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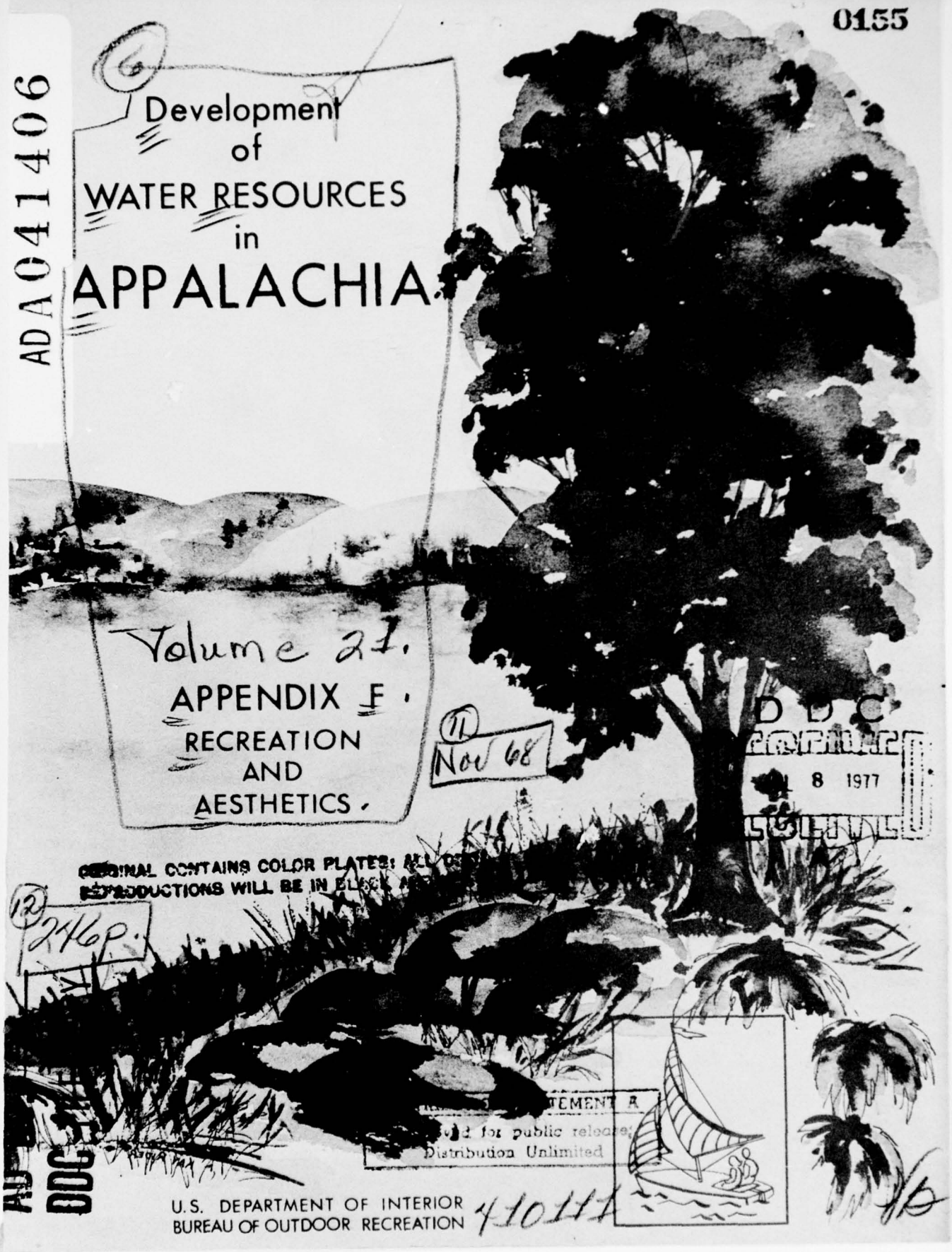

Volume 21.

APPENDIX F.

RECREATION AND AESTHETICS.

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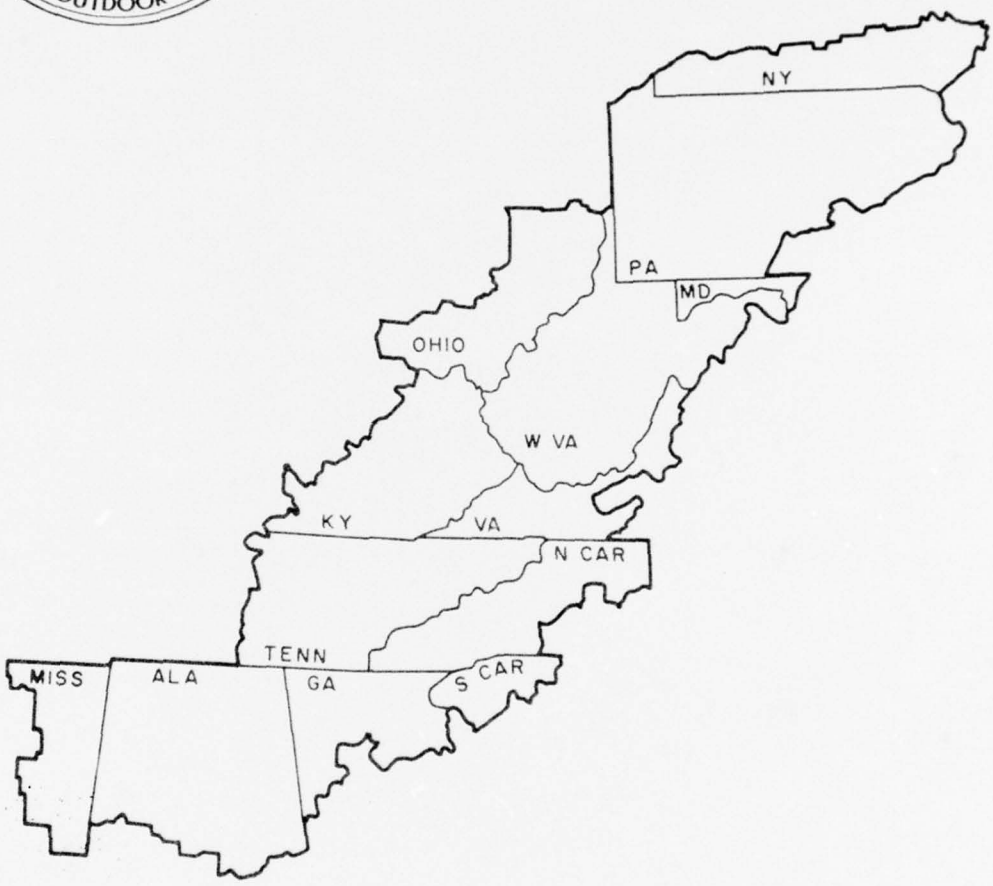
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RECREATION AND AESTHETICS

APPENDIX F

To

REPORT FOR DEVELOPMENT

of

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF OUTDOOR RECREATION
SOUTHEAST REGIONAL OFFICE
810 NEW WALTON BUILDING
ATLANTA, GEORGIA 30303

IN REPLY REFER TO:

November 21, 1968

Colonel John C. H. Lee, Jr.
Director
Office of Appalachian Studies
U.S. Army Corps of Engineers
Post Office Box 1159
Cincinnati, Ohio 45201

Dear Colonel Lee:

We are pleased to transmit the Recreation and Aesthetic Appendix which has been prepared by the Bureau of Outdoor Recreation as part of its assignment in the Appalachian Water Resource Survey.

Our studies have defined the recreation market area of the Appalachian Region. The Appendix presents estimates of future need as well as our findings regarding general recreation in the region. It also contains outdoor recreation evaluations of the water resource projects proposed by the Corps of Engineers and included as elements of the Corps plan. Supplement A following the Bureau's report includes the outdoor recreation evaluation study of the water resource proposals in the Upper French Broad River Basin prepared by the Tennessee Valley Authority.

Our participation in this part of the Appalachian Water Resource Studies stemmed from your request that we evaluate the recreation potential of certain reservoir projects. These evaluations were based on the assumption that impoundments would be constructed at predetermined sites. Time and funds allotted to this aspect of our studies did not permit adequate consideration of alternatives or a comprehensive approach to planning water resource projects to meet outdoor recreation needs. We have tried, however, to emphasize environmental considerations as they pertain to outdoor recreation in helping to meet some of these needs.

Sincerely yours,

Roy K. Wood
Regional Director

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United States Department of the Interior
BUREAU OF OUTDOOR RECREATION
SOUTHEAST REGIONAL OFFICE
810 New Walton Building
Atlanta, Georgia 30303

IN REPLY REFER TO:

D42

SEP 12 1969

Colonel John C. H. Lee, Jr.
U.S. Army Engineer Division,
Ohio River
Post Office Box 1159
Cincinnati, Ohio 45201

Dear Colonel Lee:

We have reviewed the suggested revisions to the Summary of Appendix F, to the Report for Development of Water Resources in Appalachia. We concur with the text agreed upon by members of my staff and you at the Ninth Meeting of the Water Development Coordinating Committee in Appalachia held in Cincinnati last week. We are attaching a copy of the revised text.

As you are aware, the proposed Logan, St. Petersburg, and Royal Glen Reservoir projects are matters of major concern to the Bureau. We believe the qualifications placed on the recommendations in the attached copy of the revised summary sufficiently recognize our concern with these projects and constitute a satisfactory course of action.

We believe this effort has been a successful culmination of reconciling agency views at the field level. It has been a pleasure for the Bureau to participate in the Appalachia water resource survey, and we are most impressed with your effort in producing a working plan responsive to the objectives of the Appalachian Region Development Act.

Sincerely yours,

Roy Wood

Roy K. Wood
Regional Director

Attachments

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REPORT
For
DEVELOPMENT OF WATER RESOURCES IN APPALACHIA

APPALACHIAN WATER SUB-REGIONS

VOLUME INDEX

MAIN REPORT

Volume Number	Part Number	Chapter Number	Contents
1	I	-	Summary Report
2	I	-	Key Map Folio (By States)
3	II	1	Water Sub-Region A Today
		2	Shaping the Plan for Sub-Region A
		3	Water Sub-Region B Today
		4	Shaping the Plan for Sub-Region B
		5	Water Sub-Region C Today
		6	Shaping the Plan for Sub-Region C
4	II	7	Water Sub-Region D Today
		8	Shaping the Plan for Sub Region D
		9	Water Sub-Region E Today
		10	Shaping the Plan for Sub-Region E
		11	Water Sub-Region F Today
		12	Shaping the Plan for Sub-Region F
5	II	13	Water Sub-Region G Today
		14	Shaping the Plan for Sub-Region G
		15	Water Sub-Region H Today
		16	Shaping the Plan for Sub-Region H
		17	Water Sub-Region I Today
		18	Shaping the Plan for Sub-Region I
		19	Water Sub-Region J Today
		20	Shaping the Plan for Sub-Region J
6	III	1	Introduction to Project Analyses
		2	Tamaqua Local Protection Project
		3	Royal Glen Reservoir
		4	Hipes Reservoir
7	III	5	Clinchfield Reservoir
		6	Roaring River Reservoir
		7	Curry Creek Reservoir
8	III	8	Dalton Reservoir
		9	Coosa River Navigation
		10	Stannard Reservoir
9	III	11	St. Petersburg Reservoir
		12	Greenbrier Reservoirs
		13	Lower Knox Reservoir

REPORT
For
DEVELOPMENT FOR WATER
RESOURCES IN APPALACHIA

VOLUME INDEX

MAIN REPORT (cont'd)

Volume Number	Part Number	Chapter Number	Contents
10	III	14	Whiteoak Reservoir
		15	Logan Reservoir
		16	Midland Local Protection Project
11	III	17	Upper French Broad System (TVA)
		18	Yellow Creek Port (TVA)
		19	Otocsin (Pa.)
		20	Naturealm (Pa.)
12	IV	-	Concepts & Methods
13	V	-	State Water Supplements: Ala., Ga., Ky., Md., Miss., N.Y., N.Car.
14	V	-	State Water Supplements: O., Pa., S.Car., Tenn., Va., W.Va.
15	VI	-	History, Coordination & Cooperation

APPENDICES

Volume Number	Appendix Designation	Title
16	A	Agriculture, Forestry and Conservation
17	B	Power Supply and Requirements
18	C	The Incidence and Formation of Mine Drainage Pollution
19	D	Water Supply and Water Pollution Control
20	E	Economic Base Study
21	F	Recreation and Aesthetics
22	G	Fish and Wildlife Resources
23	H	Ground Water
24	I	Mineral Industry Resources and Water Requirements

