII. Probable Adverse Environmental Effects Which Cannot Be Avoided. Temporary impacts caused by construction activities such as noise, dust, and increased local turbidity cannot be avoided. The removal of some

grasses, forbs, and trees are necessary to establish the main and supporting facilities within the proposed recreation areas. A small amount of grasses and forbs will be impacted by the addition of additional facilities in existing recreation areas. See Table EA-3 for additional information.

VIII. Relationship Between Short-Term Use of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity. The quality of the substratum, invertebrates, and fishery around the proposed peninsula and breakwater would be enhanced over time if these facilities were established. The loss of grasses, forbs, and trees can be alleviated over time by the planting of trees and native grasses and forbs within the buffer areas of each recreation area. The quality of the environmental resources within the existing recreation areas would not be impacted as a result of developing additional recreation areas.

IX. Any Irreversible or Irrecoverable Commitments of Resources Which Would Be Involved if the Proposed Action Should Be Implemented. Fuel and hours of manpower used during the construction of the proposed recreation areas can be classified as being irretrievable.

X. Relationship of the Project to Land Use Plans. The primary purpose of the affected lands is for flood control. In addition to flood control benefits, the project fulfills a multipurpose role by providing low-flow augmentation, water supply, recreation, water conservation, and fish and wildlife benefits. The proposed recreation areas are in unison with the project purposes.

XI. Compliance with Environmental Quality Statutes.

A. Endangered Species. Consultation concerning endangered species has been initiated with the Rock Island Field Office of the U.S. Fish and Wildlife Service.

B. Archaeological/Cultural. Work is continuing in accordance with the Memorandum of Agreement to mitigate the effects of the resource through intensive investigation and analysis. Current plans call for this work to be completed by 1984. This work includes the proposed recreation areas. The SHPO has reviewed the draft of the Saylorville Master Plan and will be given an opportunity to review and comment on the revised final.

C. Federal Water Project Act. Under a cost-sharing agreement* (PL 89-72) the Prairie Flower Group Campground and the Sandpiper Recreation Area could be established. The Second Marina, amphitheatres, archery and skeet range, and the outdoor recreation skills area would require 100 percent construction and maintenance funding by a non-Federal government entity. The existing facilities funded by the Federal Government will be affected by the proposed recreation areas.

D. Fish and Wildlife Coordination Act. The U.S. Fish and Wildlife Service and the Iowa Conservation Commission have been consulted during the preparation of this assessment.

* See discussion in Master Plan, Section V, subparagraph entitled Application of Public Law 89-72, page 99.

E. E. O. 11988 - Flood Plain Management. The Project will not have any effect on the development of habitable structures in the flood plain. Flood heights will not be affected by the proposed recreation areas.

F. Wild and Scenic Rivers Act. No wild and scenic rivers will be affected by the proposed recreation areas.

G. E. O. 11990 - Protection of Wetlands. No wetlands will be affected by the proposed recreation areas.

H. Clean Water Act. A Section 404(b)(1) evaluation report has been prepared and is attached to this assessment.

I. Clean Air Act. Not applicable.

J. Monitoring and Mitigation. The Rock Island District, Corps of Engineers is continuing archaeological and cultural work in accordance with the Memorandum of Agreement to mitigate the effects of the resource through intensive investigation and analysis. Current plans call for this work to be completed by 1984. The Rock Island District will continue to monitor the natural resources of the proposed recreation areas before and after construction.

XII. Conclusions. The proposed recreation areas will have no significant adverse effects on the environment.

XIII. Coordination. The following agencies have been contacted during the preparation of this Environmental Assessment:

United States Fish and Wildlife Service
Iowa Conservation Commission

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE

23 August 1983

SUBJECT OF CONVERSATION

Endangered Species/Fish and Wildlife Coordination Act - Revised Master Plan for Saylorville Lake

INCOMING CALL

PERSON CALLING

ADDRESS

PHONE NUMBER AND EXTENSION

PERSON CALLED

OFFICE

PHONE NUMBER AND EXTENSION

OUTGOING CALL

PERSON CALLING

OFFICE

PHONE NUMBER AND EXTENSION

Timothy R. Toplisek

Rock Island District
US Army Corps of Engineers

309/788-6361
ext. 6308

PERSON CALLED

ADDRESS

PHONE NUMBER AND EXTENSION

Jerry Rasmussen

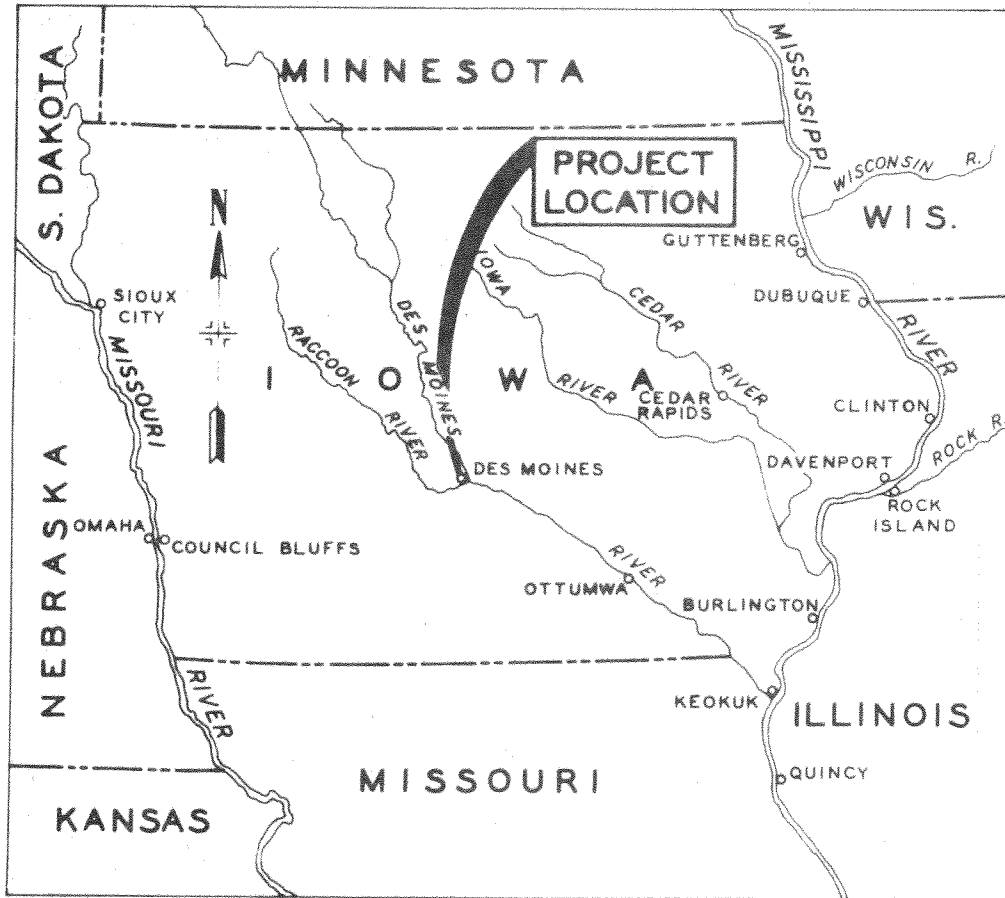
Rock Island Field Office
US Fish and Wildlife Service

309/793-5800

SUMMARY OF CONVERSATION:

I called Mr. Rasmussen to obtain Section 7 and Endangered Species Clearance for the Revised Saylorville Lake Master Plan. I informed Mr. Rasmussen about the proposed recreation areas described in the plan and the natural resources and habitats within the proposed site areas. I also stated that the proposed recreation areas would not have an effect on habitat utilized by endangered species.

Mr. Rasmussen stated that based on this information he granted the Rock Island District Section 7 and Endangered Species clearance.



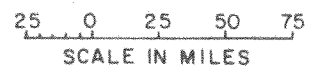
VICINITY MAP

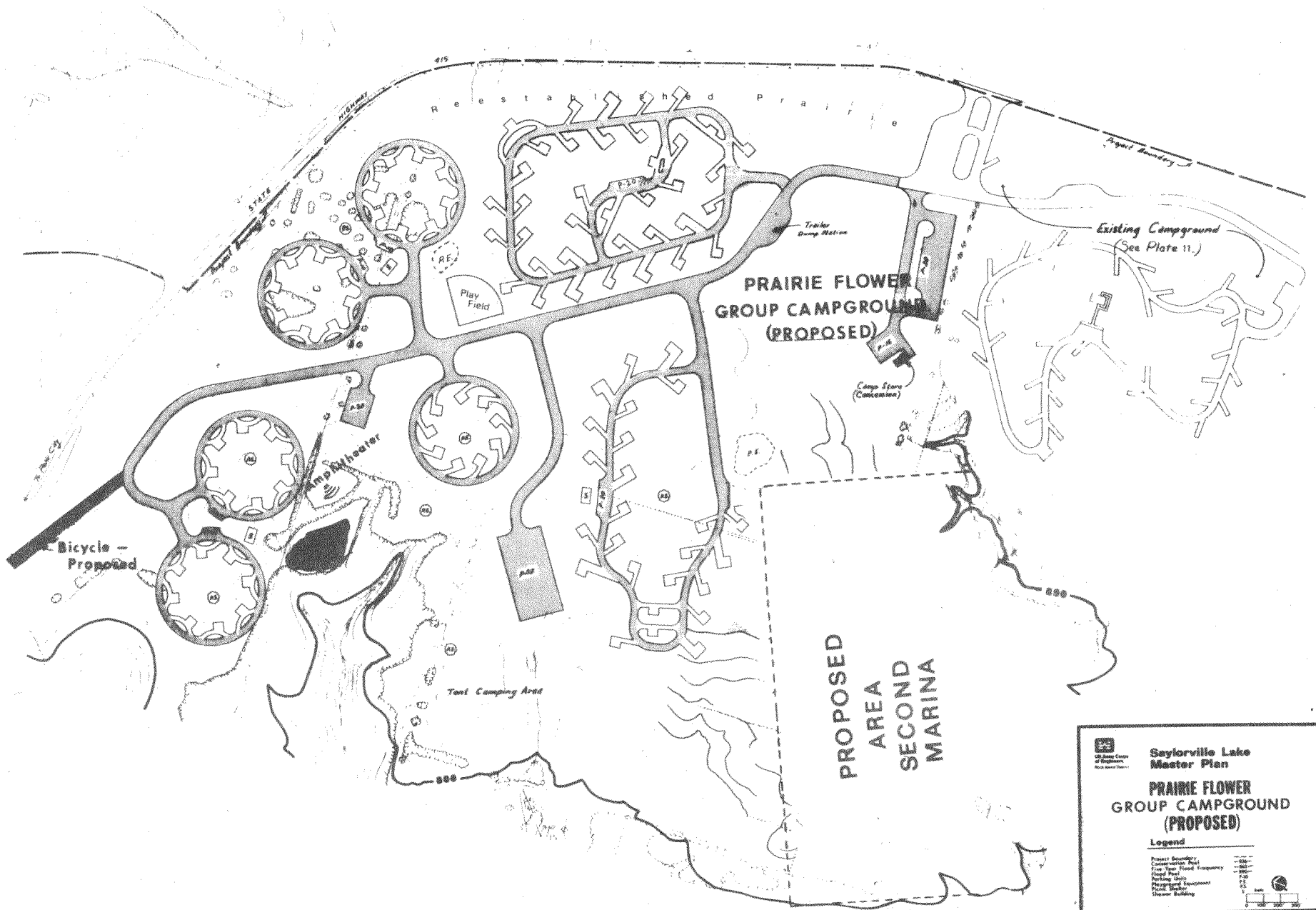


US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

PROJECT LOCATION



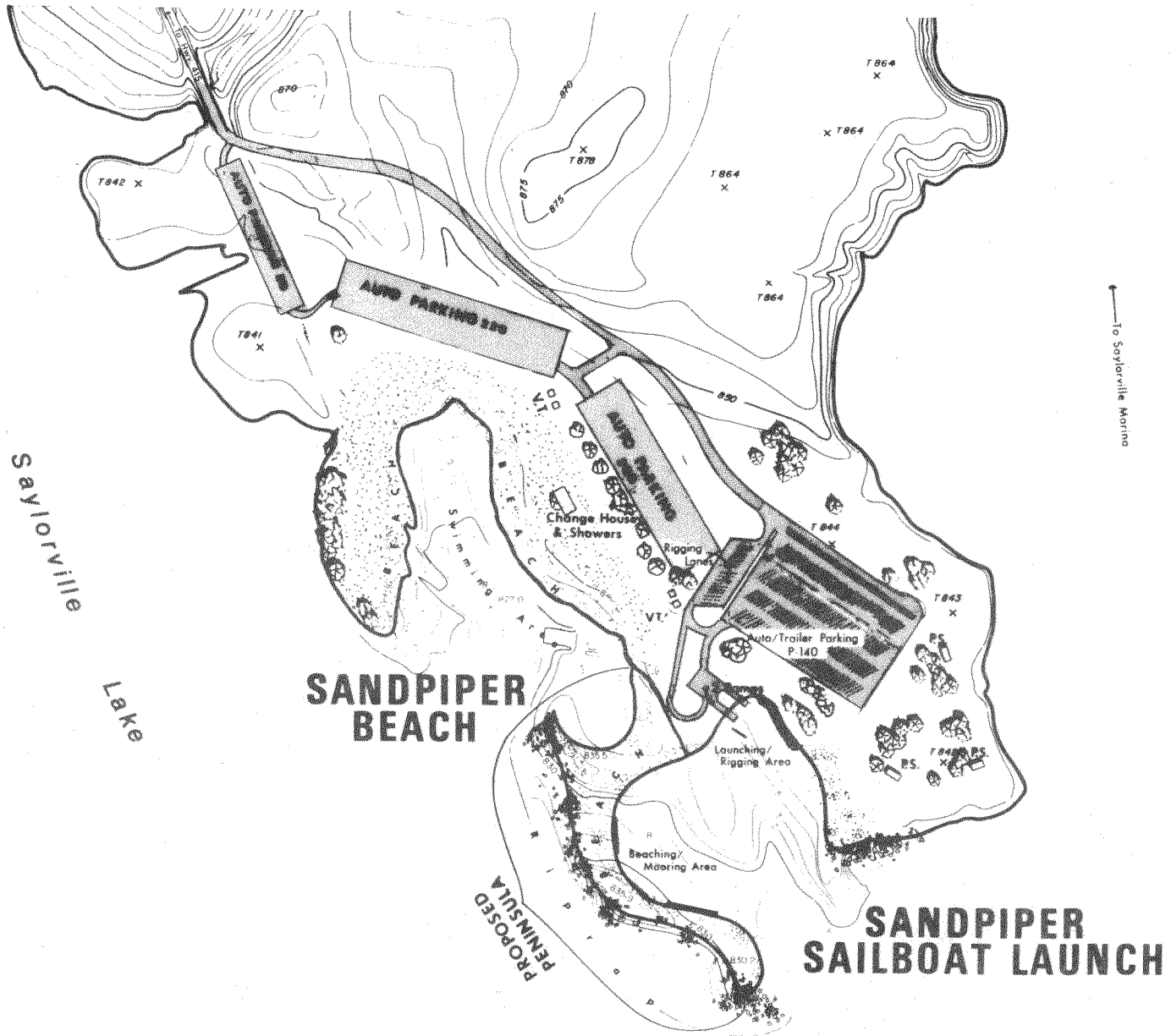



Saylorville Lake Master Plan
PRAIRIE FLOWER GROUP CAMPGROUND (PROPOSED)

Legend

Project Boundary	—
Concession Pad	—
Five Year Flood Frequency	—
High Road	—
Perching Area	—
Recreation Equipment	—
Trailer Dump Station	—
Thousand Building	—