25 Loose Leaf Volume-Errata and Addenda

TABLE OF CONTENTS

Section	Subject	Page
	SUMMARY	F-xi
1.	INTRODUCTION	F-1
	Authority	F-1
	Scope	F-1
	Background	F-1
	Assumptions	F-2
	Sources of Information	F-3
	Acknowledgements	F-3
2.	DESCRIPTION OF THE APPALACHIAN REGION	F-3
	Location	F-3
	Size	F-4
	Cities	F-4
	Physiography	F-4
	Climate	F-5
	Land Uses	F-5
	Land Resources	F-6
	Water Resources	F-8
	Activities and Facilities	F-8
	Flora and Fauna	F-9
	Scenery and Aesthetic Features	F-9
	Seasonal Activities	F-15
	Archeology and History	F-15
	Problems	F-19
3.	SOCIOECONOMIC CHARACTERISTICS	F-23
	Population Characteristics and Distribution	F-23
	Income	F-23
	Leisure	F-23
	Mobility	F-24
4.	DEMAND, SUPPLY, AND NEEDS	F-25
	Recreation Market Area	F-25
	Demand	F-25
	Supply	F-25
	Needs	F-25
5.	MEETING THE NEEDS	F-29
	Consideration	F-29
	Analysis of Resources to Meet Needs	F-32

TABLE OF CONTENTS (Continued)

Section	Subject	Page
6.	THE OUTDOOR RECREATION PLAN	F-37
	The Objective of the Plan	F-37
	Features of the Plans:	F-37
	Subregion A	F-43
	Subregion B	F-44
	Subregion C	F-47
	Subregion D	F-49
	Subregion E	F-50
	Subregion F	F-52
	Subregion G	F-53
	Subregion H	F-56
	Subregion I	F-57
	Subregion J	F-58
	Appraisal of Capacity to Meet Needs	F-60
	Alternatives	F-61
	Administrative, Cost Sharing and Funding Arrangements	F-62
	Program for Public Investment	F-64
	Evaluation	F-64
	Recreation Benefits	F-64
	General Recreation Development Costs	F-65
7.	INDIVIDUAL STUDIES - PROJECT ANALYSIS AND PROPOSALS	F-67
	Introduction	F-67
	Outdoor Recreation Evaluation Reports	F-67
	Davenport Center	F-69
	Royal Glen	F-76
	Hipes	F-83
	Roaring River	F-91
	Clinchfield	F-97
	Curry Creek	F-104
	Dalton	F-111
	St. Petersburg	F-118
	Greenbrier	F-126
	Whiteoak	F-135
	Logan	F-142
	Parker Branch	F-148
	Preliminary Evaluation Summaries	F-154
	Deer Lake	F-154
	Stannard	F-155
	Lower Knox Creek	F-155

ADDENDUM

	Definitions	F-157
	Methodology, Criteria, and Planning Procedures	F-159

LIST OF FIGURES

Number	Title	Page
1.	Appalachian Region	F-x
2.	Parksville Lake, Tennessee	F-xviii
3.	Fontana Lake in the Nantahala National Forest	F-7
4.	Mountains and Valley in North Georgia	F-11
5.	Appalachian Trail in North Carolina	F-11
6.	Big South Fork of the Cumberland River	F-13
7.	Scenic Highway in the North Carolina Mountains	F-13
8.	Summer Camping in the Appalachians	F-16
9.	Indian Mound at Mound City, Ohio	F-16
10.	Strip Mining for Coal in the Cumberland Mountains	F-20
11.	Automobile Junkyard	F-20
12.	Population Distribution of Eastern United States	F-22
13.	Existing and Projected use of Outdoor Recreation Areas	F-24
14.	Appalachian Recreation Market Areas	F-26
15.	Annual Activity Days - Boating, Swimming, Camping, Picnicking	F-27
16.	Annual Activity Days - Fishing, Hunting, Skiing	F-28
17.	Appalachian Highland Planning Area	F-34
18.	Appalachian Subregions	F-36
19.	Annual Activity Days - Subregion A and Subregion B	F-38
20.	Annual Activity Days - Subregion C and Subregion D	F-39
21.	Annual Activity Days - Subregion E and Subregion F	F-40

LIST OF FIGURES (Continued)

Number	Title	Page
22.	Annual Activity Days - Subregion G and Subregion H	F-41
23.	Annual Activity Days - Subregion I and Subregion J	F-42
24.	Administrative Arrangements, Cost Sharing and Funding	F-63
25.	Lake and Mountains in Appalachia	F-66
26.	Location Map, Davenport Center Reservoir	F-70
27.	Project Map, Davenport Center Reservoir	F-73
28.	Location Map, Royal Glen Reservoir	F-77
29.	Project Map, Royal Glen Reservoir	F-80
30.	Location Map, Hipes Reservoir	F-84
31.	Project Map, Hipes Reservoir	F-88
32.	Location Map Roaring River Reservoir	F-92
33.	Project Map, Roaring River Reservoir	F-95
34.	Location Map, Clinchfield Reservoir	F-98
35.	Project Map, Clinchfield Reservoir	F-101
36.	Location Map, Curry Creek Reservoir	F-105
37.	Project Map, Curry Creek Reservoir	F-108
38.	Location Map, Dalton Reservoir	F-112
39.	Project Map, Dalton Reservoir	F-115
40.	Location Map, St. Petersburg Reservoir	F-119
41.	Project Map, St. Petersburg Reservoir	F-123
42.	Location Map, Greenbrier Project	F-127
43.	Recreation Plan Without Project - Greenbrier River	F-130

LIST OF FIGURES (Continued)

Number	Title	Page
44.	Recreation Plan With Project - Greenbrier River	F-132
45.	Location Map, Whiteoak Reservoir	F-136
46.	Project Map, Whiteoak Reservoir	F-139
47.	Location Map, Logan Reservoir	F-143
48.	Project Map, Logan Reservoir	F-146
49.	Location Map, Parker Branch Reservoir	F-149
50.	Project Map, Parker Branch Reservoir	F-152

LIST OF PLATES

NOT BOUND IN FINAL VOLUME

Plate		
1.	Northern Appalachia	inside front cover
2.	Southern Appalachia	inside back cover

PHOTO CREDITS

Tennessee Valley Authority, Figs. 2, 3, 4, 8, 25.
U.S. Forest Service, Department of Agriculture, Figs. 5, 7.
National Park Service, Department of the Interior, Figs. 6, 9, 10.

SUPPLEMENT A

TENNESSEE VALLEY AUTHORITY
Upper French Broad River Basin Project

SUPPLEMENT B

UNITED STATES DEPARTMENT OF AGRICULTURE
Part I - U.S. Forest Service Proposals
Part II - U.S. Soil Conservation Service Proposals

FIGURE I

APPALACHIAN REGION

NOTICE TO THE READER

Recommendations for the development of the recreation resources of the Big South Fork, Cumberland River, Kentucky and Tennessee, are being deferred pending the completion of studies authorized in Section 218 of the Rivers and Harbors Act of 1968, 82 Stat. 749. Implementation of this section has begun involving interagency coordination, field surveys and preliminary work assignments.

Department of the Interior
BUREAU OF OUTDOOR RECREATION
November 1968

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RECREATION AND AESTHETICS

Appendix F

Summary

Introduction

Section 206 of the Appalachian Regional Development Act of 1965 directed the Secretary of the Army to prepare a comprehensive plan for the development of water resources of the Appalachian Region, giving special attention to enhancing the welfare of its people. The Act stated that the plan may recommend measures for flood control, water supply, hydroelectric power, navigation, and enhancement of recreation potential.

The Bureau of Outdoor Recreation was requested in the winter of 1966 by the Corps of Engineers, Office of Appalachian Studies, to estimate the degree of facility development needed and recreation use for certain proposed dam and reservoir projects. Flood control, water supply, and power development were the primary considerations in site selection. Outdoor recreation was a project purpose but it was not a factor in determining the number, size, and location of the dam and reservoir projects selected for detailed analysis during the course of the study. Subsequently, the Corps requested that the Bureau prepare the Recreation and Aesthetics Appendix.

Comprehensive outdoor recreation planning by the Bureau of Outdoor Recreation was not possible due to the limitations of funds and manpower during the period available for study. The study was primarily limited to the need for furnishing outdoor recreation opportunities associated with impounded waters and related lands, benefits of estimated recreation use, and costs of lands and facility developments required to support that use.

Recreation Resources

Variety is the key word in describing the outdoor recreation attributes. Here is an area potentially attractive to almost every segment of the recreating public.

Appalachia has an abundance of scenic and natural resource features. The mountains are one of the most outstanding scenic features, especially when lakes afford dramatic relief. The water courses of the area range from narrow and fast to broad and slow. Some are clear and pure, while others are muddy and polluted. Many of the Appalachian rivers and streams afford outstanding opportunities for outdoor recreation experiences in a natural setting. Additional water related recreational opportunity exists at the 100 manmade reservoirs and natural lakes, 500 acres or larger in size. Forests occupy nearly two-thirds of the land area. Approximately 14 percent of the forested area is in public ownership. The climate permits a wide variety of outdoor recreation activities covering all seasons of the year.

The Appalachian Region is some 1,000 miles long by 200-250 miles wide and contains 195,000 square miles. Portions of Mississippi, Alabama, Georgia, Tennessee, South Carolina, North Carolina, Virginia, Kentucky, Pennsylvania, Maryland, New York, and Ohio, and all of West Virginia, are within the region.

Appalachia is characterized by a series of ridges and valleys and encompasses much of the geologically old and eroded Appalachian Mountains. Elevations vary from 200 feet above sea level in the valleys to mountain peaks a mile or more high.

The Study

A recreation market area was delineated in order to compare and analyze the relationships between the demand for outdoor recreation opportunities and the supply of resources and facilities. The market area population was assumed to include, in addition to the residents of Appalachia, all Standard Metropolitan Statistical Areas within 2½ hours driving time of the boundaries of the study area.

Almost 70 percent of the population of the United States--125 million people in 1960--live within 1-day's driving time of Appalachia.

Based on present per capita participation rates, annual demand for outdoor recreation in the Appalachian Region was determined to be 121 million recreation days in 1965. If increasing population, more leisure time, higher incomes, and greater mobility trends continue, demand could increase to 268 million recreation days by 1980.

An inventory of the existing resources of the region showed 13.4 million acres of land, 1.2 million surface acres of lakes and reservoirs, and over 53,000 miles of rivers and streams available for outdoor recreation purposes.

The demand for and supply of outdoor recreation resources and facilities was analyzed on a subregional basis and for each proposed dam and reservoir project.

Major Problems and Opportunities

Generalization regarding outdoor recreation resources do not properly reflect the complexity and variety of Appalachian problems. The mountainous terrain has materially restricted communication and transportation through and within the region. The exploitation of natural resources, the decline in farming, mechanization of coal mining, have all had their impact. Pockets of chronic unemployment and other evidences of economic distress resulted.

Although rich in natural resources and outdoor recreation potential, many of the conditions which affected economic development also tend to prevent realization of the outdoor recreation potential. Major problems identified during the course of this study are:

Lack of outdoor recreation facilities restrict the use of the abundant natural resources.

Pollution of many lakes and streams has limited the outdoor recreation use of water.

Uncontrolled strip cities have developed along the main highways leading to and from urban centers and typifies the lack of land use planning.

Inadequate road systems greatly restrict the market area of the recreation resources.

Outdoor recreation resources are unevenly distributed with respect to the market area population centers.

Surface mining has defaced areas that were once highly scenic countryside.

Findings

The attractiveness of Appalachia for outdoor recreation is closely associated with the variety of opportunity the region affords. The mountains, forests, waters, fish, wildlife, and scenic beauty of the landscape have enormous outdoor recreation potential.

The outdoor recreation demands of millions of people can be satisfied through development of the outdoor recreation potential of Appalachia by Federal, State, and local governments, and the private sector. Additional development permitting more intensive use at existing resources and facilities will satisfy part of the demand; however, creation of new resources and development of facilities at new areas will be needed to satisfy future demands. Full realization of outdoor recreation opportunity in Appalachia requires location and development of water impoundments to meet specific recreation needs.

A large unsatisfied demand and a present shortage of water suitable for water-based recreation opportunity exist throughout much of the Appalachia market area. Surface waters suitable for boating and swimming are unevenly distributed in relation to the region and its market area. In seven subregions of Appalachia, construction of water impoundments would significantly increase the outdoor recreation opportunities in the Appalachian Region.

The Appalachian Region contains many suitable sites for small or medium sized dam and reservoir projects having potential for meeting outdoor recreation demands. Only a few sites received serious consideration during the course of this limited recreation study.

The large metropolitan areas adjacent to Appalachia will generate much of the future demand for outdoor recreation opportunities. All 10 subregions will need additional outdoor recreation resources and facilities to meet projected future demands.

Land values are rising rapidly throughout Appalachia. Lands having high recreation potential are particularly susceptible to price escalation.

Recommendations--General

The following recommendations are offered for the consideration of the Appalachian Regional Commission in carrying out its responsibilities to develop a comprehensive and coordinated program to promote economic development in Appalachia. However, the establishment of priorities for water development projects must take place within a broad planning framework.

- Scenic trails, roads, and parkways should be planned and constructed as an integral part of the water resources development program.

- Direct measures to prevent and abate water pollution at the source, including acid mine drainage, should be implemented to assure a quality environment in Appalachia. This will require plans for an action program to rehabilitate areas rendered useless by surface mining operations and retain these areas for public use.

- State and Federal programs to identify and properly administer a network of free-flowing streams should receive high priority. Potential scenic rivers need to be studied to determine their capabilities for meeting water-related recreation needs and to provide the variety of outdoor recreation opportunity necessary to attract people to the Appalachian Region.

- Extreme care must be exercised to protect and enhance the environmental quality, and the archeological, historical, and natural science resources of the Appalachian Region. It is especially important, with respect to the many programs and proposals aimed at improving economic conditions of the region, that long-term benefits not be overlooked in favor of short-term gains. Existing resources having potential for providing recreation experiences in a natural environment should be fully recognized and developed accordingly or held in reserve to meet future demands.

- Fundamental and applied research should be encouraged to provide basic information in the areas of recreation use, user motivation, and resource management. Origin and destination studies, user preferences, economic impact of recreation and related industries, resource carrying capacities, and methods of predicting use are some of the research requirements of the Appalachian Region.

Recommendations--Specific Water Development Projects

- The following dam and reservoir projects afford potential for meeting outdoor recreation needs and are consistent with the statewide comprehensive outdoor recreation plans of the Appalachian States and in keeping with the needs outlined therein. Outdoor Recreation should be included as a project purpose when authorization for construction is sought and the projects developed to provide public outdoor recreation opportunity and enjoyment:

  - Whiteoak Reservoir, Whiteoak Creek, Ohio

  - Dalton Reservoir, Conasauga River, Georgia

  - Hipes Reservoir, Craig Creek, Virginia

- Davenport Center Reservoir, Charlotte Creek, New York
- Clinchfield Reservoir, Broad River, North Carolina
- Roaring River Reservoir, Upper Yadkin River, North Carolina
- Curry Creek Reservoir, North Oconee River, Georgia
- Royal Glen Reservoir, South Branch of the Potomac River, West Virginia, subject to its demonstrated compatibility with the management plans for both the Spruce Knob-Seneca Rocks National Recreation Area and the Potomac River Basin.
- Logan Reservoir, Clear Creek, Ohio, provided that detailed studies of the recreation (including fish and wildlife and environmental quality) aspects of alternative damsites be made jointly in advanced planning by the U.S. Department of the Interior, U.S. Army Corps of Engineers, and the State of Ohio to determine optimum use of available resources.
- St. Petersburg Reservoir, Clarion River, Pennsylvania, provided the Secretary of the Interior determines, in accordance with the provisions of section 7 of the Wild and Scenic Rivers Act, P.L. 90-542, that the project would not have a direct and adverse effect on the values for which the Clarion River between the town of Ridgeway and its confluence with the Allegheny River might be included in the National Wild and Scenic Rivers System.
- Stannard Reservoir, Genesee River, New York, provided detailed studies of the recreation potential are considered in future planning to meet outdoor recreation needs.
- Royalton Reservoir, Upper Licking River, Kentucky, provided detailed studies of the recreation potential are considered in future planning to meet outdoor recreation needs.

- These reservoir sites have outdoor recreation potential and should be considered in future planning to meet outdoor recreation needs in Appalachia.
  - Zoar Valley Reservoir, New York
  - Prompton Reservoir Modification, Pennsylvania
  - Muddy Creek Reservoir, Pennsylvania
  - Union City Reservoir, Pennsylvania
  - Springville Reservoir, New York
  - Otto Reservoir, New York

- Mitchell Reservoir, North Carolina
- Reddies River Reservoir, North Carolina
- Fisher River Reservoir, North Carolina
- Deer Lake Restoration, Pennsylvania
- Lower Knox Creek Reservoir, Kentucky

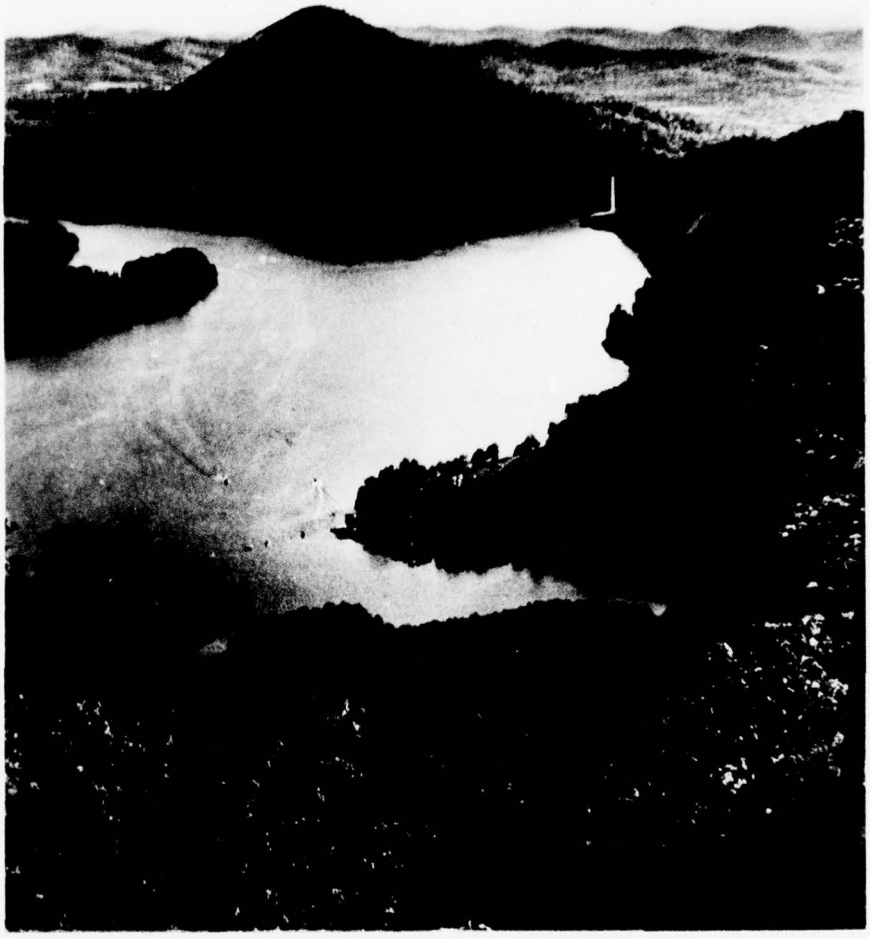


Figure 2 - Parksville Lake, Tennessee

RECREATION AND AESTHETICS IN THE APPALACHIAN REGION

I. INTRODUCTION

Authority. The Bureau of Outdoor Recreation is authorized to prepare the Recreation and Aesthetics Appendix F to the Report for Development of Water Resources in Appalachia under the provision of the Act of May 28, 1963, (77 Stat. 49; 15 U.S.C. 460ℓ et seq.) and the Federal Water Project Recreation Act (79 Stat. 213; 16 U.S.C. 460ℓ - 12 et seq.) The Bureau has surveyed the recreation resources and their potential as part of its assignment in cooperation with the Army Corps of Engineers. The Corps has been authorized by the Appalachian Regional Development Act of 1965 (79 Stat. 5; 40 U.S.C. 206) to prepare a comprehensive plan for intensified development and utilization of the resources to encourage economic growth of the region.

Scope. The report analyzes significant outdoor recreation, aesthetic, historical, archeological, and natural science resources of the region; discusses socioeconomic factors relating to outdoor recreation; evaluates demand and supply; determines needs from available information, and recommends outdoor recreation developments to help meet identified needs.

Background. Historically, the Appalachian Region has experienced problems which affected its economic development. Early settlers found the mountains of the region a major barrier to westward migration. The mountainous terrain materially restricted communication and transportation links to and across the region.

The decline in farming, the decline and/or mechanization of coal mining, and exploitation of natural resources caused the region to suffer. Large pockets of chronic unemployment and other evidences of economic distress resulted. These conditions have long been recognized by all levels of government.

In 1960 a Conference of Appalachian Governors was formed to find ways and means of coping with the region's problems. This conference was followed by the President's Appalachian Regional Commission comprised of representatives of the State and Federal Governments. This commission, in turn, authorized several studies of the region, two of which were partially or solely devoted to outdoor recreation. These were: "Appalachia's Forest Resources--

Timber" and "Report of Recreation Subcommittee--Physical Resources Committee for the President's Appalachian Regional Commission."

The findings of the President's Appalachian Regional Commission formed the basis for the program that was authorized by the Appalachian Regional Development Act of 1965. Under this Act, a new Appalachian Regional Commission was authorized to coordinate a 6-year Federal-State effort to promote growth and development of the Appalachian Region.

The Corps of Engineers requested the Bureau of Outdoor Recreation to evaluate the outdoor recreation potential of certain reservoir projects considered for inclusion as elements in the plan of development for water resources in Appalachia. These evaluations were based on the assumption that a reservoir would be constructed at a predetermined site. The Bureau's participation in the Recreation and Aesthetics Appendix F studies stemmed from this request. Neither time nor funds were sufficient to allow for the adequate consideration of alternatives or for a truly comprehensive approach to planning water development projects to meet outdoor recreation needs.

Assumptions. The following assumptions were made in the preparation of this Appendix:

- Demand for opportunities in four activities--boating, swimming, picnicking, and camping--serve as indicators for outdoor recreation demands on the region's water and related land resources.

- Present use in recreation days is based on the supply of outdoor recreation facilities as inventoried. The participation rates contained in the 1965 National Recreation Survey provide a base for determining demand for selected activities evaluated in this report.

- Proposed reservoirs will be constructed at predetermined sites and these proposals serve as a basis for the outdoor recreation evaluations of each project.

- Per capita personal income is a major variable affecting demand for and participation in outdoor recreation activities.

- Rural population of the Appalachian Region leaving the region to participate in outdoor recreation activities equals the rural population outside of Appalachia that enters the region to participate in outdoor recreation activities.

- Reservoirs and rivers are of suitable quality for planned water-dependent outdoor recreation activities and meet standards established by the State water quality control agencies.

- Adequate land will be acquired and developed, and recognized standards of administration and operation will be assured for all outdoor recreation developments.

Sources of Information. Data on the supply of publicly owned outdoor recreation resources and facilities were obtained from the Bureau of Outdoor Recreation's 1963 Nationwide Plan Inventory. Data on the supply of privately owned outdoor recreation resources and facilities which are available for public use were obtained from the 1965 inventory sponsored by the National Association of Soil and Water Conservation Districts. Ohio stream data were provided by the staff of the Ohio Water Commission. Information on the fish and wildlife resources and the archeological and historical resources was obtained from reports prepared by the Bureau of Sport Fisheries and Wildlife and the National Park Service respectively.

The outdoor recreation activities evaluated are principally of the nonurban variety and are pursued primarily in nonurban recreation areas or environments. Data on public and private swimming pools in urban areas are lacking. Therefore, these facilities are not included in the supply data.

Acknowledgements. The Bureau of Outdoor Recreation appreciates the cooperation and assistance from the following:

a. The Appalachian Regional Commission
b. Department of the Army, Corps of Engineers
c. Agencies of the Department of Agriculture
d. Agencies of the Department of the Interior
e. Department of Commerce
f. Department of Health, Education, and Welfare
g. The Tennessee Valley Authority
h. Various Agencies and Departments of the 13 Appalachian States
i. Local Governments and Interested Individuals

II. DESCRIPTION OF THE APPALACHIAN REGION

Location. The Appalachian Region encompasses much of the magnificent and rugged Appalachian Mountains of the eastern United States and extends from southern New York to northern Alabama and northeast Mississippi. Included are most of Pennsylvania, western portions of Maryland, Virginia, North Carolina, and South Carolina; northern portion of Georgia; upper half of Alabama; northeast

portion of Mississippi; eastern portions of Tennessee, Kentucky, and Ohio; southern tier of New York counties; and all of West Virginia. Refer to Plate 1, Northern Appalachia, and Plate II, Southern Appalachia inside the front and back covers respectively for information and location of items in the report.

Size. The Appalachian Region is some 1,000 miles long from north to south and some 200 to 250 miles wide from west to east. The total area encompasses approximately 195,000 square miles or 125 million acres. Within the region are 397 counties. For study purposes, the region has been divided into 10 subregions. (See Figure 18 on page F-36.)

Cities. The largest cities are Pittsburgh, Pennsylvania, and Birmingham, Alabama. Other smaller cities include Charleston and Wheeling, West Virginia; Scranton, Pennsylvania; Asheville, and Winston-Salem, North Carolina; and Knoxville and Chattanooga, Tennessee. Immediately adjacent to and having an influence on Appalachia are the metropolitan areas of Montgomery, Alabama; Atlanta, Georgia; Lexington, Kentucky; and Cincinnati and Columbus, Ohio. Many metropolitan areas along the eastern seaboard and the Great Lakes area such as Philadelphia, Pennsylvania; Baltimore, Maryland; Cleveland, Ohio; and Buffalo, New York, can be expected to continue to contribute to the demand for outdoor recreation opportunities throughout the region, providing the outdoor recreation potential of the region is developed.