Saylorville
Lake

→ To Saylorville Marina

**SANDPIPER
BEACH**

**SANDPIPER
SAILBOAT LAUNCH**

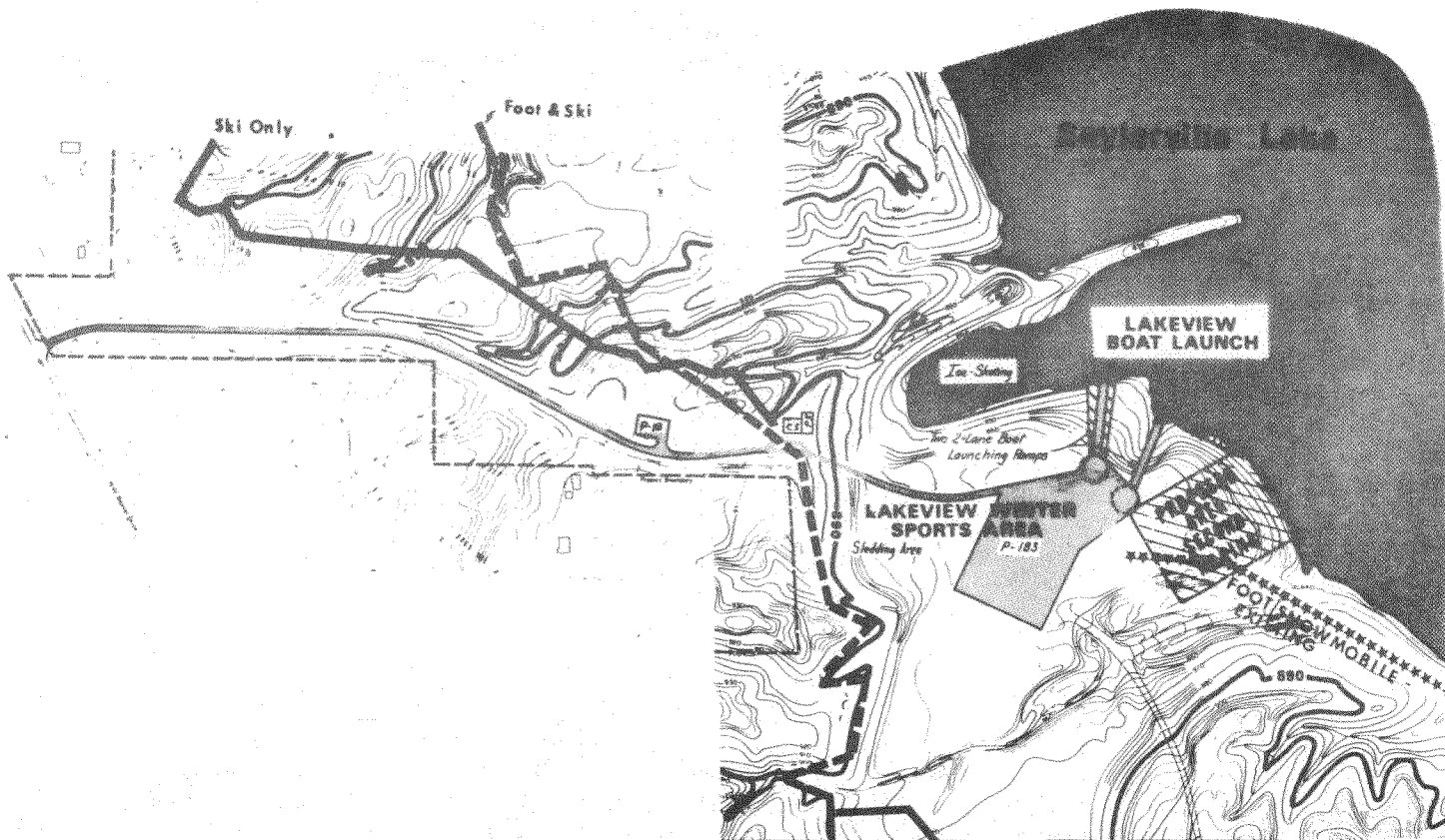
PROPOSED
PENINSULA



**Saylorville Lake
Master Plan**
**SANDPIPER RECREATION AREA
(PROPOSED)**

Legend

Project Boundary	---
Centerline Road	—●—
Five Year Flood Frequency	---
Water Pool	---
Proposed Utility	---
Proposed Equipment	■
Public Shelter	□
Shower Building	□
Confined Storage	□
Vault Toilet	□


 0 100 200







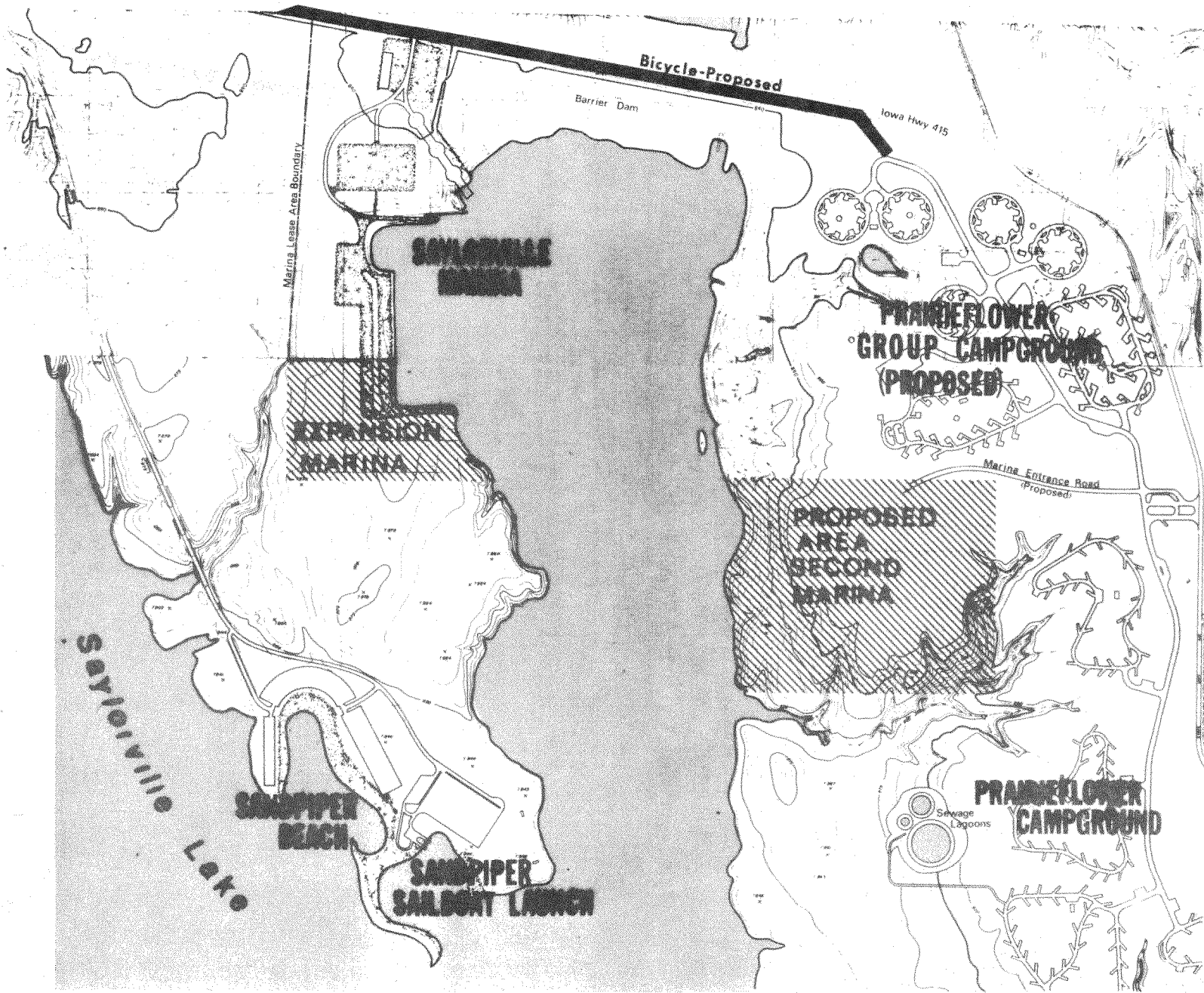
**Saylorville Lake
Master Plan**


LAKEVIEW RECREATION AREA

Legend

Project Boundary	---
Concrete Pavement	—•—•—
Two-Lane Road	—•—
Single Road	—•—
Parking Area	•••••
Recreational Equipment	•••••
Shed	•••••
Concrete Slab	•••••
Wash Trailer	•••••








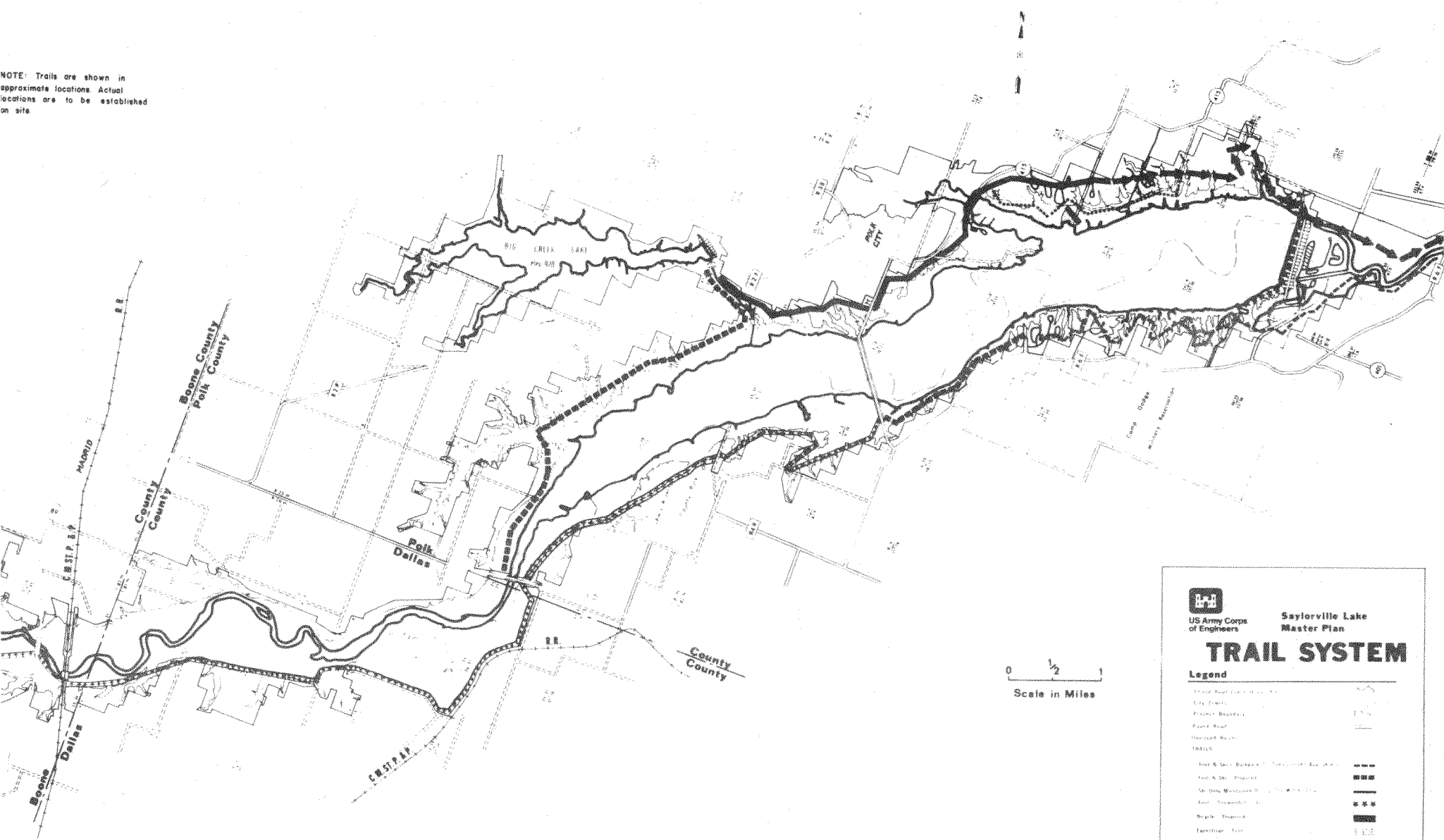

Saylorville Lake Master Plan
MARINA DEVELOPMENT ALTERNATIVES

Legend


Project Boundary	---
Concretion Pad	---
Five Year Flood Frequency	---
Fixed Pad	---
Parking Lot	---
General Development	---
Prop. Building	---
Water	---
Land	---
Water Table	---

NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.



0 1/2 1
Scale in Miles



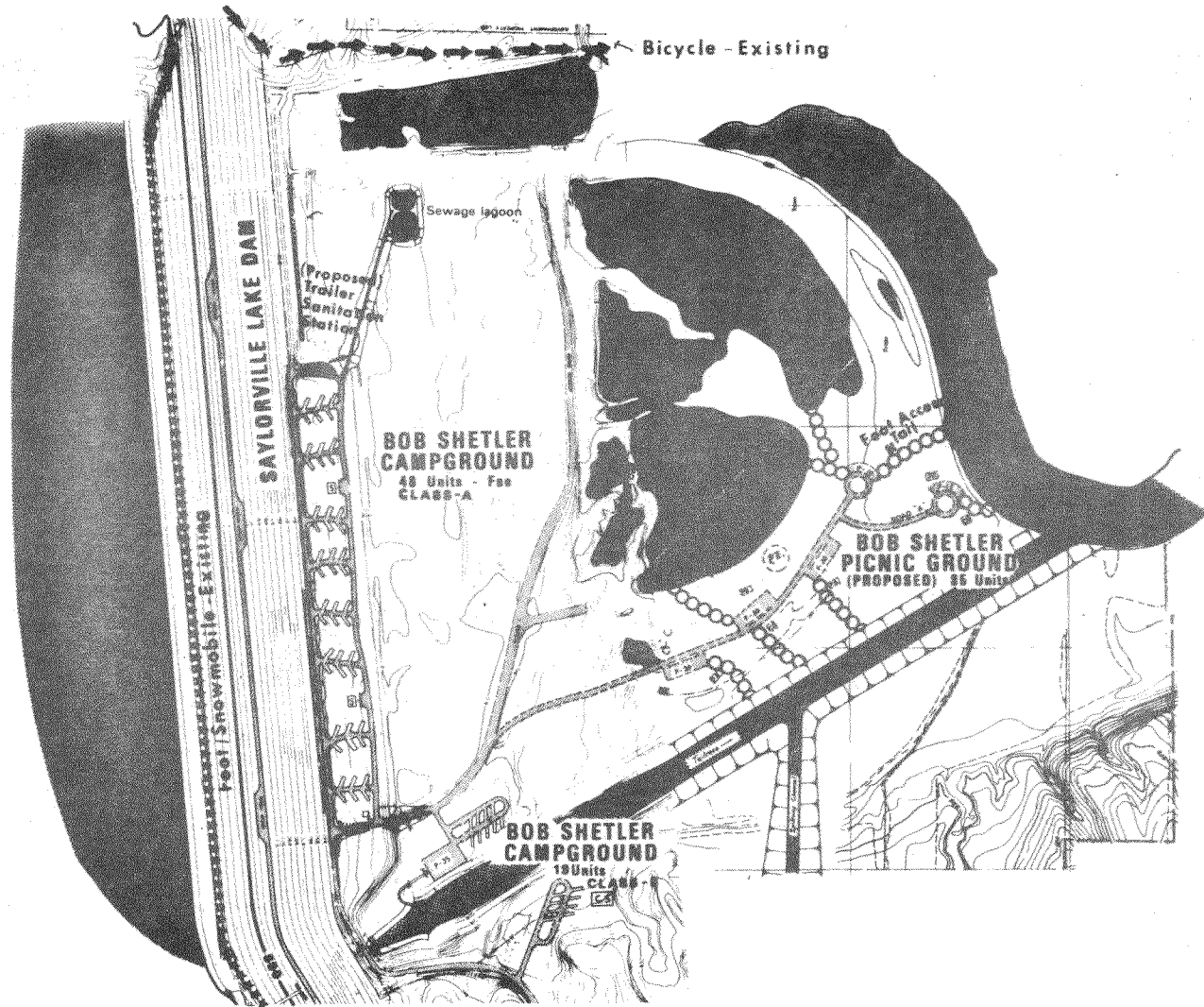
US Army Corps
of Engineers

Saylorville Lake
Master Plan

TRAIL SYSTEM

Legend

State Road	
City Street	
Project Boundary	
Public Road	
Harvest Road	
TRAILS	
Trail & Sign System (Temporary)	
Trail & Sign Proposed	
Trail Boundary (Proposed)	
Trail Boundary (Existing)	
Trail Boundary	
Trailway	
Trailway	
Trailway	



Saylorville Lake Master Plan

BOB SHETLER RECREATION AREA

Legend

Project Boundary	---
Construction Area	---/---
Tree Strip (Open Frequency)	---/---
Wood Pile	---/---
Perimeter Wall	---/---
Recreational Equipment	---/---
Picnic Shelter	---/---
Shower Building	---/---
Counter Station	---/---
Youth Table	---/---

Scale: 0 50 100 200 Feet

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ENVIRONMENTAL ASSESSMENT
AND SECTION 404 (b)(1) EVALUATION
FOR THE

REVISED SAYLORVILLE LAKE MASTER PLAN

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324 E. 11TH ST., KANSAS CITY, MO 64108

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EXHIBIT 1

PRIOR PERTINENT DESIGN MEMORANDA

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

EXHIBIT 1
PRIOR PERTINENT DESIGN MEMORANDA

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EXHIBIT 1

PRIOR PERTINENT DESIGN MEMORANDA

<u>D.M. No.</u>	<u>Title</u>	<u>Date Sub- mitted or Scheduled</u>	<u>Date Approved by NCD/OCE</u>
1	Hydrology and Hydraulic Design		17 Jun 60
2	Site Selection		6 Jun 60
3	General Design Memorandum		19 May 61
	Supplement No. 1, Remedial Works in Big Creek Valley		19 Aug 66
	Supplement No. 2, Boundary Survey and Marking		20 May 66
4	Concrete Materials		1 Jun 61
5	Geology and Soils		5 Sep 61
6a	Preliminary Master Plan		12 Dec 62
	Supplement No. 1		17 Jul 64
	Abbreviated Rec. Master Plan FY 73-74 - Facility Development In Part		3 Jun 74
6b	Recreation Master Plan (5 yr. update pending)		4 Feb 74
	Supplement No. 1 - County Road Relocations	Nov 75	11 Dec 73
	Supplement No. 4 River Valley Campground	10 Mar 77	
	Letter Report - Acorn Valley Picnic Ground	Feb 79	
	Supplement No. 3 - Water and Sewer Facilities for Acorn Valley Campground, Walnut Ridge Picnic Ground, Lakeview Boat Launch		10 Dec 79
	Supplement No. 2 - Downstream Corridor		13 Aug 81
7a	Real Estate - Damsite		19 Dec 62
7b	Real Estate - Reservoir Area		19 Jan 65
7c	Real Estate - Modification of Design Flood Control Level		17 Oct 66
7d	Real Estate - Modification of Estates to be Acquired		15 Dec 67
7e	Real Estate - Big Creek Valley		14 Nov 68
7f	Real Estate - Polk City, S&V Road		1 Jul 70
7g	Real Estate - C.M.St.P.&P. Railroad		28 Sep 70
7h	Real Estate - Iowa State Highways No. 89 and 415		19 Jul 72
7i	Ledges State Park		19 Jul 76
7j	Moingona, Iowa	16 Sep 74	Disapproved
7k	Telemetering System		28 May 75
7l	Saylorville Corridor		27 Aug 76

THIS IS NO COMPL SUP. NO. WAS FC SET ON) NARRIN DATED 1982

EXHIBIT 1 (Cont'd)

PRIOR PERTINENT DESIGN MEMORANDA

<u>D.M. No.</u>	<u>Title</u>	<u>Date Sub- mitted or Scheduled</u>	<u>Date Approved by NCD/OCE</u>
8	Dam - Earth Embankment Supplement No. 1 Underseepage Control (Slurry Trench) Dam Stability During Construction	2 Apr 75	31 Dec 62 28 Jul 65 21 Feb 66
9	Dam - Outlet Works Supplement No. 1 - Service Bridge		18 Sep 64 23 Jan 68
10	Dam - Spillway Water Quality Control Storage Study		28 Dec 62 23 May 63
11	State Highways Supplement No. 1 - Stability Analyses and Subsurface Data for Highway 89 Embankment Supplement No. 2		18 Oct 66 11 Sep 67 25 Jan 71
12A	C.M.St.P.&P. Railroad		20 Dec 68
13	Camp Hantesa		22 Dec 67
15	County Roads Supplemental No. 1 - Change in Traffic Patterns Supplemental Data Supplement No. 2 - Added Item Supplement No. 3 - S&V Road Subsurfacing and Slope Stability Data Supplement No. 4 - Polk County Road Improvements		5 Dec 67 6 Nov 68 30 Dec 69 3 Jan 71 10 Jan 77
16a	Madrid Water Supply Supplement No. 1 - Madrid Water Supply	Jul 73	17 Feb 71
16b	State Hospital Water Supply (Woodward)		11 Sep 64
16c	Ogden and Iowa 4-H Foundation Camp Water Supplies		2 Dec 70
17	Clearing Lake Area - Basic (revised) Supplement No. 1 - Lake Clearing	Dec 74	10 Sep 73
18	Administration Facilities - Visitor Center and Maintenance Building		11 Oct 73
19	Remedial Works in Big Creek Valley Supplement No. 1 - Terminal Dam and Spillway Supplement No. 2		11 Jul 68 12 Feb 70 16 Nov 70
20	Cemeteries Cemetery Relocations - Final Report	Dec 74	16 Oct 72
21	Electric Powerlines		7 Apr 69
21a-1	Electric Powerlines - Damsite		8 Jul 65

EXHIBIT 1 (Cont'd)

PRIOR PERTINENT DESIGN MEMORANDA

<u>D.M. No.</u>	<u>Title</u>	<u>Date Sub- mitted or Scheduled</u>	<u>Date Approved by NCD/OCE</u>
22	Telephone Lines		12 Nov 69
24a	Communication System		29 Mar 65
24b	Automatic Reporting Gages		13 May 66
26	Ledges State Park Remedial Work Supplement No. 1		20 Dec 68 18 Dec 69
27	Camp Dodge Remedial Work Supplement No. 1 - Five Dwellings		18 Oct 63 24 Nov 64
28	Construction Procedure and Diversion Plan		12 Mar 74
	Reservoir Regulation - Appendix B, Revised Master Reservoir Regulation Manual, Saylorville Lake	Sep 83	
-	Phase I Water Demand and Availability		Jul 81
-	Phase II Reallocation of Reservoir Storage (Adds Water Supply as Project Purpose)		Aug 82

EXHIBIT 2

FEDERAL STATUTES AND EXECUTIVE ORDERS
PERTINENT TO RESOURCE DEVELOPMENT
AND MANAGEMENT

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

EXHIBIT 2

FEDERAL STATUTES AND EXECUTIVE ORDERS
PERTINENT TO RESOURCE DEVELOPMENT
AND MANAGEMENT

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Public Law 86-717, Forest Conservation Act of 1960	1
Public Law 89-72, Federal Water Project Recreation Act of 1965	1
Public Law 89-90, Water Resources Planning Act of 1965	1
Public Law 89-665, The National Historic Preservation Act of 1966	1
Public Law 91-190, The National Environmental Policy Act of 1969	2
Public Law 92-75, Federal Boat Safety Act of 1971	2
Public Law 92-500, The Federal Water Pollution Control Act Amendment of 1972	2
Public Law 93-205, Conservation, Preservation, and Propagation of the Endangered Species Act of 1973	2
Public Law 93-291, The Archaeological and Historic Preservation Act of 1974	2
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Public Law 93-643, Highway Amendment Act of 1974	3
Public Law 94-587, Water Resource Development Act of 1976	3
Public Law 95-341, American Indian Religious Freedom Act of 1978	3
Public Law 95-632, Endangered Species Amendment of 1978	3
Public Law 96-95, Archaeological Resources Protection Act of 1979	3
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MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

EXHIBIT 2

FEDERAL STATUTES AND EXECUTIVE ORDERS
PERTINENT TO RESOURCE DEVELOPMENT
AND MANAGEMENT

Federal Statutes and Executive Orders (E.O.) which provide the basis for the development and management of the resources at the Saylorville Lake project include the following:

- . Public Law 78-534, Flood Control Act of 1944. Section 4 of this Act, as amended in 1946, 1954, and 1962, authorizes the Army Corps of Engineers to construct, maintain, and operate public parks and recreational facilities in reservoir areas under their jurisdiction and to grant leases and licenses for project lands to other public agencies.
- . Public Law 85-624, Fish and Wildlife Coordination Act of 1958. Provided that fish and wildlife conservation receive equal consideration and be coordinated with other project purposes.
- . Public Law 86-523, Reservoir Salvage Act of 1960. Provided for the preservation of historic and archaeological data, by the Secretary of the Interior, which might otherwise be lost as the result of the construction of a dam. Act further amended by Public Law 93-291.
- . Public Law 86-717, Forest Conservation Act of 1960. Provided for the protection of forest cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief of Engineers.
- . Public Law 89-72, Federal Water Project Recreation Act of 1965. An act to provide uniform policies with respect to recreation and fish and wildlife benefits and costs of Federal multiple-purpose water resource projects and for other purposes. Section 213 of this Act establishes guidelines for the development of recreation facilities on Federal Government project lands in cooperation with non-Federal Government entities on a 50/50 cost-sharing basis. The participating Government entity is responsible for all aspects of the operation and management and maintenance cost of the facility.
- . Public Law 89-90, Water Resources Planning Act of 1965. This Act established the Water Resources Council and gave it the responsibility to encourage the development, conservation, and use of the Nation's water and related resources on a coordinated and comprehensive basis.

. Public Law 89-665, The National Historic Preservation Act of 1966. This Act declared a national policy of historic preservation, including the encouragement of preservation on the State and private levels; directed the expansion of the National Register of Historic Places to include cultural resources of State and local as well as national significance; authorized matching Federal grants to the States and the National Trust for Historic Preservation for the acquisition and rehabilitation of National Register properties; established the Advisory Council on Historic Preservation; provided certain procedures to be followed by Federal agencies in the event of a proposal that might have an effect on National Register properties; defined the term "historic preservation" as "the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, or culture."

. Public Law 91-190, The National Environmental Policy Act of 1969, established a national policy for the environment and established a Council on Environmental Quality. NEPA protects the environment by requiring balancing of that factor against economic, technical, and other factors in undertaking major Federal actions. Enforcement is through the requirement of Environmental Impact Statements. This Act requires that an Environmental Impact Statement, assessing the impact of major actions on the environmental quality of federally owned land, be prepared for all such actions by the appropriate agency.

. Public Law 92-75, Federal Boat Safety Act of 1971. This Act authorizes Federal agencies to establish boat safety regulations for areas within their jurisdiction, or to accept as a supplement to Federal regulations, a Boating Safety Program which is designed and enforced by appropriate State authorities. Guidelines are also established for development and funding of the State programs.

. Public Law 92-500, The Federal Water Pollution Control Act Amendment of 1972, enacted by the Congress to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 404 of the Act established a Federal permit program to regulate the discharge of dredged or fill material into all waters of the United States.

. Public Law 93-205, Conservation, Preservation, and Propagation of the Endangered Species Act of 1973. Repealed the Endangered Species Conservation Act of 1969. Directs all Federal departments/agencies to carry out programs to conserve endangered and threatened species and to preserve the habitat of such species.

. Public Law 93-291, The Archaeological and Historic Preservation Act of 1974. This Act amends the Reservoir Salvage Act of 1960 and permits the expenditure of up to one percent of the funds appropriated for a Civil Works project for survey, recovery, analysis, and reporting of important (scientific, historical, archaeological, and paleontological) data which may be lost as the result of construction under Corps jurisdiction, including non-Federal lands provided by local interests for certain types of projects. The authorities of Public Law 93-291 apply to operating projects as well as those in the planning or design stages.

. Public Law 93-303 of 1974. This Act provides that fair and equitable fees will be assessed the users of specialized sites, facilities, equipment, or services provided at substantial Federal expense. This law is the authority for the fees charged at family and group camping facilities at Corps managed areas.

. Public Law 93-643, Highway Amendment Act of 1974. This law allows the Department of Transportation to participate in the construction or reconstruction of access roads leading to public use areas on Corps reservoirs.

. Public Law 94-587, Water Resources Development Act of 1976. Section 111 of this act authorizes full development of campground and other recreation sites and access thereto for the Saylorville Lake project at Federal cost. Section 111 also authorizes a number of modifications to the Saylorville project including: (1) provide additional recreation lands and development thereon at full Federal expense to compensate for those lands which will be taken from Ledges State Park by the Saylorville Lake pool, and (2) provide for the acquisition of lands within the downstream corridor for flood control and recreation purposes and to provide for cost-sharing with the State of Iowa in the acquisition of these lands and the development of the recreation facilities thereon.

. Public Law 95-341, American Indian Religious Freedom Act of 1978. Establishes the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including, but not limited to, access to sites, use, and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.

. Public Law 95-632 - Endangered Species Amendments of 1978. Amends the 1973 Act (Public Law 93-205) to establish an Endangered Species Interagency Committee to review proposed actions to determine whether exemptions from certain requirements of the Act should be granted. Prescribes a consultation process between Federal agencies and the Secretary of the Interior, Secretary of Commerce, or Secretary of Agriculture, as appropriate, for carrying out programs for the conservation of endangered and threatened species. Directs agencies to conduct a biological assessment to identify endangered or threatened species which may be present.

. Public Law 96-95, Archaeological Resources Protection Act of 1979. Authorizes the Secretary or other Federal official with primary management authority over public lands or Indian lands to issue permits for the excavation or removal of archaeological resources located on such lands; establishes civil and criminal penalties for the excavation or removal of archaeological resources without or in derogation of a permit; establishes penalties for the sale or transportation in interstate commerce of archaeological resources obtained in violation of State or local law.

. E.O. 11514, 5 March 1970, Protection and Enhancement of Environmental Quality. Section 2 of the order outlines the responsibilities of Federal agencies in consonance with Title I of the National Environmental Policy Act of 1969 (amended by E.O. 11991, 24 May 1977).

. E.O. 11593, 13 May 1971, Protection and Enhancement of the Cultural Environment. Section 2 of the order outlines the responsibilities of Federal agencies in consonance with the National Environmental Policy Act of 1969, the National Historic Preservation Act of 1966, the Historic Sites Act of 1935, and the Antiquities Act of 1906. Section 3 outlines specific responsibilities of the Secretary of the Interior including review and comment upon Federal agency procedures submitted under this order.