Physiography. The Appalachian Mountains consist of two principal mountain formations--the Old Appalachians, which include the Blue Ridge Mountains; and the New Appalachians, which include the ridge and valley formations west of the Blue Ridge.

Huge forests grew throughout the New Appalachian region during the carboniferous period while, at the same time, the land rose and folded. As weathering of mountains occurred and as the land rose and fell, these ancient forests became compressed by the weathered material brought down upon them. The coal fields, which cover much of Appalachia from Ohio and Pennsylvania in the north to Alabama in the south, were formed during this period.

The mountains in parts of the region rise to over a mile in height, with valleys in some areas little over 100 feet above sea level. The region is dotted with hundreds of mountain peaks, waterfalls, valleys, ravines, gaps, gulches, coves, natural

tunnels, streams and broad rivers, caves, and unusual geologic formations. Few natural lakes of size were formed in the vast area of the Appalachians, except in the north where glaciation had an influence upon topography.

Climate. The climate throughout Appalachia varies seasonally from warm and humid to bitter cold. The New York and Pennsylvania portions can be delightfully warm and pleasant in summer and have a long, extremely cold winter season with considerable snow. This permits a wide range of activities from swimming in the summer to snow skiing and ice skating in the winter. By contrast, the mountains of Georgia, North Carolina, and Virginia offer a cooler summer than the flats of the north; and because of latitude, the flat areas of the south offer more moderate winter temperatures. These warmer conditions often permit year-round fishing and boating.

Land Uses. Agriculture has been confined mostly to the valleys in Appalachia, although subsistence agriculture has been and still is attempted on some of the mountain slopes. A few valley farms have been prosperous; but for the most part, agriculture in the region has not kept pace with mechanization and, in many areas, was never more than subsistence farming.

Many of the Appalachian forests were cut over to meet a national demand for forest products. However, much of this land today is supporting second growth forest cover; and with good forestry practices, the forests of Appalachia will eventually become a more valuable economic resource of the region. Around 60 percent of the region, or 74 million acres, are covered with forests or woodland. Approximately 10 percent of this, or 7.3 million acres, are in national forests or other public ownership which have outstanding outdoor recreation potential.

Today, strip-mining operations are common in Appalachia. Through this operation, thousands of acres of land in Appalachia have been distrubed. Little effort was made in the past to reclaim this land, and often high acidity of the soil prevented natural revegetation of spoil piles.

Laws in some States require strip-mine operators to reclaim the land they ravage. Additional laws in the future may result in more land reclamation, making much of it aesthetically acceptable and with potential as an outdoor recreation resource.

Land Resources. The public and private land resources of Appalachia presently devoted to outdoor recreation purposes total some 13.4 million acres, of which approximately half is in Federal ownership. In addition, there are countless acres of land laid waste by surface mining operations that, if reclaimed, could have potential recreation value.

The larger publicly owned land resources in Appalachia include the 800-square mile Great Smoky Mountains National Park in Tennessee and North Carolina and part or all of the following national forests:

Monongahela National Forest, West Virginia
Jefferson and George Washington National Forests
Virginia and West Virginia
Daniel Boone National Forest, Kentucky
Pisgah and Nantahala National Forests, North Carolina
Sumter National Forest, South Carolina
Cherokee National Forest, Tennessee
Bankhead and Talladega National Forests, Alabama
Chattahoochee National Forest, Georgia
Wayne National Forest, Ohio
Allegheny National Forest, Pennsylvania
Holly Springs and Tombigbee National Forests, Mississippi
Hector Land Use Area, New York

Included in these national forests are hundreds of miles of rivers, many large and small water impoundments, and some 6 million acres of land. Supplement B, Part I, of this Appendix contains further details on the outdoor recreation resources of these forests.

Three national recreation areas have been authorized in or adjacent to Appalachia. They are the scenic Spruce Knob-Seneca Rocks National Recreation Area in the Potomac headwaters country of West Virginia, the Mount Rogers National Recreation Area in southwestern Virginia, and the Delaware Water Gap National Recreation Area on the New Jersey-Pennsylvania State line.

Probably outside of urban day-use recreation areas, these national recreation areas will receive the most intensive use of all other recreation areas in Appalachia. Located in regions of natural beauty and close to densely populated cities, they are large, being over 20,000 acres in size. Where possible, they will be designed to provide the public with a broad range of outdoor recreation opportunities.

The recreation developments on Tennessee Valley Authority lakeshores in Appalachia include 78 public parks, 359 public access

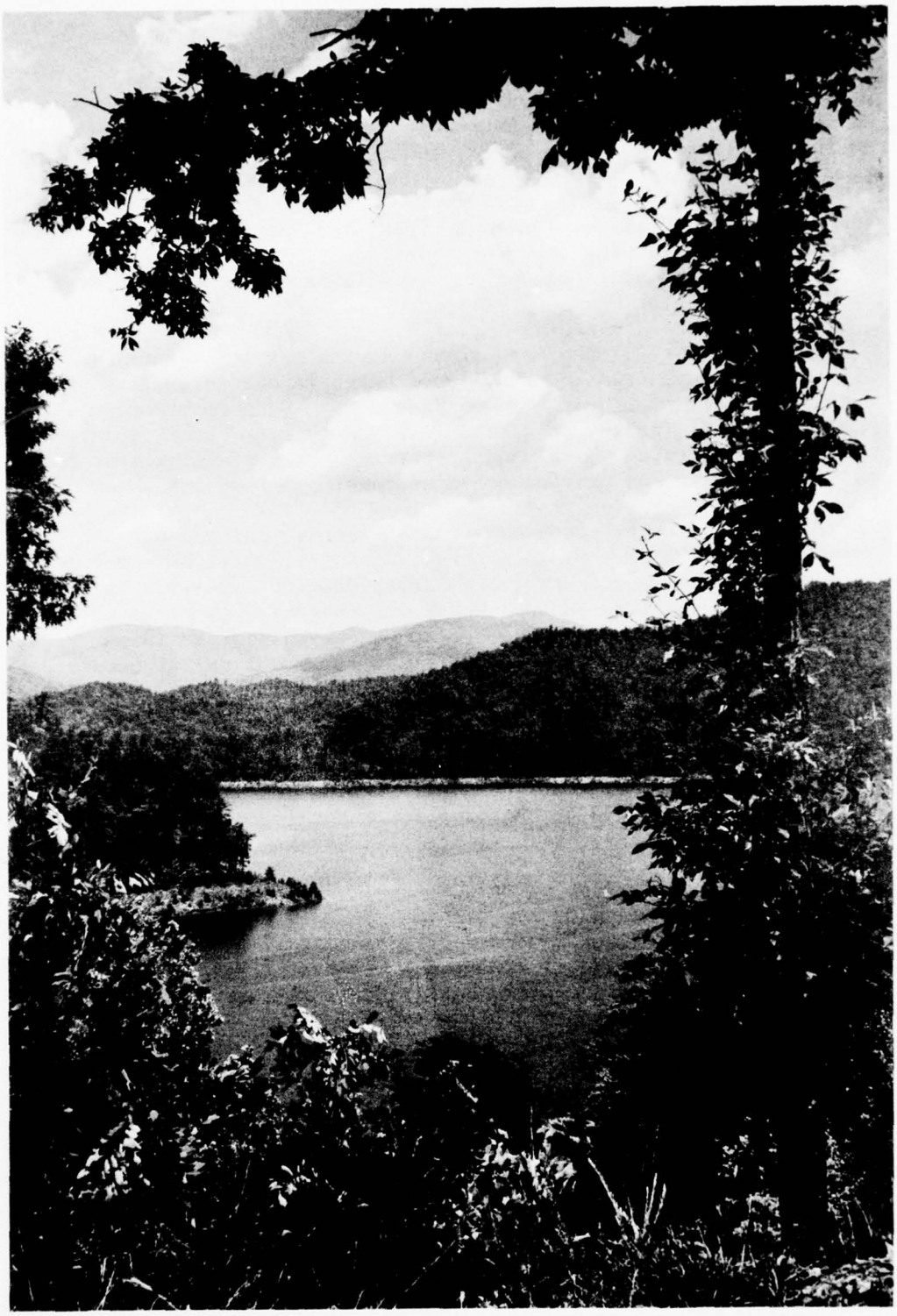


Figure 3 - Fontana Lake in the Nantahala National Forest, North Carolina

areas and roadside parks, 17 State wildlife management areas, a national wildlife refuge, a national park, a national parkway, three national forests, 26 group camps, and 51 club sites. These total some 190,000 acres of land.

In addition to large tracts of land held in national parks and forests, there are also thousands of acres of State, local, and private land available for hunting as well as general outdoor recreation.

Water Resources. The Appalachian Region has few natural lakes except Lake Chautauqua and the Finger Lakes in New York State. However, large and small water impoundments have been constructed by the Corps of Engineers, Tennessee Valley Authority, U. S. Soil Conservation Service, U. S. Forest Service, private power companies, and other public and private organizations.

Total broad-water resources consists of 1.4 million acres of lakes and reservoirs. Of this total, around 1.1 million acres are in large public impoundments, and around 300,000 acres are in small private lakes and farm ponds. Water impoundments vary from these small 1-acre ponds to the 69,000-acre Guntersville Lake in northeastern Alabama. In addition, over 53,000 miles of rivers and streams cover the region. More than 10,000 of these miles are suitable for canoes and small boats when streamflow is adequate.

Activities and Facilities. The principal outdoor recreation activities in Appalachia are hunting, fishing, hiking and nature studying, horseback riding, boating, swimming, canoeing, camping, picnicking, sightseeing, driving for pleasure, and snow skiing.

There are millions of acres of actual wildlife habitat and 1.4 million acres of water for fishing, boating, and swimming. A large segment of the 2,000-mile Appalachian Trail passes through Appalachia, and hundreds of additional miles of trail are located in national parks and forests. Many outdoor recreation areas include trails for horseback riding too.

There is an estimated existing supply of water and beaches in the area to annually accommodate 37 million recreation days of swimming. Camping facilities can accommodate an estimated 11 million recreation days a year and picnicking an estimated 39 million recreation days a year. Resources suitable for camping are extensive; and if facilities are provided, the potential of the Appalachian Region for camping will be greatly increased. Presently developed ski slopes of the region can support 11 million recreation days annually.

For those who wish to drive for pleasure, there is the 469-mile long Blue Ridge Parkway; the 80-mile long Skyline Drive in Shenandoah National Park just outside the Appalachian Region; the partially completed Natchez Trace Parkway in Mississippi and Tennessee; and other shorter scenic routes throughout the region.

Flora and Fauna. Those who love the outdoors will find the Appalachian Region boasts a greater variety of trees, flowering plants, ferns, and other vegetative material than any other section of the country. More than 1,300 kinds of flowering plants have been identified in the Great Smoky Mountains alone. The spring and fall pageantry of color here as well as in other sections of Appalachia is well known. Although Appalachia's bird and animal life may not be as well publicized or as spectacular as its vegetative cover, many species may be found in the region to interest the student and test the hunter. Deer, black bear, mink, beaver, wild turkey, squirrel, and, of course, songbirds are principal attractions. A mixed strain of domestic hogs and imported Prussian boar are found in the lower east Tennessee portion of the Cherokee National Forest. For some 30 years, managed hunts have been conducted for these animals.

Scenery and Aesthetic Features. Appalachia is rich and varied in its scenic and aesthetic features. The type varies from north to south and with the seasons. In the spring, summer, and fall the landscape is colored with flowers from thousands of species of plants and shrubs. Summers are cool in comparison with the Coastal Plain and Midwest; and in this season, the mountains and valleys are coated in green. In autumn, the woodlands are set ablaze in autumn foliage; and in winter the hills are often under a mantle of snow.

Mountains

The mountains are the most outstanding scenic and aesthetic feature in Appalachia. From the Catskills of northern Pennsylvania and southern New York State, southward through the Blue Ridge, Alleghenies, and Great Smokies to the southernmost Dahlonega Plateau in Georgia and Alabama, peaks and crests of tree-covered mountains often rise to heights of 5,000 to 6,000 feet m.s.l.

The highest point east of the Mississippi River is the 6,684-foot Mount Mitchell, North Carolina. A close rival is 6,642-foot Clingmans Dome in the Great Smokies of Tennessee and North Carolina. Southwestern Virginia peaks reach heights of 5,500 feet m.s.l. at White Top Mountain and Mount Rogers. Their grandeur is rivaled only by the highest mountains of the West. From the street of Gatlinburg, Tennessee, for example, at an elevation of 1,400 feet,

a person can gaze upward to the 6,593-foot summit of Mount Le Conte in the Great Smokies. Many peaks, such as Grandfather Mountain, Mount Mitchell, North Carolina, and Roan Mountain and Clingmans Dome, situated near the North Carolina and Tennessee border, can be reached or approached by automobile and trails.

Large portions of Appalachia--an Indian name which means highland country--are in public ownership as national and State parks and forests. One of the most outstanding is the Great Smoky Mountains National Park, which has ranked highest in annual visits among national parks for many years.

Trails

The 2,000-mile Appalachian Trail, stretching from Georgia to Maine, is one of the most outstanding hiking trails in America. Some two-thirds of the trail is located in or adjacent to the Appalachian Region. Where the trail crosses private lands, the Appalachian Trail Conference, in cooperation with the landowners, shares responsibility for construction, maintenance, and operation through its individual clubs. Within national forests, the U. S. Forest Service and the Appalachian Trail Conference share responsibility for construction and maintenance; within national parks, virtually full responsibility is borne by the National Park Service.

Of significant future importance in Appalachia is the proposed Potomac Heritage Trail. One branch would connect the Spruce Knob-Seneca Rocks National Recreation Area with the Chesapeake and Ohio Canal along the Potomac River; another branch would extend into western Pennsylvania. In addition, there are hundreds of miles of trails for horseback riding and bicycling.

Rivers and Streams

The 53,000 miles of rivers and streams are a part of the recreation resources and aesthetic features of Appalachia. Whitewater rapids and waterfalls are particularly outstanding. The rivers vary from broad and slow to narrow and fast. Some are crystalline clear while others are muddy. Many are polluted. A few of the larger rivers are the Tennessee, Ohio, Chattahoochee, Allegheny and Susquehanna.

Portions of many of these Appalachian rivers and streams have potentials for unique outdoor recreation opportunities and should be preserved in their primitive state. The Big South Fork of the Cumberland, the Greenbrier, the Clarion, upper portions of the

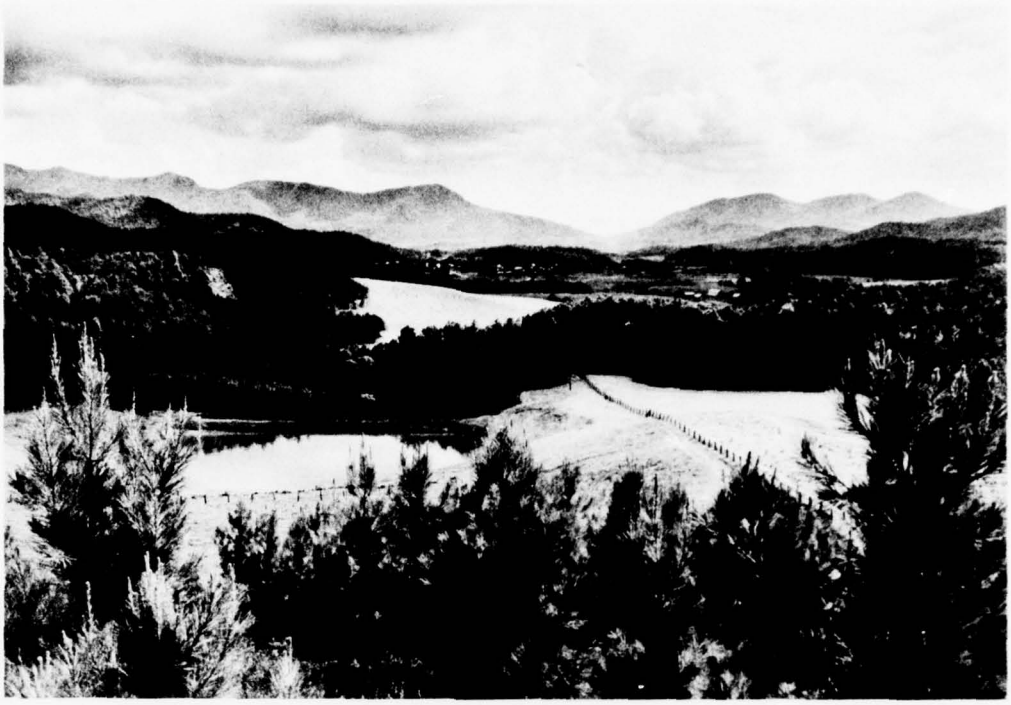


Figure 4 - Mountains and Valley in North Georgia

Figure 5 - Appalachian Trail in North Carolina

Susquehanna, including Pine Creek below Ansonia, Pennsylvania, the Delaware, the French Broad, the Chattooga, the Obed, and the South Branch of the Potomac are among the rivers meeting criteria for serious consideration in a nationwide system of scenic and wild rivers.

Of the 10,000 miles of these rivers and streams identified as suitable for canoeing, selection of a few of the more outstanding ones is difficult. However, some of the more exceptional ones are: the Shenandoah, Greenbrier, Cacapon, Cheat and Potomac upper tributaries in West Virginia and Maryland; the James and New in North Carolina, Virginia, and West Virginia; the Cumberland in Kentucky and Tennessee; and the Chattooga in North Carolina, South Carolina and Georgia. Stream flow generally permits canoeing during the early spring months. Rains make portions satisfactory for this purpose throughout the summer also.

Reservoirs and Lakes

The Appalachian Region contains a total of 117 manmade reservoirs and natural lakes of more than 500 acres in size. A majority of the reservoirs are located in the Alabama, Georgia, Tennessee, Kentucky, North Carolina, and Virginia portions of the region. Practically all the natural lakes are in the New York and Pennsylvania portions. The northwestern boundary of the region abuts Lake Erie. Hundreds of small lakes and ponds of less than 500 acres in size are scattered throughout the region.

Most of the reservoirs and lakes, particularly those located near urban centers, are used extensively for fishing, boating, swimming, and other water-dependent activities. The adjacent lands provide opportunities for camping, picnicking, hiking, sightseeing, and related water-enhanced activities. In some cases, however, water pollution, shoreline blight, and uncontrolled development detract from the suitability and attractiveness of these waters for outdoor recreation purposes.

Parkways and Scenic Drives

The Blue Ridge and the Natchez Trace Parkways are existing scenic parkways in Appalachia. The 469-mile Blue Ridge Parkway is located along the crest of the Blue Ridge Mountains in western Virginia and North Carolina, connecting Shenandoah National Park to the Great Smoky Mountains National Park. Future National Park Service plans include an extension of this parkway through North Carolina into Georgia, terminating at Kennesaw Mountain National Battlefield Park near Atlanta. Some 100 miles of the Natchez Trace Parkway cross the Appalachia portion of Mississippi and an extension

Figure 6 - Big South Fork of the Cumberland River, Tennessee

Figure 7 - Scenic Highway in the Mountains of North Carolina

is planned northeastward toward Nashville, Tennessee. Under construction and closely tied to the Blue Ridge Parkway is the Foothills Parkway running 72 miles within Tennessee, which will furnish spectacular views of the Great Smoky Mountains. Other plans for scenic drives include the construction of the proposed Allegheny Parkway from Hagerstown, Maryland, to the Cumberland Gap National Historical Park, crossing portions of Kentucky, Virginia, and West Virginia.

For many years, various groups and individuals have proposed a 160-mile north-south scenic route in West Virginia called the Highland Scenic Highway. Of this total, 95-miles would be within the Monongahela National Forest. Such points of interest as Summit Lake, Cranberry Glades, and some of the better hunting and good fishing areas in the national forest would be accessible. The route generally would follow the high ridges, crossing 4,000-foot Kennison Mountain and traversing Black Mountain for 6 miles at an elevation of 4,500 feet.

The road which runs for 38 miles from Tellico Plains, Tennessee, to Robbinsville in southwestern North Carolina, is located in one of the most picturesque scenic areas in the eastern United States. It follows the Tellico River, entering a gorge through two tunnels with a combined length of 2,000 feet and rises in elevation from 890 feet to 5,300 feet, providing numerous vistas of the surrounding mountains.

Throughout the Appalachian Region, numerous roads deserve scenic road status. The Bureau of Public Roads is cooperating with the Appalachian Regional Commission in carrying out the highway portion of the Appalachian development program. After approval by the Commission, the Bureau arranges for construction work with State highway departments in the same manner as in the regular Federal aid highway programs. These development roads will become a part of the Federal aid primary system. They will be constructed in accordance with the design criteria pertaining to that system, and considerable mileage will have great scenic value. Provision of facilities for the traveling public will foster tourism and enhance the economics of the area.

Caves

There are many additional attractions in the Appalachian Region, such as caves and caverns. Many are commercially developed and are open to the public. Some are accessible only to the more experienced spelunker.

Seasonal Activities. If purely a summertime experience, outdoor recreation would only add seasonally to the economics of Appalachia. However, outdoor recreation activities such as hunting, fishing, and skiing take place outside the summer season. Resources and facilities to provide for these activities will be important in keeping certain recreation areas open the year round.

In the autumn, thousands of people will drive for pleasure to enjoy the autumn foliage. Many will hunt, fish, and camp, and thousands will walk or hike for pleasure.

With snow on the ground, winter sports enthusiasts are and can be drawn in greater numbers to Appalachia. With them will come the thousands who wish to see the mountains under a mantle of snow and to sit and relax by a fire.

In the spring, with the mountains and valleys clothed in blossoms and with fresh new foliage, thousands again will be drawn to the region for its scenery. Fishing will be a prime activity in many areas.

Because of improved highways, longer vacations, earlier retirement, longer weekends, higher incomes, and well-developed and scenic resorts catering to the visitor, many recreation areas within Appalachia may be able to sustain themselves year round. They should thus have a much greater economic impact on the region.

Skiing, popular in the North, is becoming increasingly popular in the South where the resource facilities are snowing heavy use. In some areas of the southern Appalachians, artificial snow is necessary to insure that a person may have the opportunity to participate in this activity on a weekend that, of necessity, is planned well in advance. The same is true, to a large extent, in the North. Periodic warm spells during the winter season tend to inhibit the skiing enthusiast from planning for the activity far in advance; and thus, resort operators are at the mercy of the weather.

Archeology and History. The American Indian lived in Appalachia for some 10,000 years before the arrival of the European. During that time, Indian culture gradually evolved from small migratory bands of hunters and gatherers to large sedentary agricultural societies. Although the mountains themselves were not suitable for concentrated occupation, the broader mountain valleys and the rolling hilly country within the study area provided favorable living conditions for both hunting and farming populations. This is attested by the hundreds of known archeological sites that are scattered throughout the area.

Figure 8 - Summer Camping in the Appalachians

Figure 9 - Indian Mound at Mound City, Ohio

The two major prehistoric cultural climaxes of the Eastern United States, those of the Hopewellian and Mississippian cultures, are well represented in the Appalachia study area. Hopewell culture, 200 B. C. - 400 A. D., was characterized by highly developed art forms, the procurement of exotic raw materials from great distances, the building of burial mounds and extensive earthworks, an elaborate burial complex and a well-developed social organization. The peak of Hopewellian development was centered in the Scioto Valley near Chillicothe, Ohio. Mound City National Monument, Ohio, administered by the National Park Service, is one of the more important Hopewellian sites located in Appalachia.

Mississippian culture, 800 - 1500 A. D., was characterized by elaborate Meso-American influenced art forms, widespread trade, the building of platform mounds to serve as the bases of temples and the arrangement of these mounds around open plazas, the development of large, permanent, and often fortified villages and towns, intensive agriculture, and an elaborate religious ceremonial complex related to agricultural production. Two of the major southeastern sites illustrating this culture are located in Appalachia: the Moundville site in Tuscaloosa and Hale Counties, Alabama, and the Etowah site in Bartow County, Georgia. Both are State owned properties and have excellent museums displaying archeological materials.

Other nationally significant archeological sites within Appalachia include: Russell Cave National Monument, Alabama; the Lamoka site, Schuyler County, New York; Hopeton Earthworks, Ross County, Ohio; Serpent Mound, Adams County, Ohio; and Grave Creek Mound, Marshall County, West Virginia. The latter four sites, as well as Etowah and Moundville, are Registered National Historic Landmarks.

Portions of Appalachia were explored and claimed by Spain, France, Holland, and England during the colonial period; and although the major part of the area was held by various Indian tribes until after the Revolutionary War, it was the scene of major struggles between these nations and their Indian allies. Outstanding among these was the French and Indian War of 1754-63.

A number of trading posts and forts were constructed in Appalachia prior to the Revolutionary War; however, there was little actual settlement within the area with the exceptions of Pennsylvania and New York and of scattered small settlements in western North Carolina, eastern Tennessee, and central Kentucky. During the Revolution, the settlements in Appalachia were subject to numerous raids, mostly by British-led Indian war parties; and

the men from these settlements constituted a large percentage of the American forces at Kaskaskia, Vincennes, Cowpens, and Kings Mountain.

Shortly after the war, most of Appalachia, except for the Creek- and Cherokee-held areas of the Southeast, was settled, and other settlers crossed the area on their way west. Westward expansion was halted by the War of 1812 but resumed immediately thereafter.

In the period between the War of 1912 and the Civil War, there was considerable development of transportation facilities, including roads, canals, and railroads, and of industry, primarily coal and iron; and America's first gold rush occurred in the southeastern part of the area. Most of the population, however, continued to be dependent upon agriculture for a livelihood.