. E.O. 11989, 24 May 1977, Off-Road Vehicles on Public Lands. Agency heads are authorized to close areas or trails, within their jurisdiction, to off-road vehicles which cause adverse effects to soil, vegetation, wildlife, wildlife habitat, cultural or historic resources. Fire, military, emergency, and law enforcement vehicles are excluded when used for emergency purposes. This order amends E.O. 11644, 8 February 1972.

. E.O. 11990, 24 May 1977, Protection of Wetlands. This order directs Federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. Section 2 of this order states that in furtherance of the National Environmental Policy Act of 1969, agencies shall avoid undertaking or assisting in new construction located in wetlands unless there is no practical alternative. Each agency will provide opportunity for early public review of plans and proposals for construction in wetlands, including those whose impact is not significant to require EIS preparation. Section 9 exempts assistance provided for emergency work, essential to protect lives, health, and property performed pursuant to Sections 305 and 306 of the Disaster Relief Act of 1974.

EXHIBIT 3

SECTION 404(b)(1) EVALUATION

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

EXHIBIT 3
SECTION 404 (b)(1) EVALUATION

TABLE OF CONTENTS

Subject

Preliminary Section 404 (b)(1) Evaluation Report
Public Notice
Regulatory Permit Application



REPLY TO
ATTENTION OF:

NCRPD-F

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING — P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

REVISED SAYLORVILLE LAKE MASTER PLAN
POLK, DALLAS, AND BOONE COUNTIES, IOWA

CLEAN WATER ACT
PRELIMINARY SECTION 404(b)(1) EVALUATION

OCTOBER 1983

ATTACHMENT 1 OF 1
OF ENVIRONMENTAL ASSESSMENT

REVISED SAYLORVILLE LAKE MASTER PLAN
 POLK, DALLAS, AND BOONE COUNTIES, IOWA
 CLEAN WATER ACT
 SECTION 404(b)(1) EVALUATION

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List of Plates*

<u>No.</u>	<u>Title</u>
1	Project Location
3	Sandpiper Recreation Area
4	Second Marina - Lakeview Site
5	Second Marina - Prairie Flower Site

* Refer to Environmental Assessment Plates (Exhibit 3)

PRELIMINARY SECTION 404(b)(1) EVALUATION
REVISED SAYLORVILLE LAKE MASTER PLAN
POLK, DALLAS AND BOONE COUNTIES, IOWA

I. Project Description.

A. Location. Saylorville Lake is located in central Iowa approximately 11 miles northwest of Des Moines, Iowa (see plate 1).

B. General Description. The revised Saylorville Lake Project Master Plan replaces the Master Plan approved on 4 February 1974. The purpose of the revised Master Plan is to provide an up-to-date comprehensive guide to the sensitive, wise, and orderly use, development, and management of the natural and manmade resources of the Saylorville Lake project over the next 5 years.

The existing and projected public recreational use at the project warrants the construction of additional recreation areas. Two of the proposed recreation areas, the Sandpiper Recreation Area and the Second Marina, require the preparation of a Section 404(b)(1) Evaluation Report and obtaining a 401 Certification from the State of Iowa.

The Sandpiper Recreation Area would be located at the southwest end of a peninsula along the east shoreline of the reservoir. The proposed area would contain a beach and sailboat launch facilities. Plate 3 displays a proposed peninsula to be constructed between the beach and sailboat launch area. The peninsula would be approximately 750 feet long, 100 feet wide, and 5 feet in height. The peninsula would require approximately 12,000 cubic yards of impervious material and 850 tons of riprap. The launch area will contain two hardened ramps, each being approximately 50 feet long, 14 feet wide, and 6 inches thick.

There are two sites for the second marina; only one of the two sites would be developed. The first site is located to the northwest of the existing Prairie Flower Campground (see plate 5). The second site is located directly southeast of the Lakeview Recreation Area (see plate 4). The marina may require pilings for the docks and the development of a break-water for wave and wind protection.

The development of the Sandpiper Recreation Area is dependent upon a 50/50* cost-sharing partner (non-Federal government entity). The partner would be responsible for all management and maintenance cost once the area was constructed. The area would be developed as shown on plate 3.

Site plans for the second marina have not been developed. The second marina* would require 100 percent construction funding by a non-Federal government entity as well as the facility maintenance and administration costs. If a developer would decide to establish a marina at one of the

* Note discussions in Master Plan, Section I, subparagraph entitled Current Policy, page 3; and Section VI, subparagraph entitled Second Marina, page 129.

two sites, the site plans would be coordinated with the appropriate Federal, State, county, and local government entities for their review and comments prior to construction. In addition, a separate environmental assessment, Section 404 Evaluation report, and obtaining 401 certification from the State of Iowa for the second marina would be developed and coordinated before construction would take place.

C. Authority and Purpose.* The Saylorville Lake Project was authorized for flood control in the Flood Control Act of 3 July 1958. This authorization was based upon recommendations established in Senate Document No. 9, 85th Congress, 1st Session. The development of recreation facilities at Saylorville was initiated at full Federal expense under the direction of Section 4 of the Flood Control Act of 22 December 1944. The development and construction of these facilities was continued at full Federal expense under the authorization of Section 111 of the Water Resources Development Act of 1976. On 1 October 1982, a new policy which required a 50/50 cost-sharing partner in order to construct new recreation facilities and/or improve existing recreation facilities at noncompleted reservoir projects was implemented. The new policy applies the principles of the Federal Water Project Recreation Act, 9 July 1965.

D. General Description of Fill Material. Material to be deposited for the peninsula will consist of approximately 12,000 cubic yards of inert and uncontaminated impervious material and 850 tons of riprap. The concrete ramp will extend into the water approximately 12 feet. Approximately 30 cubic yards of fill will be used as a foundation base for the ramps. The beach area is a natural sand beach and would not require any fill. Both fill materials will be obtained from an approved site and/or from a gravel company. At this time, it is not known how much fill material would be used to establish a breakwater for the second marina. A separate 404 Evaluation Report would be developed if a developer would be found for the second marina. The report would be coordinated with the proper agencies for review and approval prior to construction.

E. Description of the Proposed Discharge and Site.

1. Sandpiper Recreation Area. The proposed peninsula and launch area is currently inundated with 1 to 6 feet of water at conservation pool elevation 836 NGVD. The benthic habitat of the proposed area consists of sand (alluvial) 3 to 4 feet thick covered by a layer of silt 6 to 12 inches thick which is over shale. The shoreline of the area consists of sandy loam soils which are vegetated in grasses and forbs.

2. Second Marina - Prairie Flower Site. The proposed marina area (i.e., docks, breakwater, etc.) is currently inundated with 8 to 15 feet of water at conservation pool elevation 836 NGVD. The benthic habitat for the Prairie Flower Site is clay (alluvial) 3 to 4 feet thick

* Note discussion in Master Plan, Section I, subparagraph entitled Current Policy, page 3.

over a layer of alluvial sand which is over shale. The shoreline of the area consists of a Lester-Colo complex soil attributed to the slope of the area. The area is vegetated with an uneven age stand of hardwood and bottom land species. A flat open upland area to the east of the shoreline would be the major area of development for this proposed site. The soils in this area of the site are loams.

3. Second Marina - Lakeview Site. The proposed marina area (i.e., docks, breakwater, etc.) is currently inundated with 8 to 25 feet of water at conservation pool elevation 836 NGVD. The benthic habitat for the Lakeview site is clay (alluvial) 3 to 4 feet thick over a layer of alluvial sand which is over shale. The shoreline of the area is a shallow Lester-Colo complex soil over bedrock. Soil was removed from the shoreline area in order to construct the dam for the reservoir. The area is revegetated with a mowed grass lawn and sections of grasses and forbs.

II. Factual Determinations.

A. Physical Substrate Determination.

1. Substrate Elevation and Slope. The elevation of the substrate in the area on which the peninsula would be constructed will be altered. The elevation range from the shoreline to the west end of the proposed peninsula is approximately 6 feet (830-836 NGVD). This area would be filled with impervious material and riprap which would eliminate approximately 1.7 acres of substrate. The side slopes of the peninsula would have a 3 on 1 slope. The proposed peninsula would not have an effect on bedload sediment in the area of the proposed recreation area or the lake.

2. Sediment Type. Approximately 12,000 cubic yards of impervious material will be deposited to construct the peninsula. Approximately 850 tons of riprap would be placed along the side of the peninsula to protect it from wind and wave action. This would be a significant change in the substrate material compared to the 3 to 4 feet of sand with a layer of silt now present. The two launch ramps require a foundation of approximately 30 cubic yards of gravel. The substrate is the same in the launch ramp area as within the proposed peninsula.

3. Dredge/Fill Material Movement. Due to the large amount and size of the rock used, off-site migration of the impervious fill is not expected in the peninsula area. No migration of gravel is expected to occur in the launching area.

4. Physical Effects on Benthos. The benthic life will increase in locations where riprap will be placed along the side of the peninsula. The nature of the substrate now present does not appear to support a significant variety or abundance of benthic life. The riprap will provide an ideal habitat for many invertebrate species.

5. Actions Taken to Minimize Adverse Effects. The use of riprap will improve aquatic habitat for a range of aquatic organisms. The contractor(s) for the proposed peninsula and launching ramps will

be required to follow practices to reduce the potential of turbidity and other environmental impacts during construction by following guide specifications CW-01430-July 1978.

B. Water Circulation Fluctuation and Salinity Determination.

1. Water.

- a. Salinity. Not applicable.
- b. Water Chemistry. No effect.
- c. Clarity. Temporary increases in turbidity during construction.
- d. Color. No effect.
- e. Odor. No effect.
- f. Taste. No effect.
- g. Dissolved gas levels. No effect.
- h. Nutrients. No effect.
- i. Eutrophication. No effect.

2. Current Patterns and Circulation.

a. Current Patterns and Flow. The proposed peninsula, launch ramps, and breakwater would have an effect on currents and flow within the area where they would be constructed. Currents and flows would be reduced due to wave and wind action being impeded by the breakwater (Second Marina) and the peninsula (Sandpiper Recreation Area). These effects are considered to be minor and localized in nature with no effects concerning turbidity or suspended particulates. The launch ramps would not have an effect on current and circulation patterns.

b. Velocity. Velocities will not be affected by the proposed peninsula or breakwater.

c. Stratification. No effect.

d. Hydrologic Regime. There will be no significant effect in the hydrologic regime.

3. Normal Water Level Fluctuations. No effect.

4. Salinity Gradients. Not applicable.

5. Actions That Will Be Taken to Minimize Impacts. The contractor(s) for the proposed breakwater, launching ramps, and peninsula would be required to follow practices to reduce the potential for environmental impacts (i.e., turbidity, etc.) during construction in accordance with guide specifications (CW-01430-July 1978). Inert and uncontaminated impervious material and riprap would be utilized to construct the peninsula for the Sandpiper Recreation Area.

C. Suspended Particulate/Turbidity Determinations.

1. Expected Changes in Suspended Particulates and Turbidity in Vicinity of Disposal Sites. No effect.

2. Effects on Chemical and Physical Properties of the Water Column.

a. Light Penetration. No effect.

b. Dissolved Oxygen. No effect.

c. Toxic Metals. No effect.

d. Pathogens. No effect.

e. Aesthetics. No effect.

3. Effects on Biota.

a. Primary Production, Photosynthesis. A slight decrease in the flow and current in the immediate area of the peninsula and breakwater may have a small positive impact on the populations of phytoplankton and floating macrophytes. The launch ramps will not have an effect on biota.

b. Suspension/Filter Feeders. Invertebrate populations of mayflies, caddisflies, stoneflies, etc., will increase on the substrate provided by the riprap.

c. Sight Feeders. Invertebrate organisms as in b. above will increase.

4. Actions Taken to Minimize Impacts. No special precautions needed.

D. Contaminant Determinations. Fill material will be clean and uncontaminated and will not cause the release of undesired contaminants into the environment.

E. Aquatic Ecosystem and Organism Determinations.

1. Effects on Plankton. No effect other than that previously mentioned in Section C.3.a. No specific testing was done.

2. Effects on Benthos. Invertebrate organisms will colonize the solid substrate provided by the submerged riprap which would protect the peninsula from wave action.

3. Effects on Nekton. Fish populations will benefit from the riprap along the peninsula and riprap, through invertebrate colonization, will provide an excellent food source and provide possible spawning sites.

4. Effects on Aquatic Food Web. The proposed peninsula would have an overall beneficial effect on the food web by increasing production at the lower trophic levels. The launch ramps will not have an effect on the aquatic food web.

5. Effects on Special Aquatic Sites.

a. Sanctuaries and Refuges. The project would have no effect on sanctuaries and refuges.

b. Wetlands. No wetlands will be affected.

6. Threatened and Endangered Species. Two federally listed endangered species may occasionally occur in the reservoir area: the bald eagle (Haliaeetus leucocephalus) and the peregrine falcon (Falco peregrinus).

Bald eagles occur in the reservoir area primarily during the winter months. The eagles use trees adjacent to the reservoir and outlet structure for perching and open water areas in the winter months for feeding. Perching trees adjacent to the reservoir and outlet structures as well as winter open water areas would not be disturbed by the proposed recreation areas.

The peregrine falcon may be present in the project area during the spring and/or fall migration periods. There are no recorded sightings of the falcon within the project area but there have been recorded sightings within the region. The project contains a small amount of habitat which would be favorable to the falcon during the migration seasons. This habitat consists of nonforested open areas adjacent to the former river valley. This habitat would not be impacted by the proposed recreation areas and is not utilized for recreation purposes from mid-fall to late spring. The proposed Sandpiper Recreation Area (and peninsula) and both sites for the Second Marina (and breakwater) would not have an effect on the habitat required and used by the endangered species. The U.S. Fish and Wildlife Service, Rock Island Field Office, has indicated that the proposed actions will have no effect on endangered species (see the attached telephone conversation record).

F. Proposed Disposal Site Determination.

1. Mixing Zone Determination. The fill material is inert and will not mix with water.

2. Determination of Compliance with Applicable Water Quality Standards. Due to the nature of the fill material, all discharges are anticipated to be in compliance with State of Iowa standards.

3. Potential Effects on Human Use Characteristics.

- a. Municipal and Private Water Supply. No effect.
- b. Recreation and Commercial Fisheries. The peninsula, launching ramps, and breakwater are expected to benefit sport fishing. There is no commercial fishing in the lake.
- c. Water-Related Recreation. Recreation would be enhanced by the proposed recreation facilities.
- d. Aesthetics. Newly deposited riprap along the proposed peninsula and breakwater would be in contrast to the natural shoreline. Through weathering the rock would eventually blend with the shoreline and vegetation within the area. The placement of the launching ramps will have a minor, if any, effect on aesthetics within the area. Landscape plantings will be placed in the Sandpiper Recreation Area to enhance its aesthetics.
- e. Parks, National and Historic Monuments, National Seashores, Wilderness Area, Research Sites and Similar Preserves. No effect.

G. Determination of Cumulative Effects on the Aquatic Ecosystem.
No detrimental cumulative impacts are anticipated because of the peninsula, launching ramps, or breakwater.

H. Determination of Secondary Effects on the Aquatic Ecosystem.
No adverse secondary effects on aquatic resources are anticipated. Several beneficial secondary effects, as already discussed, are likely to occur.

III. Finding of Compliance or Non-Compliance With the Restrictions on Discharge. No significant adaptations of the guidelines were made relative to this evaluation.

Other alternatives considered were variations of the present peninsula and launching ramps design for the Sandpiper Recreation Area. These designs would have similar impacts. It was determined that these designs would be less effective for providing a protected launching area for nonmotorized craft and an additional protected area for swimming (see plate 3). The alternative of "no action" would result in the continued overuse of the existing beach and launching ramps and would not fulfill the existing or future recreation needs of the general public.

The proposed discharge for the peninsula will comply with applicable state water quality standards.

There will be no significant adverse effects on aquatic resources, endangered species, recreational opportunity, aesthetics, economic values or human health and welfare.

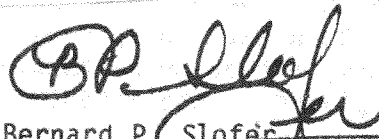
The peninsula has been designed to benefit (or mitigate impacts to) recreation and aquatic resources.

If a developer is found for a second marina, a Section 404 Evaluation Report would be prepared at that time for the review of various government entities and the general public. The report would provide specifics on which site would be developed, and the amount and type of fill to be utilized for the breakwater. The development and management cost of the second marina would be totally borne by the developer. At this time, no developer has been found for the second marina.

On the basis of the 404(b)(1) guidelines, the proposed disposal site for (the Sandpiper Recreation Area peninsula) the discharge of fill material is in compliance.

21 DEC 83

DATE



Bernard P. Slofer
Colonel, Corps of Engineers
District Engineer



US Army Corps
of Engineers
Rock Island District

Public Notice

Applicant:

Date:

U.S. Army Corps of Engineers 19 September 1983

In Reply Refer to:

Section:

NCROD-S-070-0X6-1-111280

404

1. General Information.

a. Applicant. U.S. Army Corps of Engineers, Rock Island District, Rock Island, Illinois 61201.

b. Project Location. Saylorville Lake, Des Moines River, in Section 13, Township 80 North, Range 25 West near Polk City, Polk County, Iowa.

c. Project Description.

(1) The Revised Saylorville Lake Master Plan proposes the development of the Sandpiper Recreation area (under a 50/50 cost-sharing agreement). Two facilities, a beach and sailboat launch, would be separated by a proposed peninsula 750 feet long, 100 feet wide and 5 feet high. The peninsula would provide two protective coves for the beach and launch area and serve as a breakwater for the launch ramp. The peninsula would require 12,000 cubic yards of impervious material and 570 cubic yards of riprap. Inert and uncontaminated impervious material and riprap would be used to construct the peninsula. The launching ramp will be U-shaped with two 7-foot wide ramps constructed of concrete laid over approximately 30 cubic yards of coarse gravel. To date, no cost-sharing partner has been found.

(2) The plan also designates the development of one of two proposed sites for a second marina. The development of the second marina would require 100 percent funding by a non-Federal government entity. As a result, no site plan(s) have been developed for the second marina. During the planning and design stage it may be determined that a breakwater is needed. At that time, Section 404 processing of the project plans will be made if appropriate.

d. Project Plans. The project plans have been reproduced on the attached sheet(s).

2. Agency Review. The project plans are being processed as follows:

a. Department of the Army, Corps of Engineers. The project plans are being processed under the provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344).

b. State Water Quality Certification/Review. Application has been made to the Iowa Department of Water, Air and Waste Management for state water quality certification of the proposed work in accordance with Section 401 of the Clean Water Act. The project plans have also been submitted to the Iowa Conservation Commission for review.

3. Historical/Archaeological. The staff has consulted the latest published version of the National Register of Historic Places and found no registered properties, nor properties eligible for inclusion therein, that would be affected by the applicant's proposed activity. However, presently unknown archaeological, scientific, prehistoric, historic, or historical data may be lost or destroyed by the proposed work.

4. Endangered Species. Preliminary review by District staff indicates that the proposed activity is not likely to jeopardize the continued existence of any species or the critical habitat of any fish, wildlife, or plant which is designated as endangered or threatened pursuant to the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq.). Therefore, no formal consultation request has been made to the United States Department of the Interior, Fish and Wildlife Service.

5. Dredge/Fill Material Guidelines. The evaluation of the impact of the proposed activity on the public interest will also include application of the guidelines promulgated by the Administrator of the United States Environmental Protection Agency under authority of Section 404(b) of the Clean Water Act (40 CFR Part 230).

6. Public Interest Review. The decision whether to proceed with the project will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety production and, in general, the needs and welfare of the people.

7. Who Should Reply. Any interested parties, particularly navigation interests, Federal and state agencies for the protection of fish and wildlife, and the officials of any state, town, or local association whose interests may be affected by the proposed work, are invited to submit to this office within 21 days from the date of this notice written statements of facts, arguments, or objections thereto. These statements should bear upon the adequacy of plans and suitability of locations and should, if appropriate, suggest any changes considered desirable.

8. Public Hearing Requests. Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. A request may be denied if substantive reasons for holding a hearing are not provided.

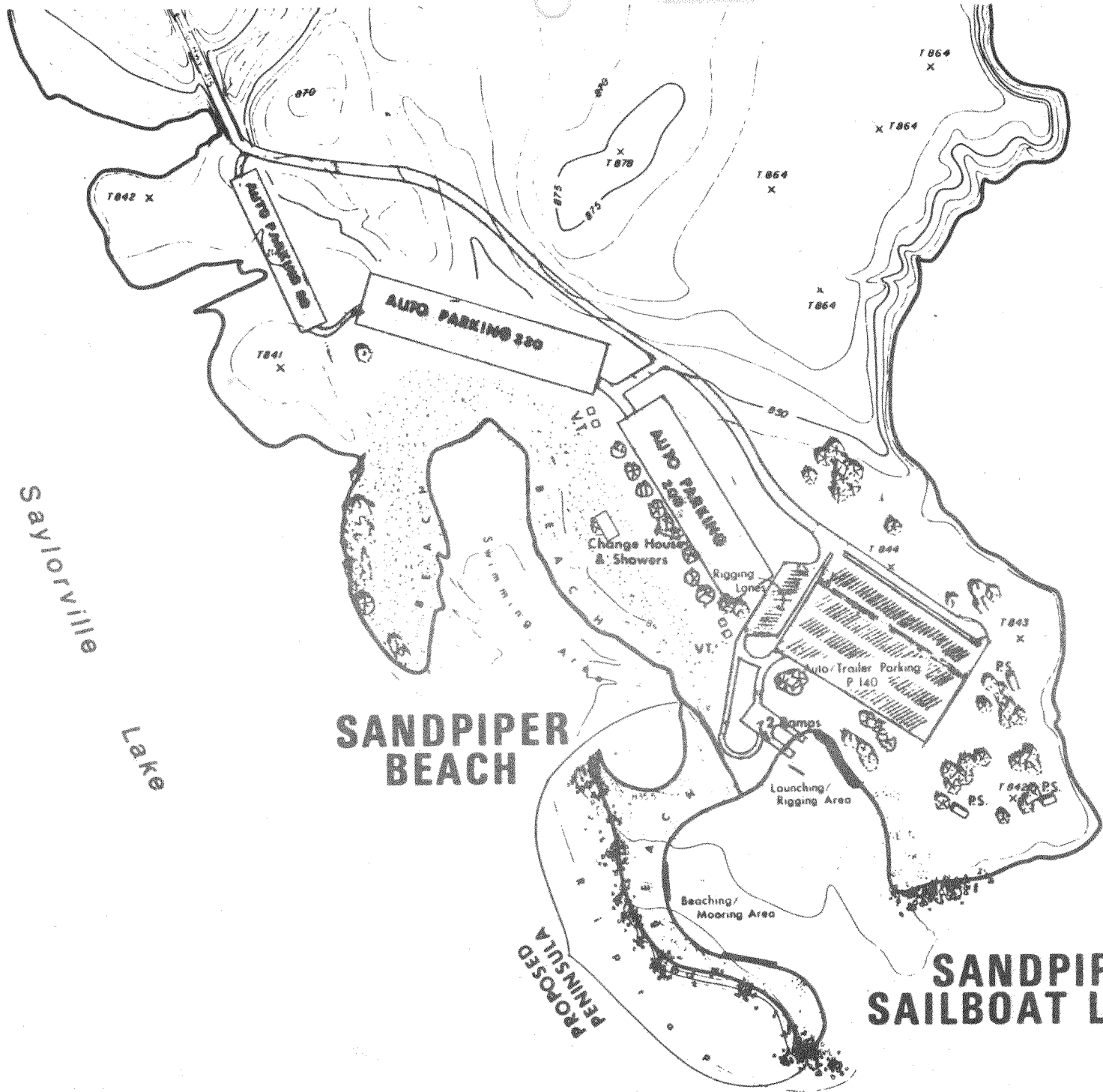
9. Where to Reply. All replies to this public notice should be addressed to the District Engineer, US Army Corps of Engineers, Rock Island District, ATTN: Planning Division, Clock Tower Building, Rock Island, Illinois 61201. Mr. Tim Toplisek, telephone number 309/788-6361, extension 6386, may be contacted for additional information.

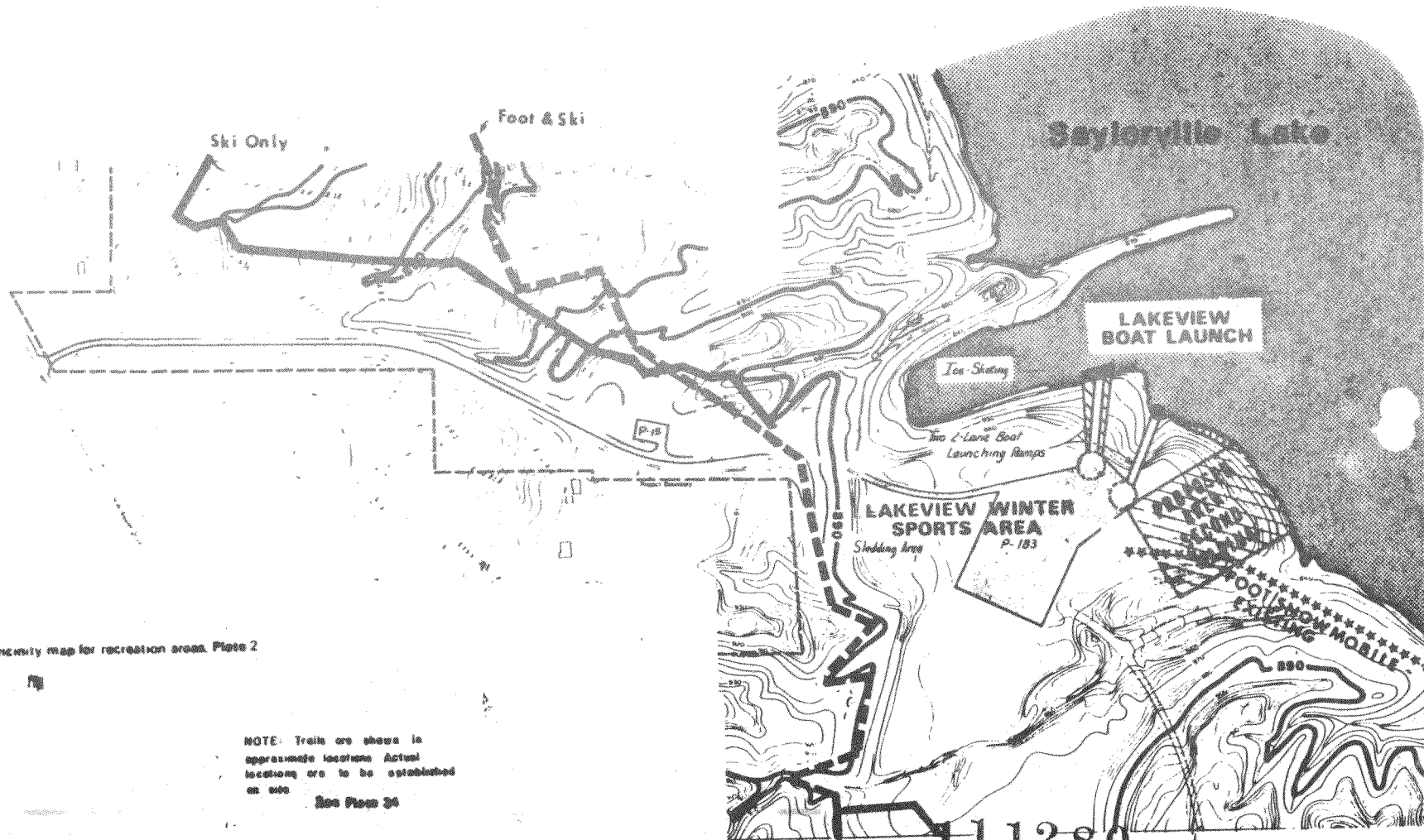
Attach
Plan


Bernard P. Slofer
Colonel, Corps of Engineers
District Engineer

NOTICE TO POSTMASTERS:

It is requested that this notice be conspicuously and continuously posted for 21 days from the date of issuance of this notice.

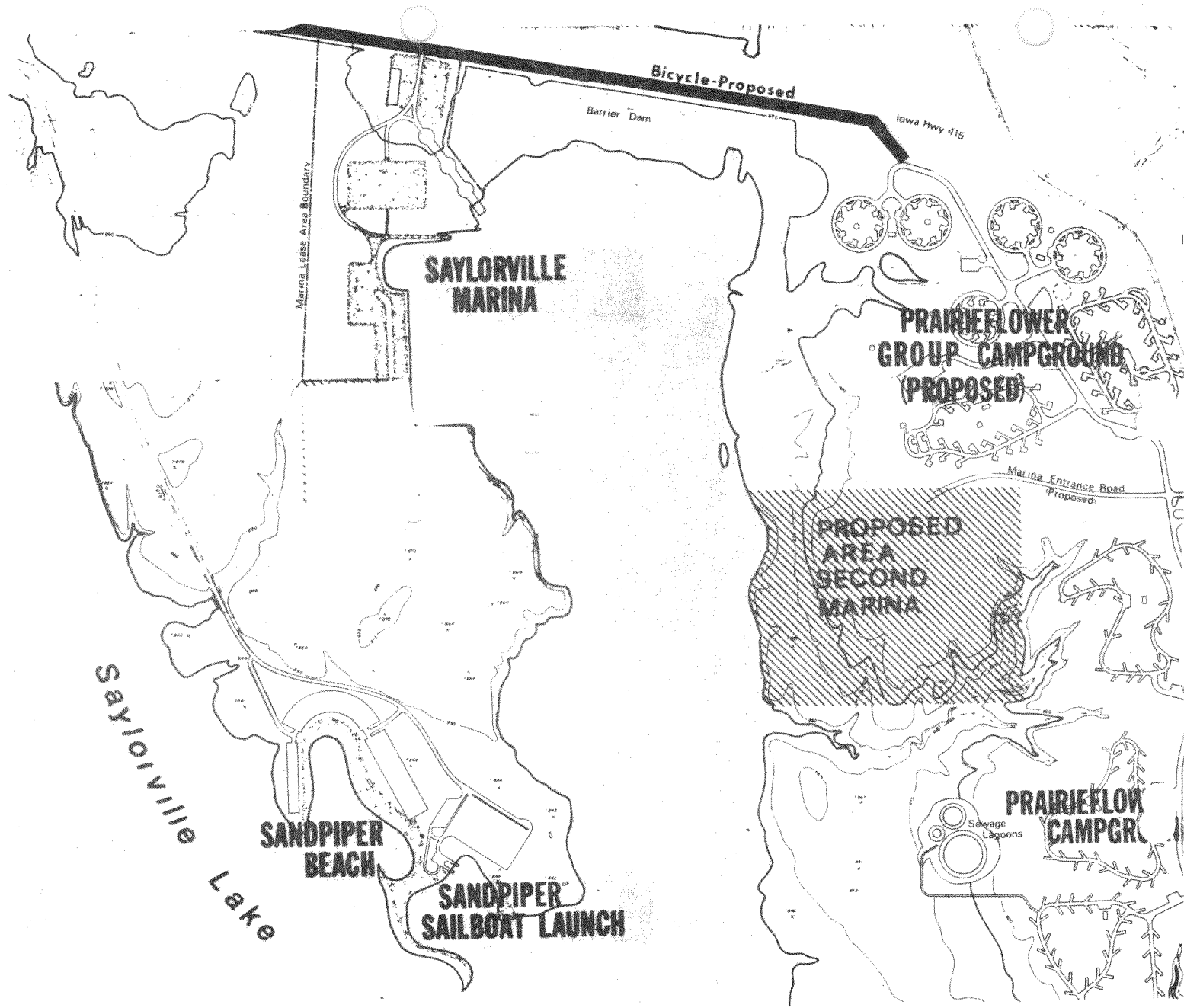




See vicinity map for recreation areas, Plate 2

NOTE: Trails are shown in approximate locations. Actual locations are to be established on site.