Before the Civil War, Appalachia, split on the question of slavery, was the scene of considerable controversy, including John Brown's Raid on Harpers Ferry in 1859. With the outbreak of war, Virginia, North Carolina, South Carolina, Georgia, Alabama, and Tennessee seceeded from the Union. The portions of these States included in Appalachia, as well as areas of Maryland and Pennsylvania, were the scene of some of the bloodiest battles of the war, such as Shiloh, Antietam, Gettysburg, Chickamauga, and Kennesaw Mountain.

Following the Civil War, there was a tremendous development of the iron industry, particularly in the Pittsburgh and Birmingham areas, and a great increase in coal mining, thus creating a demand for labor that could not be supplied by the rural and somewhat isolated population of Appalachia. In response to the demand, large numbers of Europeans migrated to the area, settling mainly in Pennsylvania.

The 20th century has seen great strides in technological development and the growth of industrial urban areas. However, for the still rural areas, which account for roughly 60 percent of Appalachia's population, technological advance has had negative as well as positive effects. The mechanization of agriculture has been of little help to the farmers of Appalachia because most of the farms are too small or too rough to afford or to benefit from it, and the mechanization of coal production has resulted in unemployment for thousands of miners.

Problems. Numerous problems confront the future of outdoor recreation and aesthetics in Appalachia. These include mining, pollution of the lakes and rivers, uneven distribution of lakes and reservoirs suitable for outdoor recreation, manmade ugliness, poor quality roads, lack of urban recreation developments, escalating land values, inadequate access to potential recreation areas, urban sprawl, and general poverty prevalent in many areas of the region. Some of the more significant problems follow:

Mining, Acid Mine Drainage and Siltation

There is little doubt that acid mine drainage and stream siltation are major problems in large parts of Appalachia. The departmental report, "Study of Strip and Surface Mining in Appalachia, an Interim Report by the Secretary of the Interior to the Appalachian Regional Commission" discusses the subject in some detail.

Strip and auger mining for coal has probably contributed the most to altering once highly scenic country into ugly wastes. Coal in many areas of Appalachia lies near the surface, and coalfields cover much of Appalachia west of the Blue Ridge. Much of this coal has been strip mined--an operation that leaves the area affected looking somewhat like the surface of the moon. Whole townships have been laid bare by this operation. If left solely to nature, many years would be required for climax vegetation to once again cover these barren wastes.

Pollution of Lakes and Rivers

Many rivers and lakes that were suitable for outdoor recreation have been severely polluted by a wide range of sources, chiefly industrial and municipal. Temperature changes resulting from heating and cooling water has, in recent years, been an additional factor in altering water quality desirable for recreation.

Water pollution takes many forms. Some are closely linked with mining. When heavy rains fall on most strip spoil, acids are formed which wash into the rivers destroying vegetation, fish, and animals. In addition, spoil banks quickly erode and wash into the rivers. Some authorities claim the only means of combating pollution from strip mines is to eliminate the strip mines. Future research may find other means. However, today it is estimated that up to 5 years are required to eliminate acid from the "overburden." Many more years will pass before vegetation can prevent erosion.

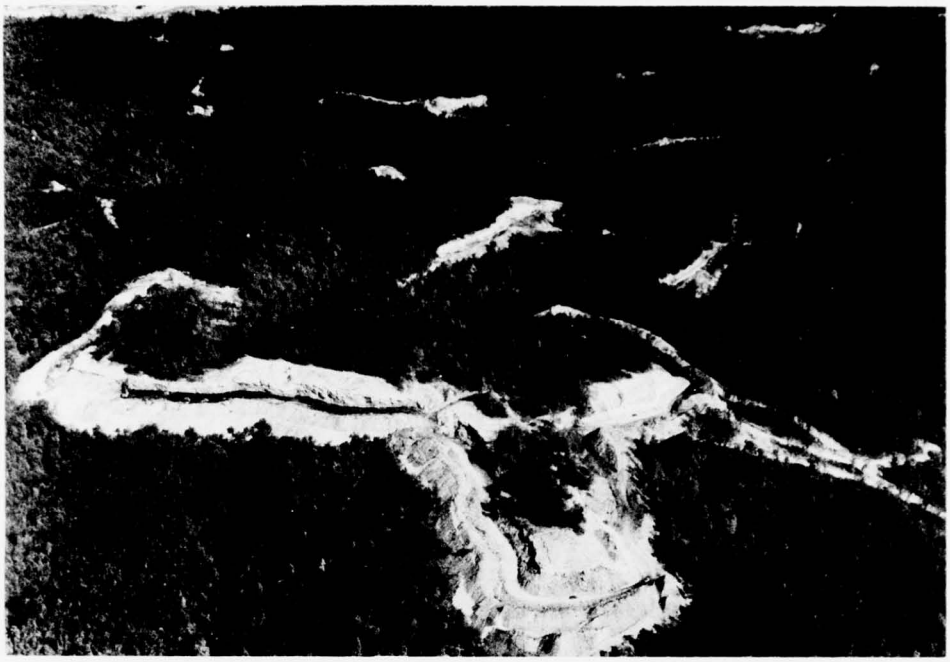


Figure 10 - Strip Mining for Coal in the Cumberland Mountains

Figure 11 - Automobile Junkyard

Uneven Distribution of Lakes and Rivers

Generally, the larger lakes and reservoirs are found in southern Appalachia. Many population centers, especially in the northern Appalachian Region, are still relatively distant from bodies of water suitable for water dependent activities.

Manmade Ugliness

As elsewhere in the Nation, highways of Appalachia are lined with utility lines, and uncontrolled advertising signs. Also, there is considerable evidence of improper land use practices, litering, and inadequate maintenance along the highway rights-of-way. All of these practices detract from scenic and aesthetic values and, thus, also from an outdoor recreation experience.

Because of the terrain, "strip" cities develop along the main highways leading to and from urban areas. This urban sprawl often spills for miles into areas of natural beauty.

In some areas of Appalachia (especially rural areas), topography is such that the disposal of old, useless automobiles poses a serious environmental quality problem. The result of this, too frequently, is that these derelict vehicles are left by their owners to clutter and choke roadsides and easily accessible ravines and hollows.

Inadequate Access

Much of Appalachia has always been difficult to reach. This has meant that many recreation areas in the region have been beyond an hour's driving time of much of the population and, therefore, cannot meet the day-use needs of many people residing inside as well as outside the region. In addition, inadequate airports and service and discontinued railroad passenger service, have severely hampered outdoor recreation development that could focus on urban dwellers living outside the region.

Poverty and Outdoor Recreation Needs

The urban day-use recreation needs of many of the Appalachian communities are not currently being met. This is especially true for many poverty stricken people and their children in towns and cities who are denied the opportunity of enjoying the outdoor recreation that the hills and valleys can offer. The lack of local sources of financing has also been an additional problem in obtaining funds to meet these needs.

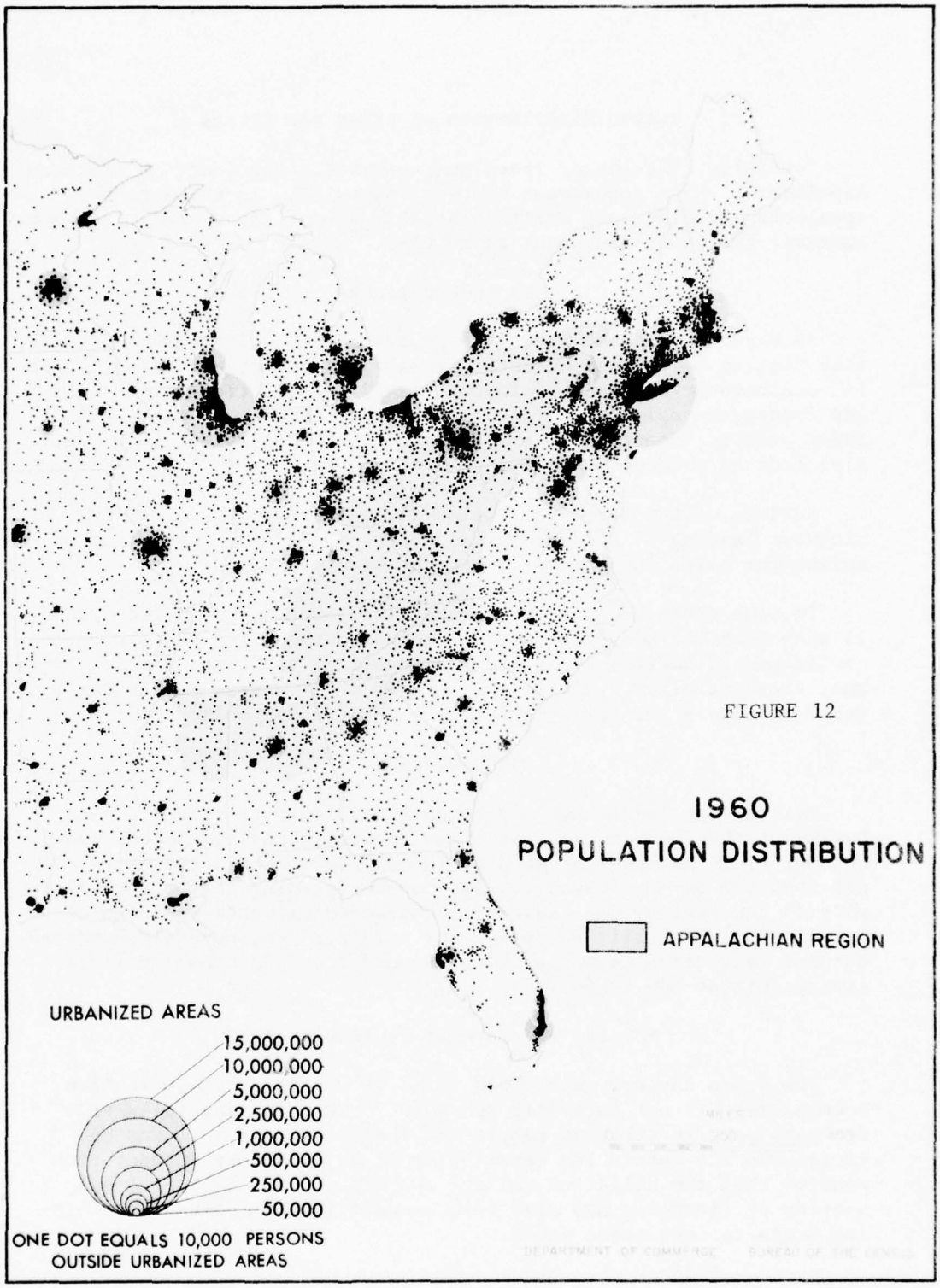

1960
POPULATION DISTRIBUTION
APPALACHIAN REGION
URBANIZED AREAS
15,000,000
10,000,000
5,000,000
2,500,000
1,000,000
500,000
250,000
50,000
ONE DOT EQUALS 10,000 PERSONS
OUTSIDE URBANIZED AREAS

FIGURE 12

3. SOCIOECONOMIC CHARACTERISTICS

Population Characteristics and Distribution. Concentration of population in Appalachia is in the North and in the growing metropolitan areas of the South. Throughout central Appalachia there is a fairly even distribution of rural population.

In 1960, the population of the Appalachian Region was in excess of 17 million people, almost 10 percent of the population of the United States. Of this number, approximately 7 million--or 41 percent--were living in 20 Standard Metropolitan Statistical Areas. More significant insofar as outdoor recreation is concerned is the fact that almost 70 percent of the total population of the United States--around 125 million people in 1960--live within approximately 1 day's drive--or 500 miles--of some part of Appalachia.

Urbanization and higher income are factors having an influence on outdoor recreation today. The urbanite also has more leisure time and longer paid vacations than his nonurban neighbor. These factors provide him with a greater opportunity to participate in outdoor recreation activities. Urbanization is expected to continue. By the year 2000 some three-quarters of the population of America are expected to live in or near metropolitan areas.

Income. The economy of the Appalachian Region lags well behind the United States. As with any developing area in the modern world, there can be no economic development among the indigenous population unless a reasonable portion of the income from industrialization remains within the region. In 1960, the per capita income in the region was approximately $1,460, in comparison with an approximate $1,850 per capita income for the United States as a whole.

Leisure. Shorter and staggered work hours, and continued automation of production, are expected to result in greater leisure time for the American people. Higher per capita incomes will permit individuals to pursue more cultural and outdoor recreation activities during their leisure time. Use of outdoor recreation areas, in comparison with 1960 use, is estimated to grow. Figure 13 represents an idealized situation of maximum reasonable use at recreation areas throughout the week. If this pattern of use does, in fact, develop, the project evaluated in this report will meet almost twice the needs currently credited to them. This, then, will have the net effect of reducing the unsatisfied demand or water-related recreation needs projected to exist after 1980. See the figure on Page F-60 for the net effects.