See Plate 24



PROPOSED PLAN-SANDPIPER SAILBOAT LAUNCH

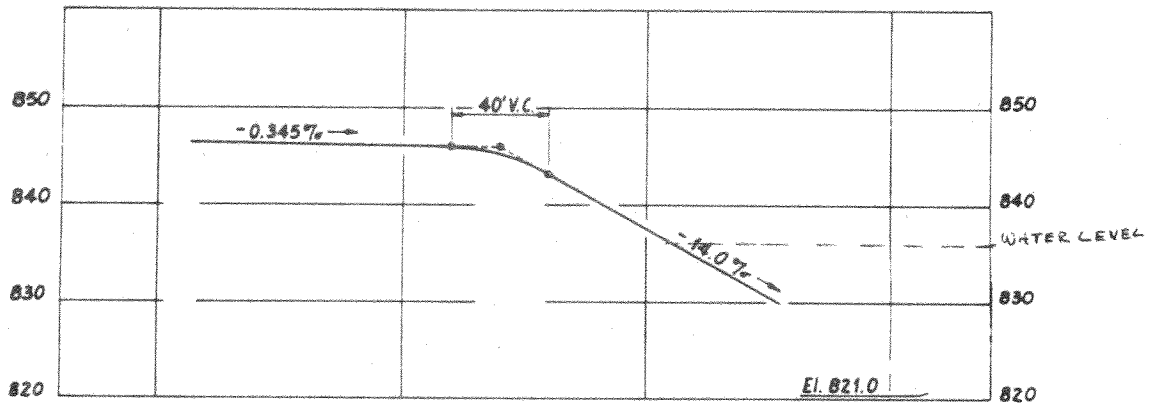


EXHIBIT 4

AERIAL PHOTOGRAPHS -
SAYLORVILLE LAKE RECREATION AREAS

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

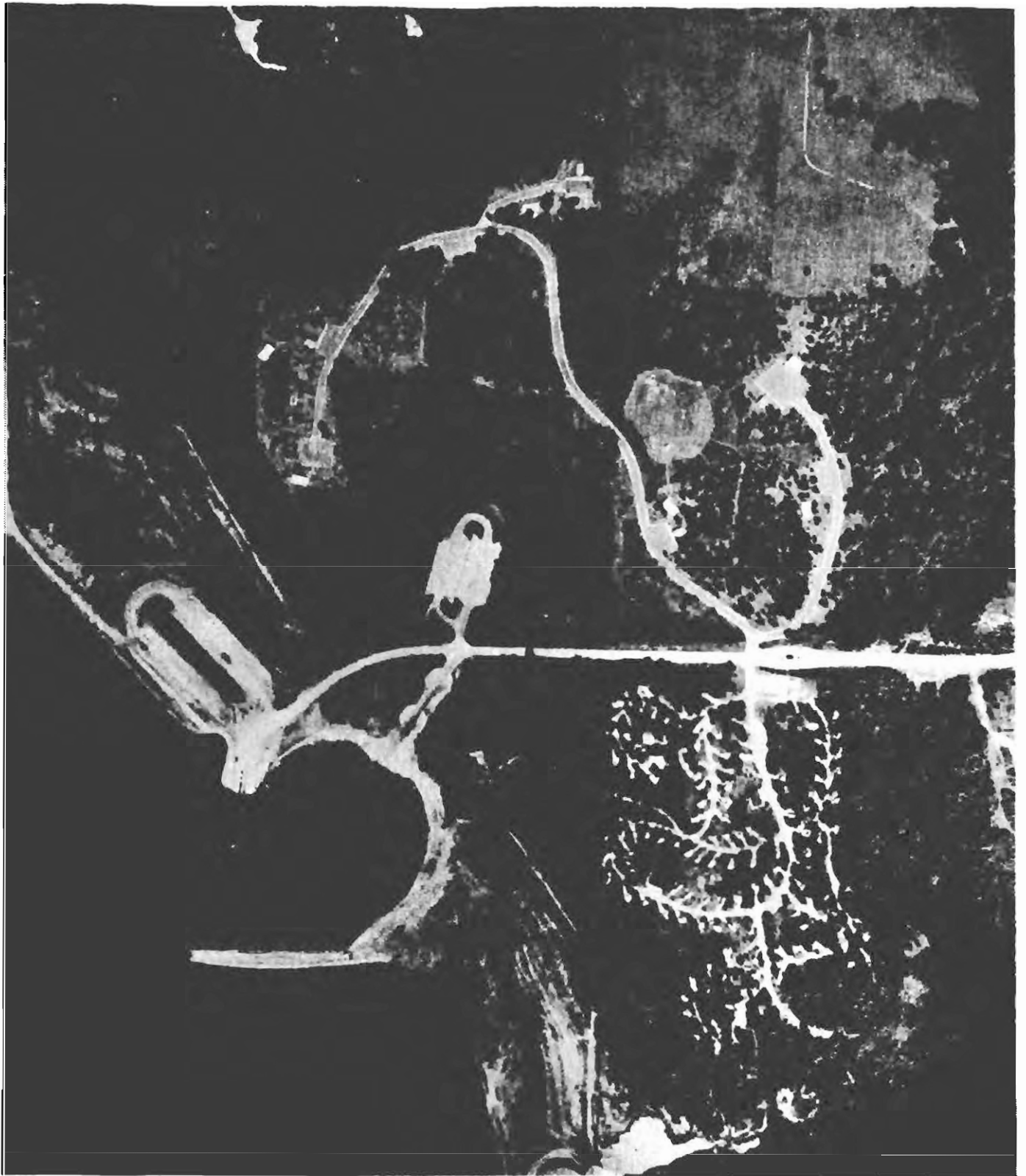
MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

EXHIBIT 4

AERIAL PHOTOGRAPHS -
SAYLORVILLE LAKE RECREATION AREAS

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Walnut Ridge Recreation Area	4-G
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Saylorville Lake Visitors Center	4-K



Pool Elevation 836 NGVD



**US Army Corps
of Engineers**
Rock Island District

Saylorville Lake
Master Plan

**AERIAL
PHOTOGRAPH**

**CHERRY GLEN
RECREATION AREA**

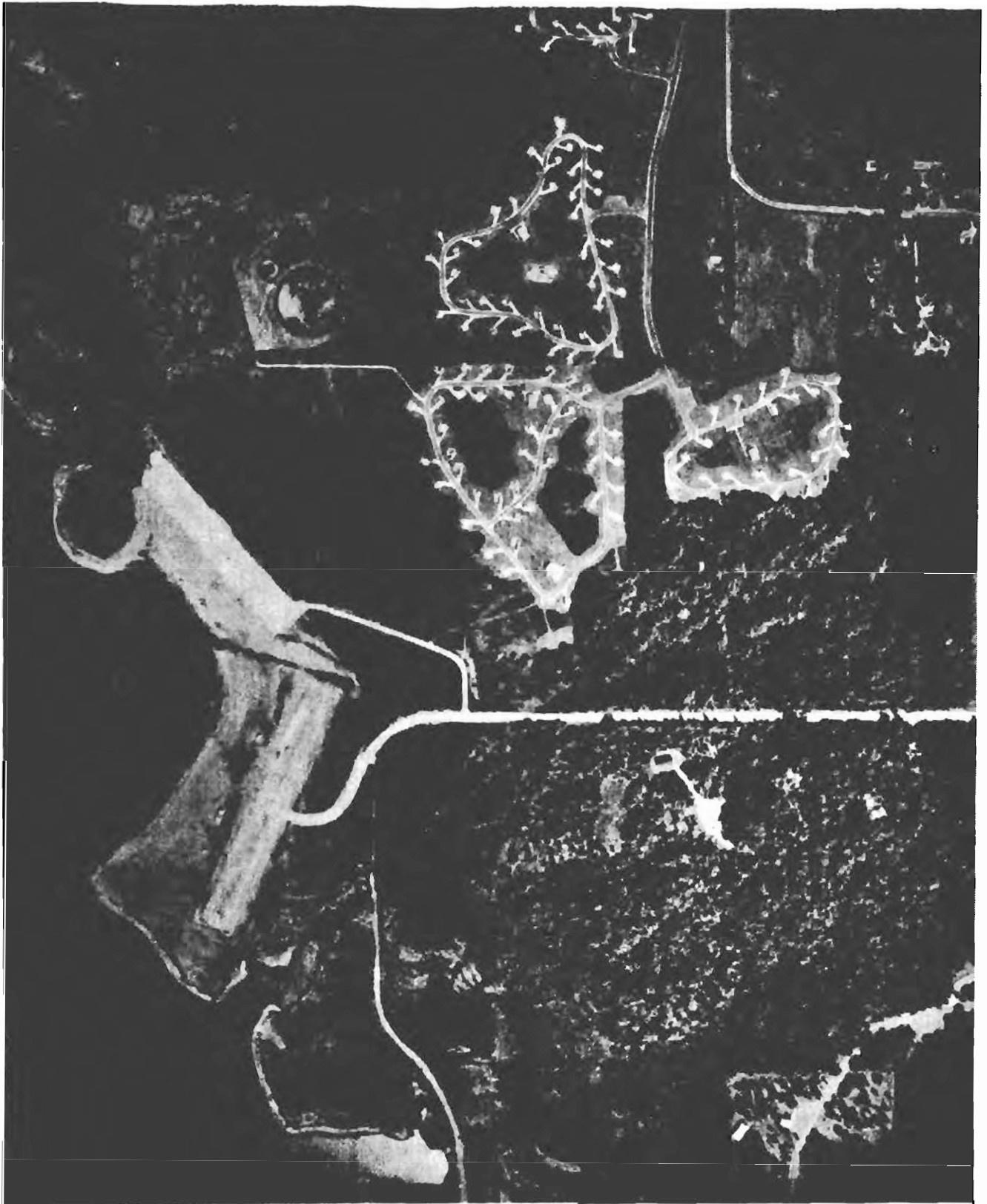
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1" = 500 FEET



EXHIBIT 4-A



Pool Elevation 836 NGVD



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

AERIAL
PHOTOGRAPH

OAK GROVE
RECREATION AREA

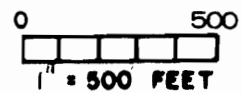


EXHIBIT 4-B

PROPOSED AREA
PRAIRIE FLOWER
GROUP CAMPGROUND

PROPOSED AREA
SECOND
MARINA

Pool Elevation 836 NGVD



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

AERIAL
PHOTOGRAPH

PRAIRIE FLOWER
CAMPGROUND

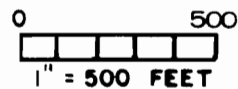
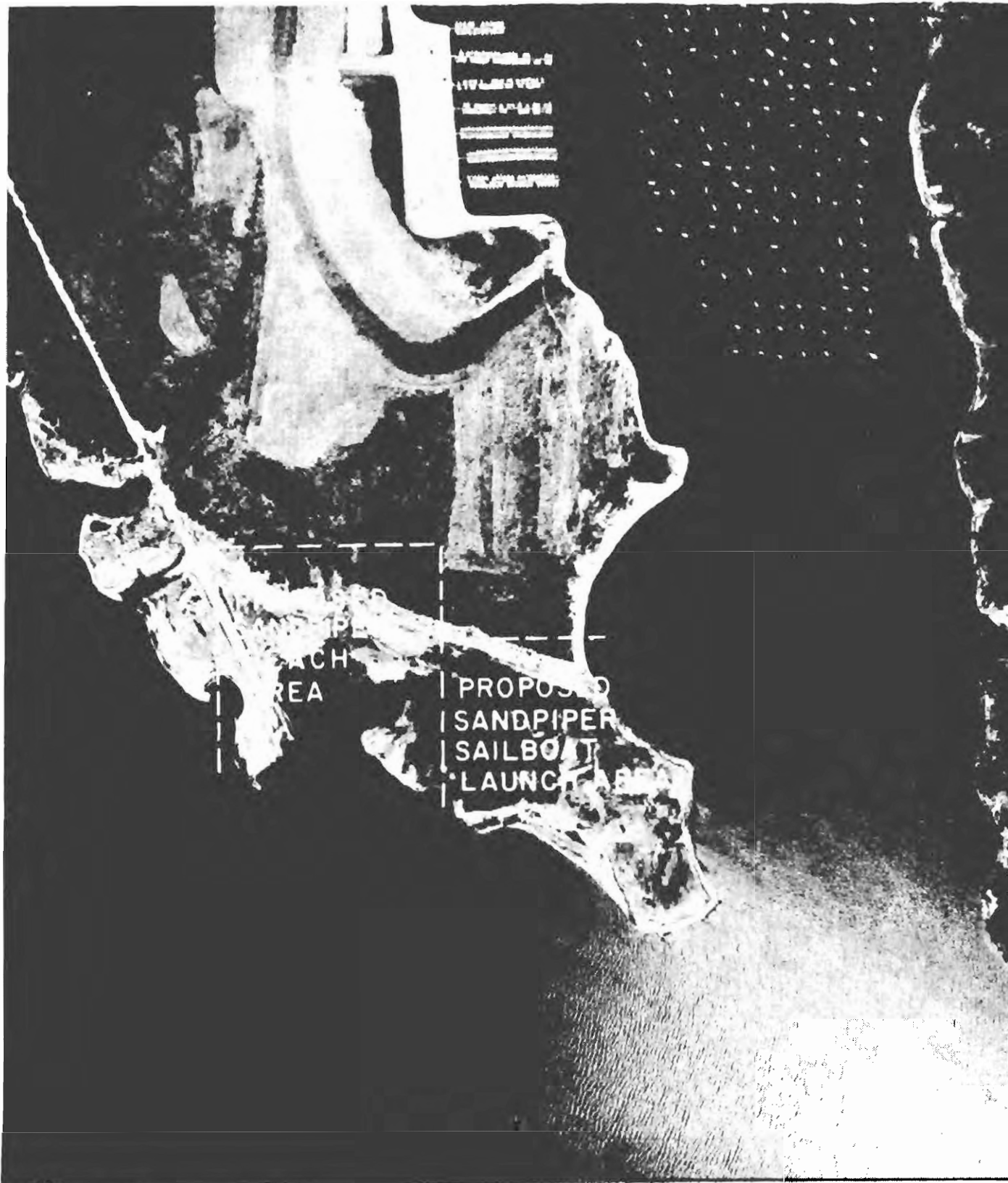


EXHIBIT 4-C



Pool Elevation 836 NGVD



**US Army Corps
of Engineers**
Rock Island District

Saylorville Lake
Master Plan

**AERIAL
PHOTOGRAPH**

**SANDPIPER PROPOSED
RECREATION AREA**

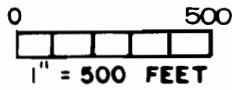
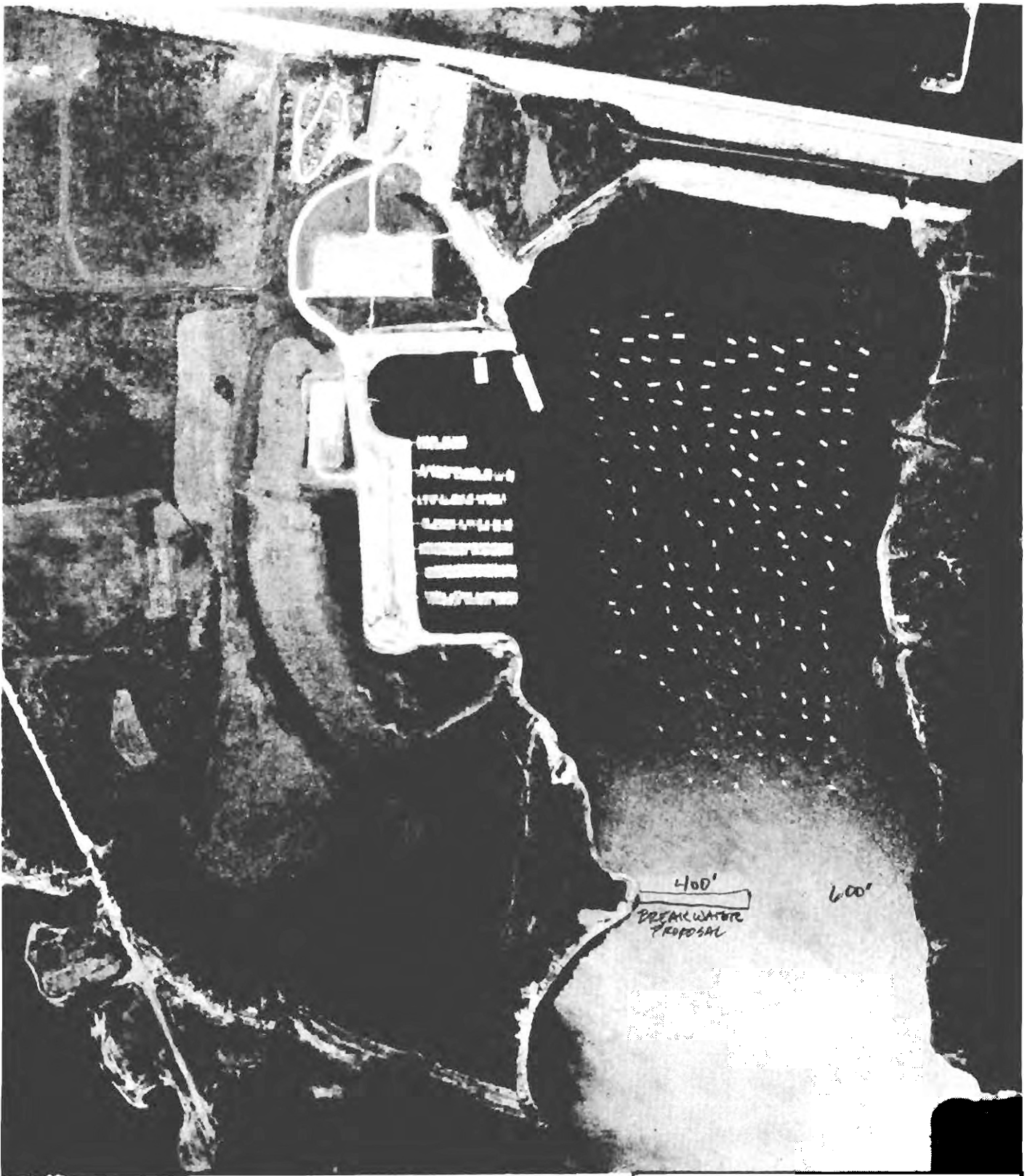


EXHIBIT 4-D



Pool Elevation 836 NGVD



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

AERIAL
PHOTOGRAPH

SAYLORVILLE LAKE
MARINA

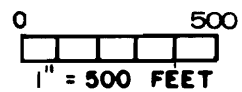


EXHIBIT 4-E



Pool Elevation 836 NGVD



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

AERIAL
PHOTOGRAPH

ACORN VALLEY
CAMPGROUND

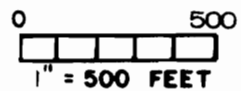


EXHIBIT 4-F



Pool Elevation 836 NGVD



**US Army Corps
of Engineers**
Rock Island District

Saylorville Lake
Master Plan

**AERIAL
PHOTOGRAPH**

**WALNUT RIDGE
RECREATION AREA**

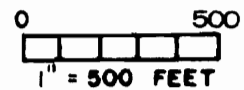


EXHIBIT 4-G



Pool Elevation 836 NGVD



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Rock Island District

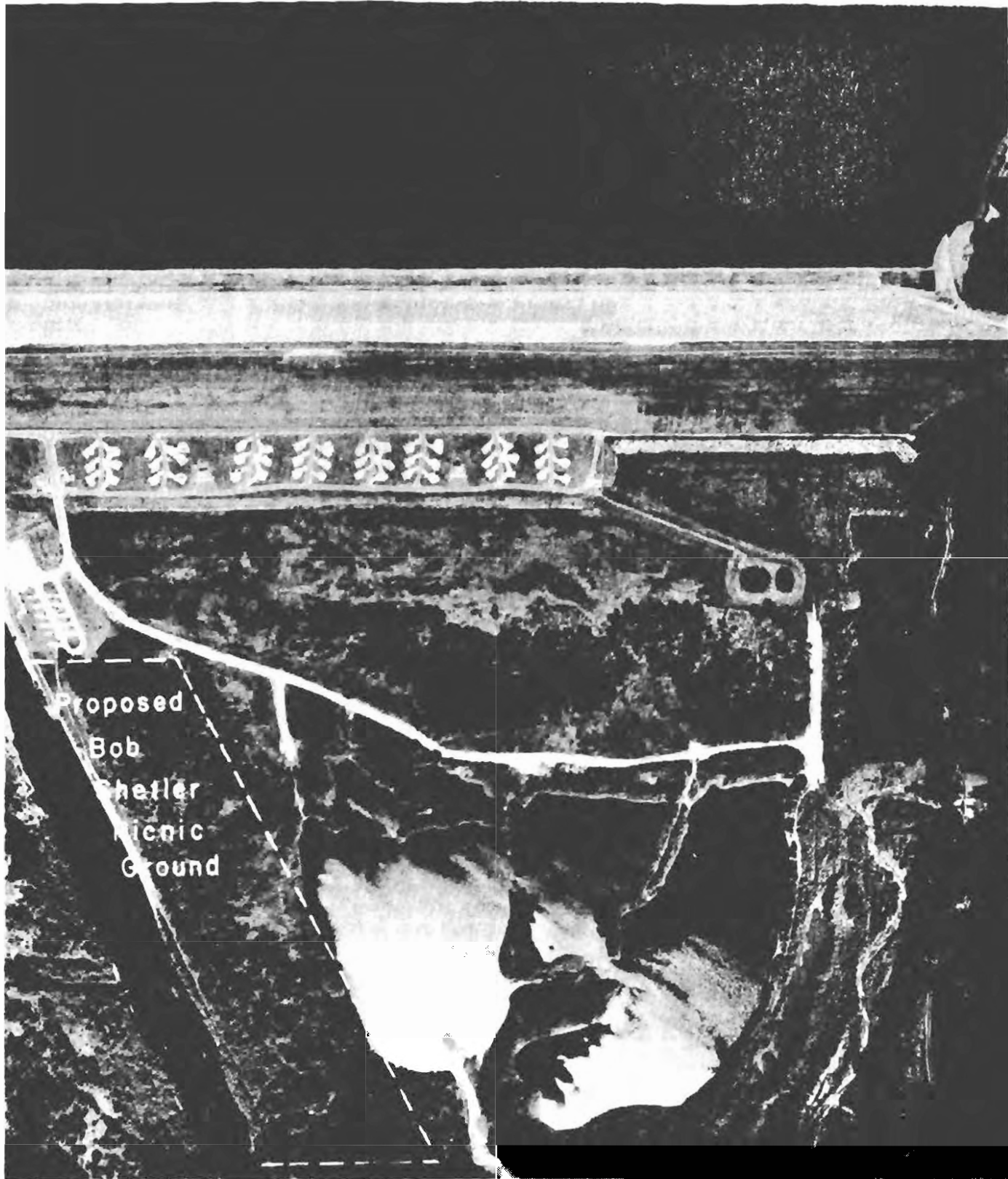
Saylorville Lake
Master Plan

AERIAL
PHOTOGRAPH

LAKE VIEW
RECREATION AREA



EXHIBIT 4-H



Pool Elevation 836 NGVD



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

AERIAL
PHOTOGRAPH

BOB SHETLER
RECREATION AREA

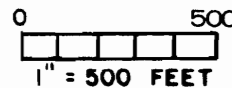


EXHIBIT 4-1



Pool Elevation 836 NGVD



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

AERIAL
PHOTOGRAPH

COTTONWOOD
RECREATION AREA

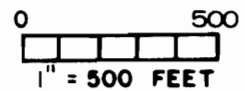


EXHIBIT 4-J



Pool Elevation 836 NGVD



**US Army Corps
of Engineers**
Rock Island District

Saylorville Lake
Master Plan

**AERIAL
PHOTOGRAPH**

**SAYLORVILLE LAKE
VISITORS CENTER**

0 500



1" = 500 FEET



EXHIBIT 4-K

EXHIBIT 5

AERIAL PHOTOGRAPHS -
SOILS, SAYLORVILLE LAKE RECREATION AREAS

MASTER PLAN
DESIGN MEMORANDUM 6B
SAYLORVILLE LAKE

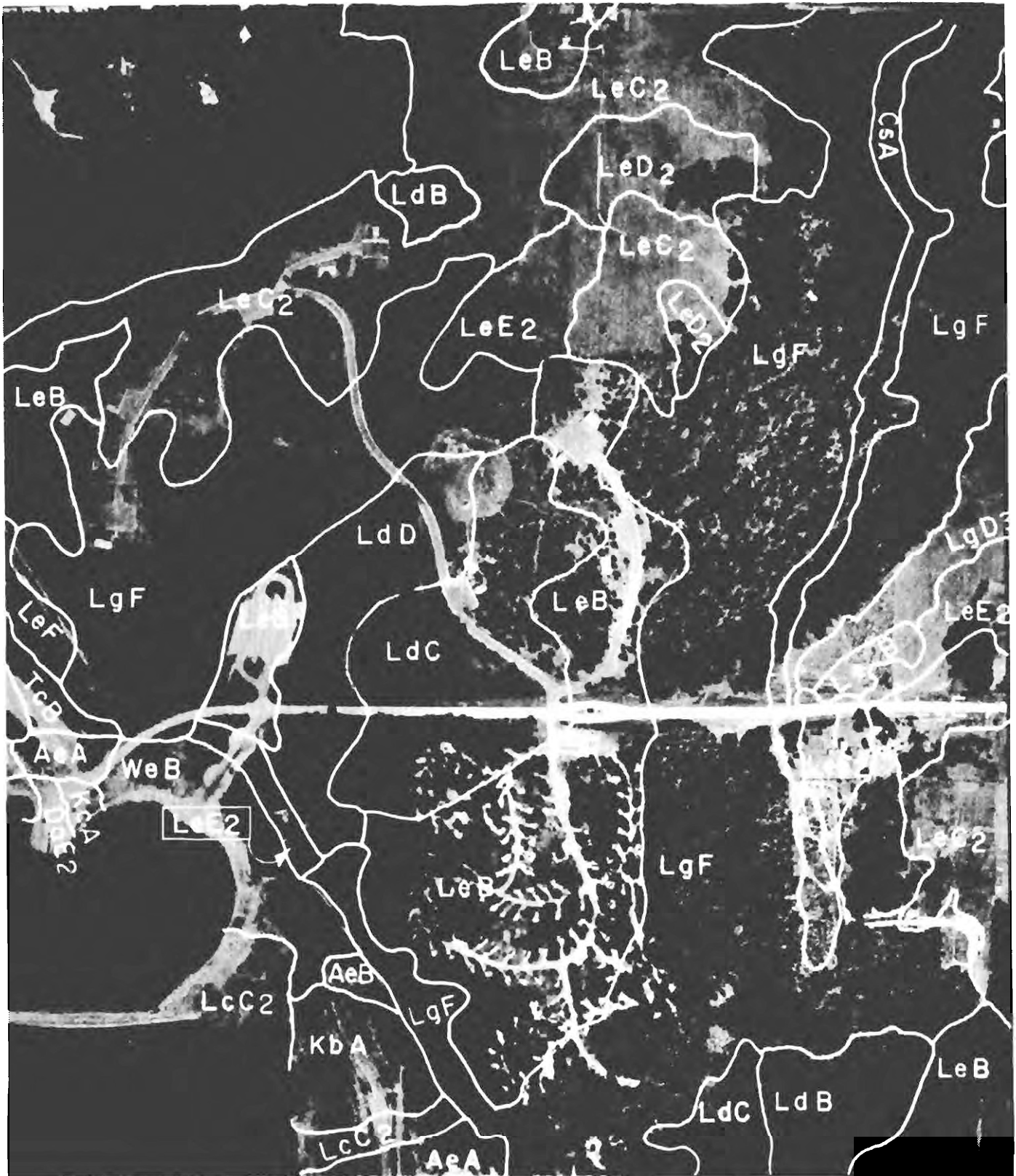
MULTI-PURPOSE PROJECT
DES MOINES RIVER BASIN
DES MOINES RIVER, IOWA

EXHIBIT 5

AERIAL PHOTOGRAPHS -
SOILS, SAYLORVILLE LAKE RECREATION AREAS

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NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

SOILS

CHERRY GLEN
RECREATION AREA

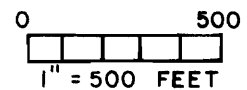


EXHIBIT 5-A



NOTE : Refer To Table 4 For
Soil Identification Symbols .