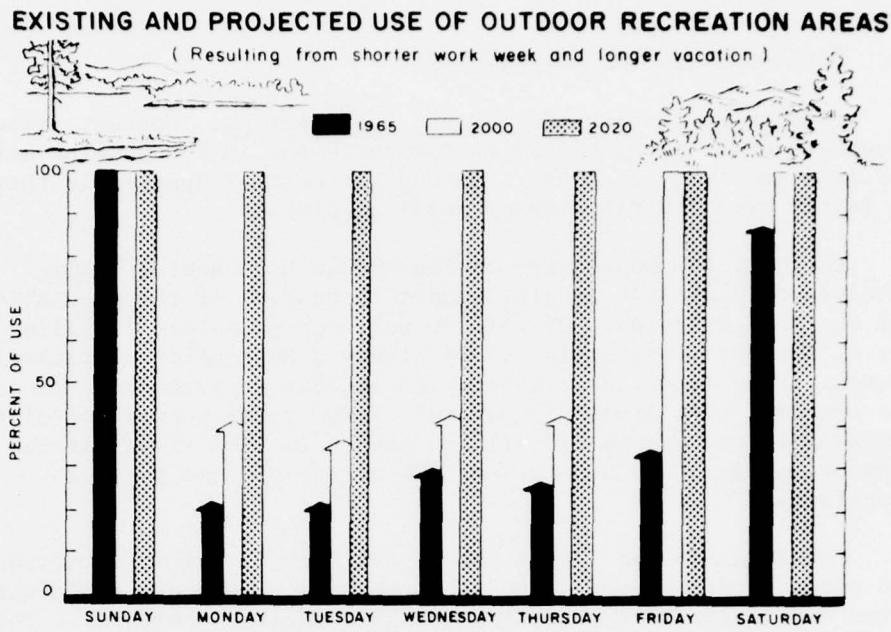


FIGURE 13

Outdoor recreation areas to meet the needs of special groups during their leisure hours are also expected to increase. Church camps and recreation areas dedicated to the study of natural sciences are often found in areas of natural beauty. Camps in a natural environment setting where people may further their musical abilities or other artistic talents are also becoming more numerous. A growing interest in culture among the American people, as well as the expected increase in vacation leisure time, will constitute a demand for more vacation areas where Americans can pursue cultural and other activities in an outdoor setting.

Mobility. Increased mobility, largely due to improved highways and automobiles, has had a marked effect on outdoor recreation participation and activities in recent years. Americans participate in all activities at an increased rate today because they can get to the resources--land and water--easier and faster than in the past. Certain winter activities, particularly snow skiing, are enjoyed by many living in the large urban centers as the result of special train, bus, and airplane accommodations. With private aircraft and the construction of more airfields, the years ahead will see many more recreators traveling to resort areas and recreation complexes via air. Better highways throughout Appalachia will make travel to any area within the region more pleasant and faster.

4. DEMAND, SUPPLY, AND NEEDS

Recreation Market Area. To analyze the outdoor recreation demand, supply, and needs of the Appalachian Region, a recreation market area was established. This is the area from which approximately 90 percent of the users are drawn on 1-day outings, a weekend (overnight) trip, or both. See Figure 14.

The 397 counties lying entirely within the region and Standard Metropolitan Statistical Areas outside the region constitute the recreation market area for this report. The methodology of demand, supply, and needs is given in the Addendum to this report.

Demand. Demand for outdoor recreation in Appalachia has been determined on the basis of per capita participation in several selected activities. See Figures 15 through 16. Seven principal activities--boating, swimming, camping, picnicking, fishing, hunting, and skiing--have been shown separately. These activities together with all other outdoor activities, sightseeing and nature study, have been grouped under "All Activities."

Supply. Capacity of existing resources and facilities for boating, swimming, camping, picnicking, and snow skiing has been determined from the supply information. Annual use that can be expected of the existing supply has been determined in a manner to provide a comparison between the annual demand for these activities and the annual use that the supply can handle. This supply is assumed, for comparative purposes, to be static after including programmed recreation facilities.

Needs. Annual needs for outdoor recreation opportunities for each subregion and the region as a whole has been determined by subtracting the present and programmed annual supply of outdoor recreation resources and facilities from the existing (1965) and projected outdoor recreation demand. Data on hunting and fishing needs were provided by the Bureau of Sport Fisheries and Wildlife. The estimated outdoor recreation needs from the present to the year 1980 are large but become staggering by the turn of the century and beyond.

All levels of government and private interests must combine and coordinate their efforts if these needs are to be met. This will include upgrading the quality of the environment and providing additional public and private recreation developments and complexes, scenic drives, and other related improvements. By so doing, the people of the region will enjoy a richer life; and likewise, the region itself will become more attractive.

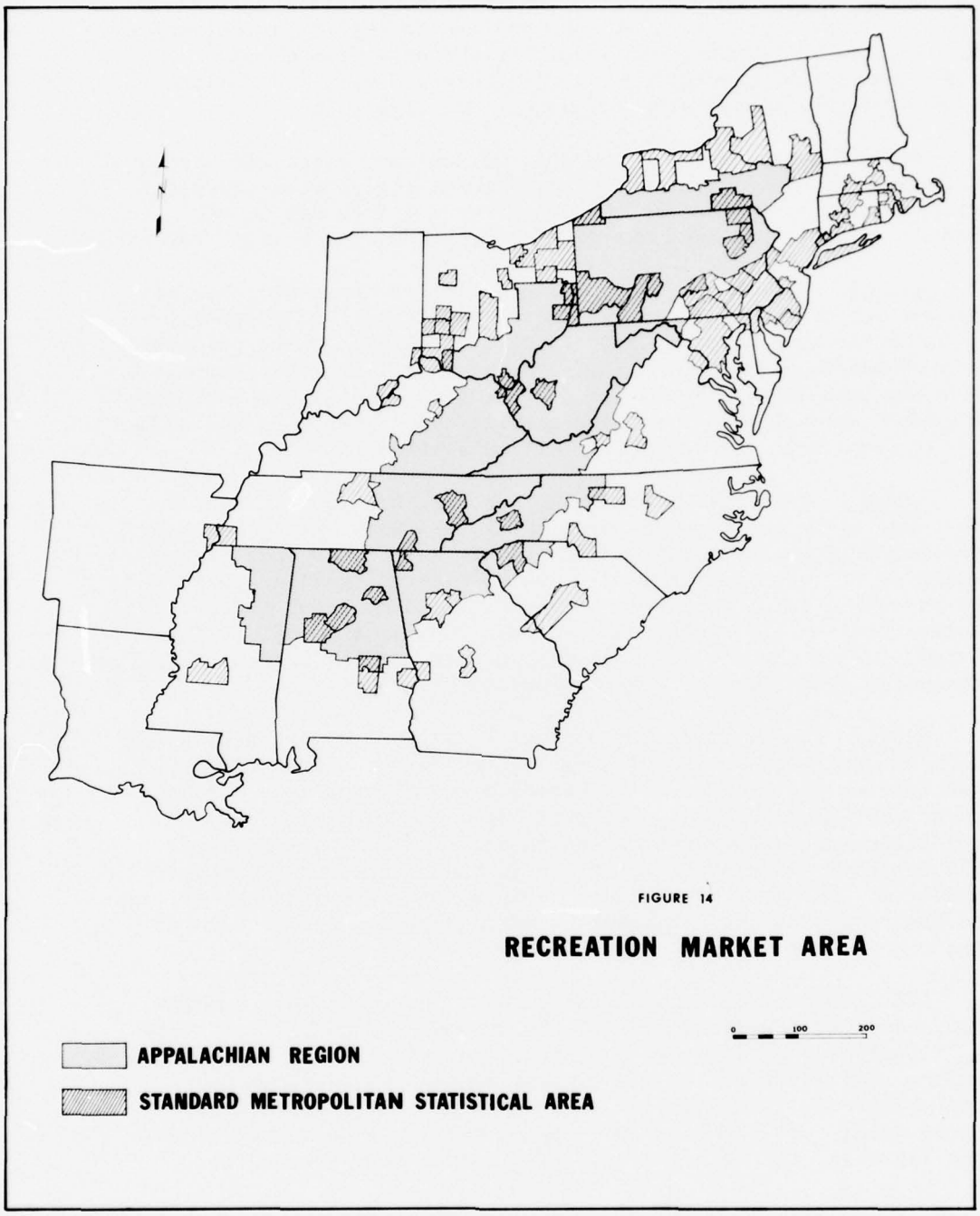


FIGURE 14

RECREATION MARKET AREA

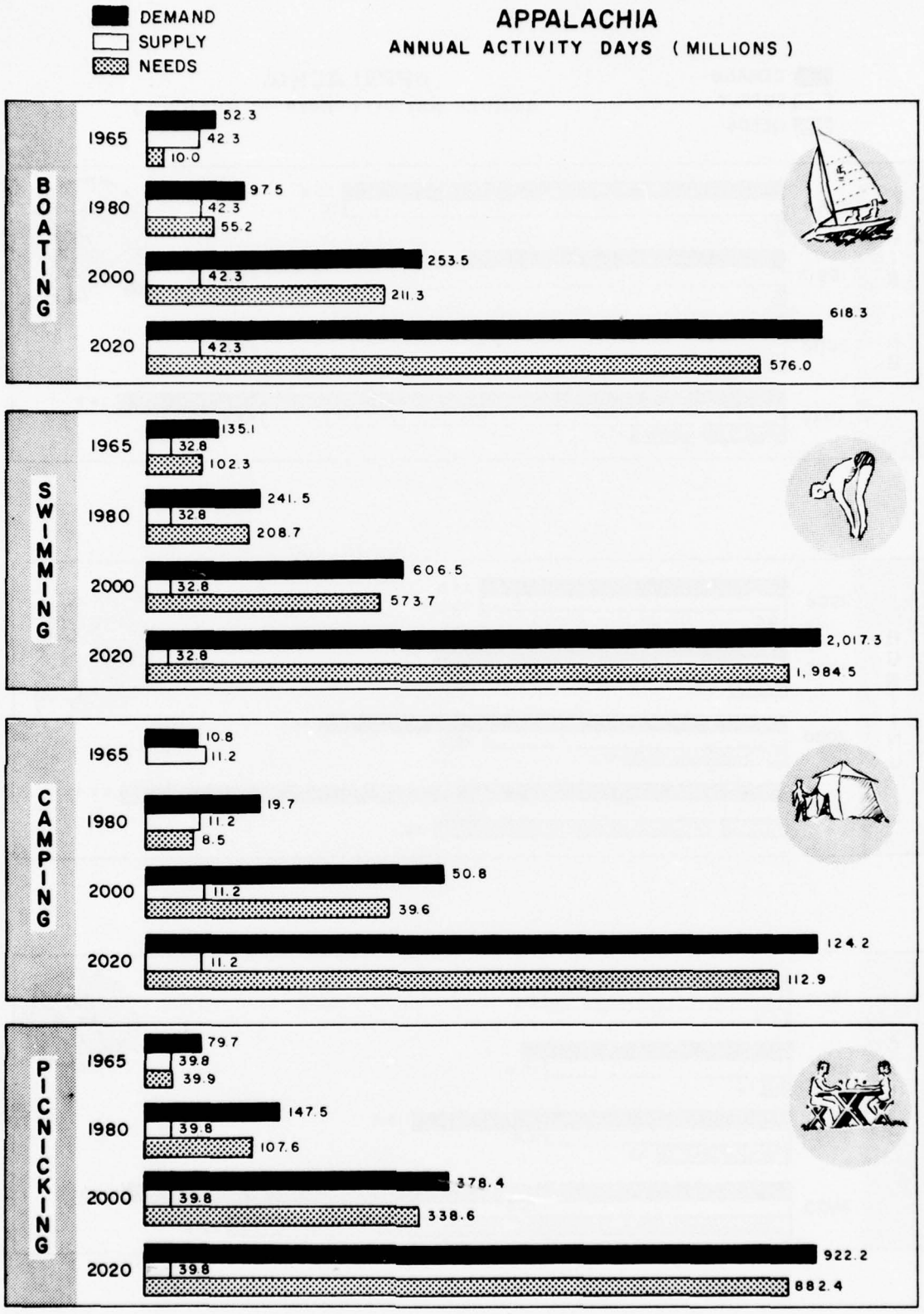

DEMAND
SUPPLY
NEEDS
APPALACHIA
ANNUAL ACTIVITY DAYS (MILLIONS)
BOATING
1965
52.3
42.3
10.0
1980
97.5
42.3
55.2
2000
253.5
42.3
211.3
2020
618.3
42.3
576.0
SWIMMING
1965
135.1
32.8
102.3
1980
241.5
32.8
208.7
2000
606.5
32.8
573.7
2020
2,017.3
32.8
1,984.5
CAMPING
1965
10.8
11.2
1980
19.7
11.2
8.5
2000
50.8
11.2
39.6
2020
124.2
11.2
112.9
PICNICKING
1965
79.7
39.8
39.9
1980
147.5
39.8
107.6
2000
378.4
39.8
338.6
2020
922.2
39.8
882.4