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Rock Island District

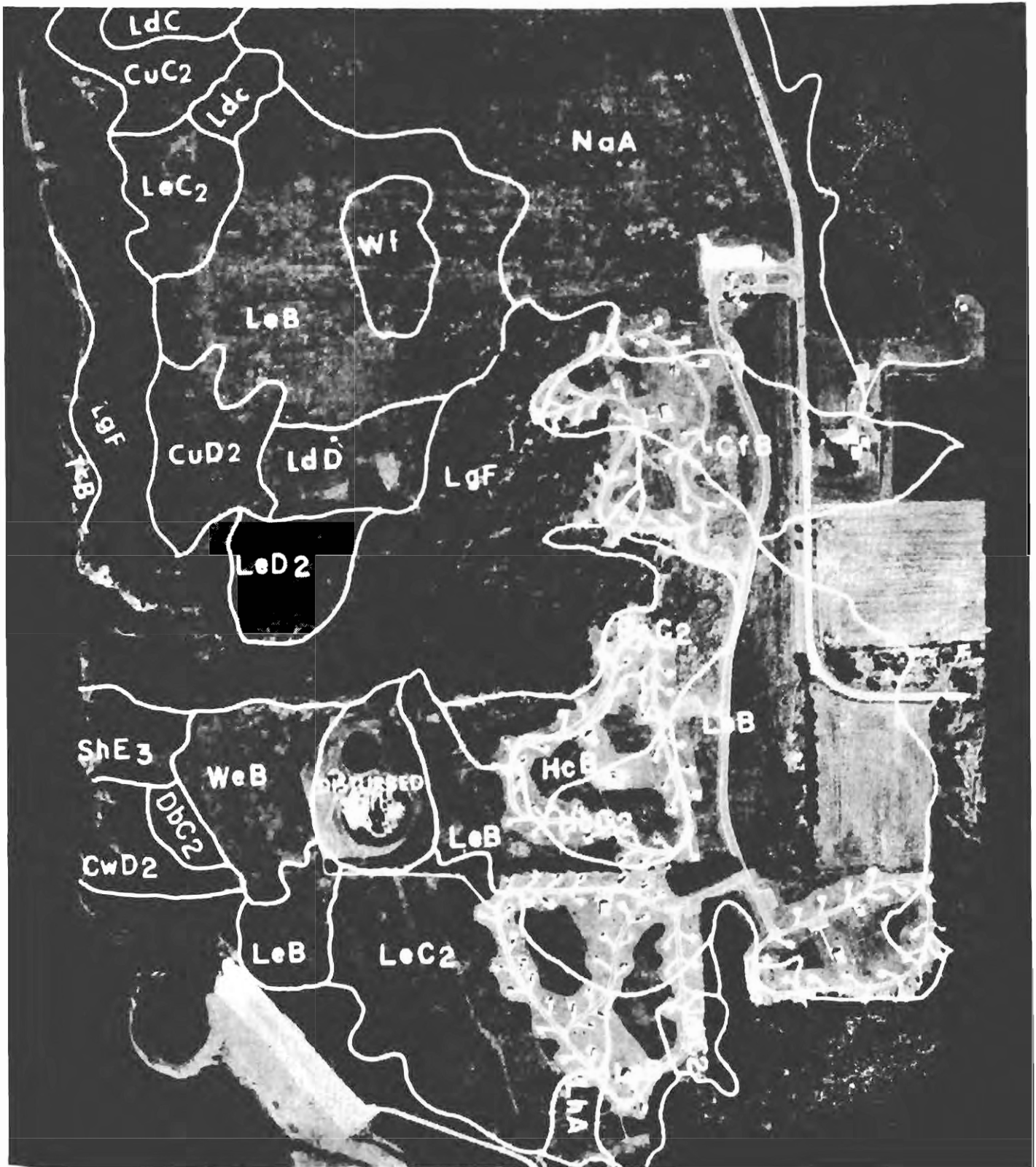
Saylorville Lake
Master Plan

SOILS

OAK GROVE
RECREATION AREA



EXHIBIT 5. B



NOTE : Refer To Table 4 For,
Soil Identification Symbols .



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Rock Island District

Saylorville Lake
Master Plan

SOILS

PRAIRIE FLOWER
CAMPGROUND

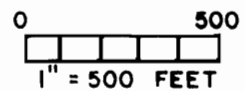
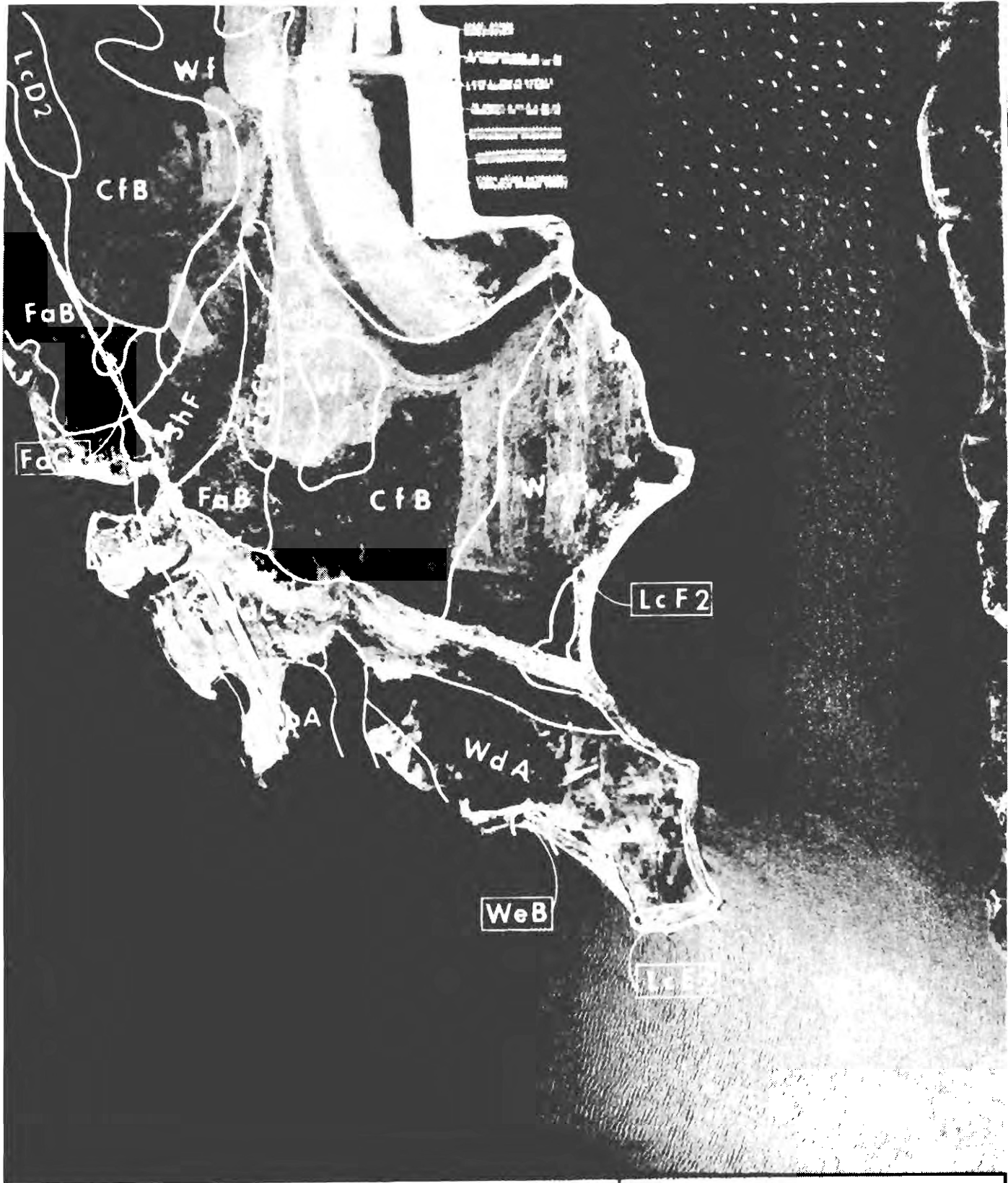


EXHIBIT 5-C



NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
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Rock Island District

Saylorville Lake
Master Plan

SOILS

**SANDPIPER PROPOSED
RECREATION AREA**

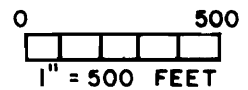
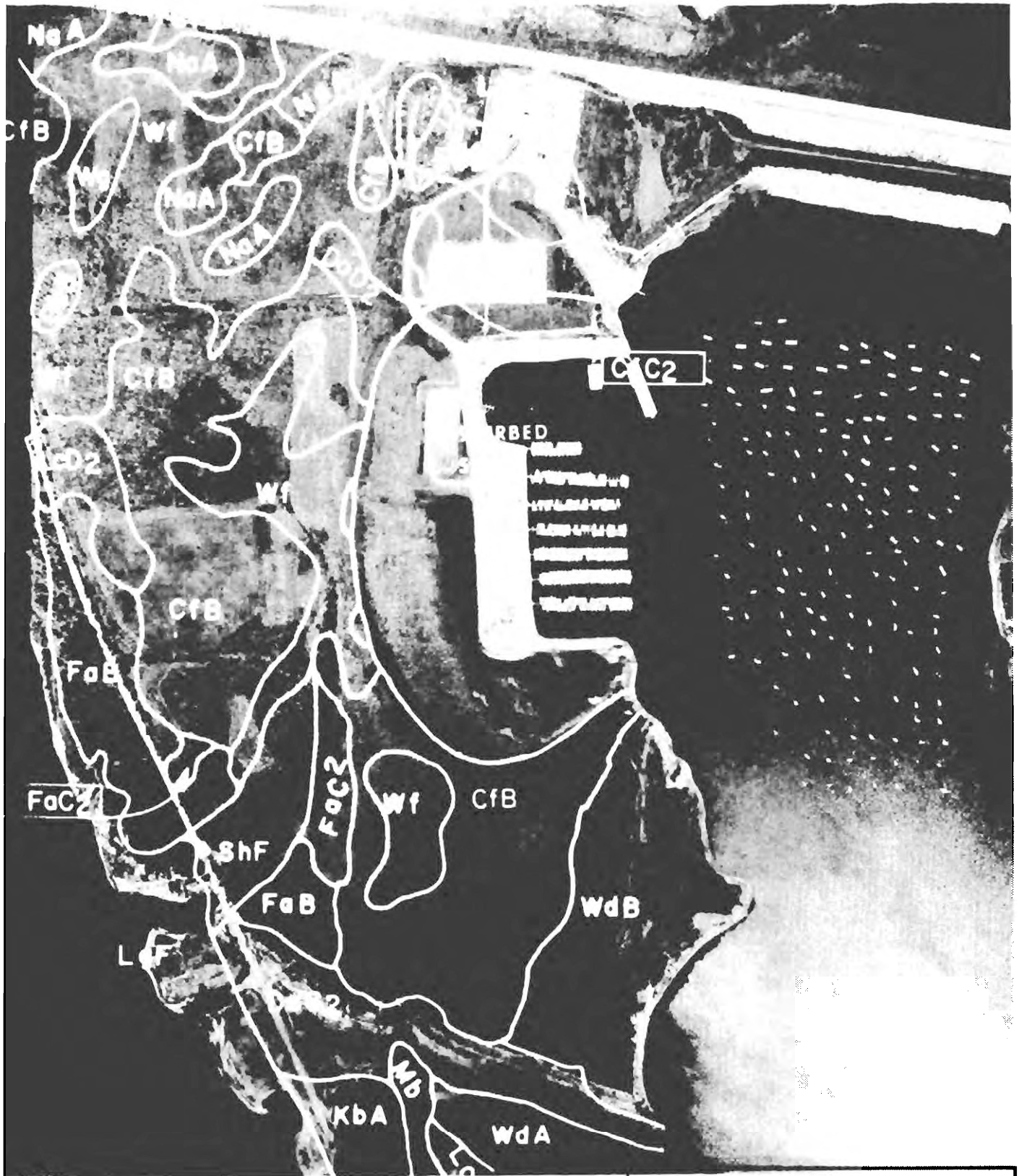


EXHIBIT 5.D



NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

SOILS

SAYLORVILLE LAKE
MARINA



EXHIBIT 5-E



NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
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Rock Island District

Saylorville Lake
Master Plan

SOILS

ACORN VALLEY
CAMPGROUND

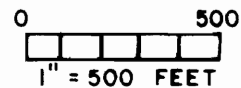


EXHIBIT 5-F



NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

SOILS

WALNUT RIDGE
RECREATION AREA

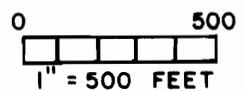


EXHIBIT 5-G



NOTE : Refer To Table 4 For
Soil Identification Symbols .



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Rock Island District

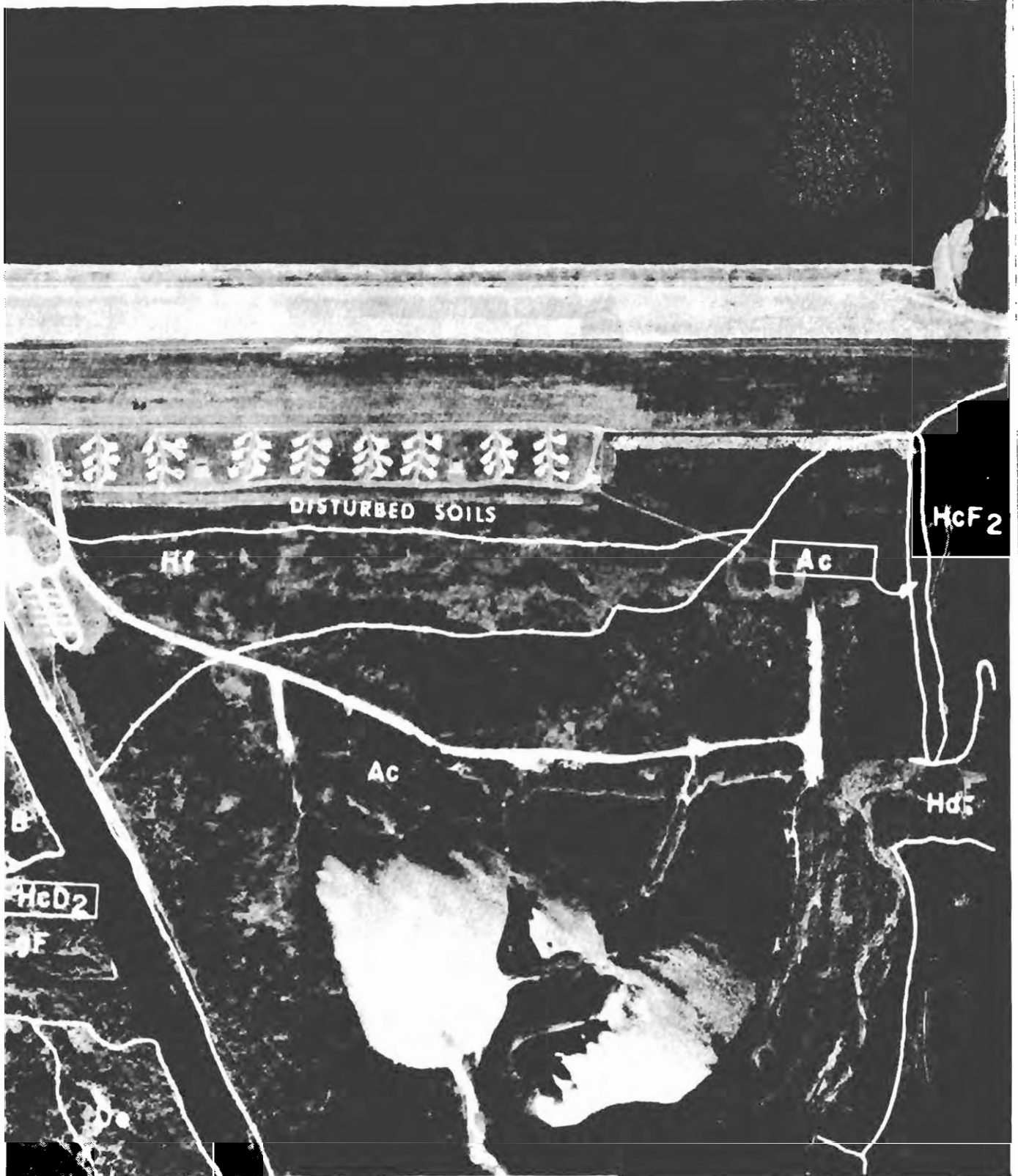
Saylorville Lake
Master Plan

SOILS

**LAKE VIEW
RECREATION AREA**



EXHIBIT 5-H



NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
of Engineers
Rock Island District

Saylorville Lake
Master Plan

SOILS

BOB SHETLER
RECREATION AREA

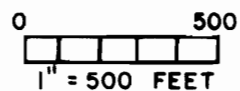


EXHIBIT 5 I



NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
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Saylorville Lake
Master Plan

SOILS

COTTONWOOD
RECREATION AREA

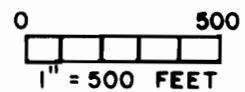


EXHIBIT 5-J



NOTE : Refer To Table 4 For
Soil Identification Symbols .



US Army Corps
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Rock Island District

Saylorville Lake
Master Plan

SOILS

SAYLORVILLE LAKE
VISITORS CENTER

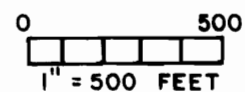


EXHIBIT 5-K

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DESIGN MEMORANDUM 6B

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