FIGURE 15

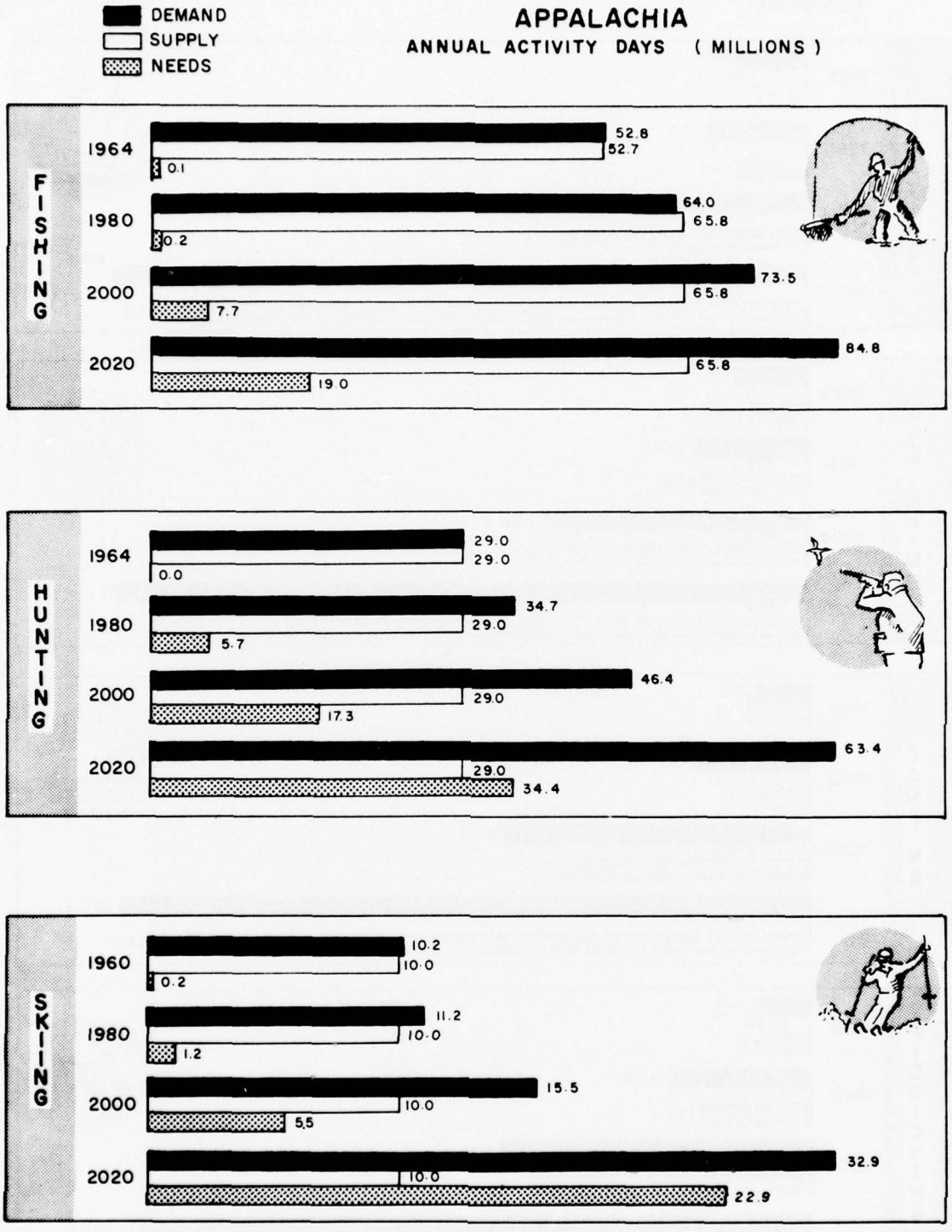

DEMAND
SUPPLY
NEEDS
APPALACHIA
ANNUAL ACTIVITY DAYS (MILLIONS)
FISHING
1964
52.8
52.7
0.1
1980
64.0
65.8
0.2
2000
73.5
65.8
7.7
2020
84.8
65.8
19.0
HUNTING
1964
29.0
29.0
0.0
1980
34.7
29.0
5.7
2000
46.4
29.0
17.3
2020
63.4
29.0
34.4
SKIING
1960
10.2
10.0
0.2
1980
11.2
10.0
1.2
2000
15.5
10.0
5.5
2020
32.9
10.0
22.9

FIGURE 16

5. MEETING THE NEEDS

Considerations. When the first settlers came to the Appalachian Mountains, the region was truly beautiful. There were high mountains, valleys covered with the splendor of giant trees, lush meadows with thousands of wildflowers, pristine rivers and streams, and an abundance of many species of fish and wildlife. Then, exploitation of our natural resources began its toll. Much of the virgin timber was removed; hillsides were eroded; floods were widespread; and mountainsides were scarred by strip mining. Grimy company towns developed; ugly billboards become commonplace; and rivers and streams became polluted.

These conditions detract from the region's beauty which, in turn, limits its value as a recreation resource. Certainly, eroded and scarred hillsides adversely affect a sightseeing or driving experience just as polluted waters discourage swimming and fishing activities. More passive activities, largely dependent on natural beauty, such as sightseeing, walking, and driving for pleasure, account for more than 50 percent of the outdoor recreation participation. Facilities such as highways, paths, and walkways alone do not provide for these activities.

In recent years, there has been a steadily increasing emphasis at the Federal level on the need for considering environmental quality values. This is attested, too, by numerous Presidential messages to Congress and the American people, Executive Orders, departmental policy decisions, and a number of environmental quality bills enacted into law. At this time, the awareness for a higher quality physical environment has spread to many of the State governments and is capturing the imaginations of thousands of individual citizens and citizen organizations.

If the natural beauty of Appalachia is to make its full contribution to the future economic development of the region, environmental quality must be protected and preserved. To the maximum extent possible, consistent with the necessities of other programs, blight and decay need to be removed and action programs initiated to prevent new "uglification" in the years ahead. Some of the more significant considerations are discussed in greater detail below:

Highway and Roads

Highway and road route selections should be viewed as more than simply ribbons of asphalt and concrete for the movement of people and goods from one place to another. Where possible, roads should

be designed, and routes selected, which afford the user a variety of pleasing visual experiences which draw heavily on the area's natural scenic beauty.

Roadside Litter

Glass, plastics, and the recent use of aluminum for containers produce environmental quality problems, since these materials are nearly indestructable. Cleanup programs, with action focused at local levels, should be initiated and carried out in conjunction with broad public educational programs aimed at litter prevention.

Transmission Lines

Low cost electric power lines are essential for Appalachian economic development. Means should be sought, however, to mask or diminish the adverse impacts of such lines on environmental quality, especially where they cross mountain ridges. For example, designation of "transmission corridors" through areas of low esthetic quality would be one way of preserving areas of high scenic quality.

Strip and Surface Mining

Rehabilitation and reclamation of land stripped and surface-mined in the past should be initiated as quickly as practicable. The Appalachian States should enact comparable regulations controlling future strip and surface mining operations. These regulations should have the following specific objectives: (1) control or elimination of acid drainage from both underground and surface mining operations, (2) soil stabilization and revegetation, (3) elimination of safety hazards in potential use areas, (4) conservation and preservation of natural resources, (5) reclamation and rehabilitation of stripped land and its return to some form of productive use, and (6) restoration of natural beauty.

Billboard and Sign Control

To assure maximum public enjoyment of the region's natural scenic resources, the Appalachian States, if they have not already done so, should enact laws and regulations no less stringent than those provided for in Title I of the Highway Beautification Act of 1965 (Public Law 89-285). Such controls should give a high degree of consideration to the effects of all outdoor advertising on the quality of the view from the road, and should include signs and related advertising on off-road rock outcroppings, cliff faces, and the like.

By the close of April 1968, Kentucky, Maryland, New York, Pennsylvania, and Virginia signed agreements with the Department of Transportation to control billboards along interstate and primary highways. While the State laws vary in content and complexity, all recognize the uncontrolled and indiscriminate outdoor advertising contributes to an ugly environment.

Public Development

Day-use outdoor recreation activities, such as swimming and picnicking, normally occur within an hour's driving time of a person's home. To help satisfy the demand for this type of activity, single-purpose water impoundments and public parks outside of urban centers would be desirable. Such water impoundments would provide recreation opportunities for the public, and also enhance the scenic attractiveness of the area if not overdeveloped. Day-use development should, generally, be the responsibility of the public sector. Outdoor recreation activities such as swimming, picnicking, and fishing should be considered for such an area. Little emphasis should be put on overnight accommodations.

Weekend and vacation activities such as camping, sightseeing, skiing, and hiking generally occur beyond an hour's driving time of a person's home. Lodges, motels, shelters, and related accommodations are required. A publicly owned outdoor recreation area that is primarily for weekend use will have little private development. Exceptions are concessionaires to provide such services as boat and horse rentals and food. In some State parks, lodges are often provided by the administering public agency. In the case of a publicly developed reservoir, standards of building on public lands should be established and enforced by the administering agency.

Private Development

Development for day-use activities of fishing lakes, facilities for horseback riding, snow skiing, and other attractions is often provided by private interests. In addition, the private sector often provides satellite services adjacent to outstanding public recreation development, such as motels, restaurants, and gift shops. To be competitively profitable, private development should seek to maintain a standard of cleanliness and architectural beauty that will complement the attractiveness of the area it serves.

Private development for weekend and vacation use largely consists of concessionaire enterprises in or near public recreation areas.

Overnight accommodations for weekend visitors are often suitably located outside such areas. Private development often includes cottages, resort hotels, vacation farms, and campgrounds. Such areas should be accessible by good highways and provide people with many different recreation opportunities. These developments, however, should not infringe on the natural beauty or uniqueness of the surroundings.

Tourism

Tourism is a major industry in sections of Appalachia, such as the Pocono Mountains and the Great Smoky Mountains. The outdoor recreation resources have been managed in these areas so that a partnership of outdoor recreation development and tourist facilities have had a mutually advantageous effect on each other. Other sections, such as the Mount Rogers and Spruce Knob-Seneca Rocks National Recreation Areas, possess many of the resources that could promote tourism if the necessary public and private development were provided. Should private development take place, the demand for outdoor recreation opportunities would increase.

Analysis of Resources to Meet Needs. The mountainous Appalachian Region competes for users against the popular seashore. Additional water impoundments and further development of all water resources will overcome this competitive disadvantage to a great extent.

Existing outdoor recreation resources in the region are not distributed evenly to serve either the people in the region or those who live in the nearby large urban centers. The Tennessee and Alabama portions of the region contain 700,000 acres of water surface in reservoirs alone. This is 75 percent of all reservoir water surface and 50 percent of the total water surface in the entire region. On the other hand, the New York and Pennsylvania portions, surrounded by millions of people, contain only 15 percent and 10 percent of reservoir and total water, respectively. This condition results in a substantial need at present for additional water in this large segment of the northern portion. Conversely, a large segment of the southern portion has sufficient water to meet current needs. By 1980, however, there will be a considerable need for additional water throughout the region.

Numerous rivers and streams have outstanding potential to help meet these needs. Portions of some offer unique opportunities, such as canoeing and fishing, if left in their natural state. Others offer excellent sites for large, multiple-purpose and small, single-purpose impoundments. Many in this latter group are needed near urban centers. Much of today's boating and related water skiing require large water areas. Fishing and swimming can be enjoyed on either. Most swimming is done in pools, however, located in or near urban centers.

A majority of the acreage in the national parks and forests is located in the sparsely populated southern portion of the region where needs are less. The heavily populated northern portion where the needs are greater contains the smaller acreage of such lands.

Three outstanding national recreation areas--Spruce Knob-Seneca Rocks in the Monongahela National Forest, Mount Rogers in the Jefferson National Forest, and Delaware Water Gap astride the Pennsylvania-New Jersey State line--are located in the Appalachian Region. These will help satisfy much of the weekend demand for outdoor recreation from large metropolitan areas within 125 miles of their location.

Proposed parkways and scenic roads will provide access to recreation areas throughout Appalachia and also help satisfy the need for additional opportunities for sightseeing.

The Highland Planning Area, embracing 148 counties from south-central New York to northern Georgia, comprises large publicly-owned lands including national forests and parks. The best use for much of this core area is generally recognized as being for outdoor recreation. The study being made by the Appalachian Regional Commission will identify primary impact areas related to tourist and recreation activities, especially in regard to the economic effects. To date, 23 terminal complexes have been delineated. Of these, 14 areas (See figure 17) have been selected by the Commission for feasibility studies to determine resources and market potential for recreation development. An action plan will be prepared for the primary impact area which will involve all appropriate agencies, both public and private.

Many of the other public and private outdoor recreation resources, such as nationaland State forests, nationa, State and local parks and private recreation development can help satisfy current and future needs by expansion of existing facilities and by new developments. The reclaiming of lands

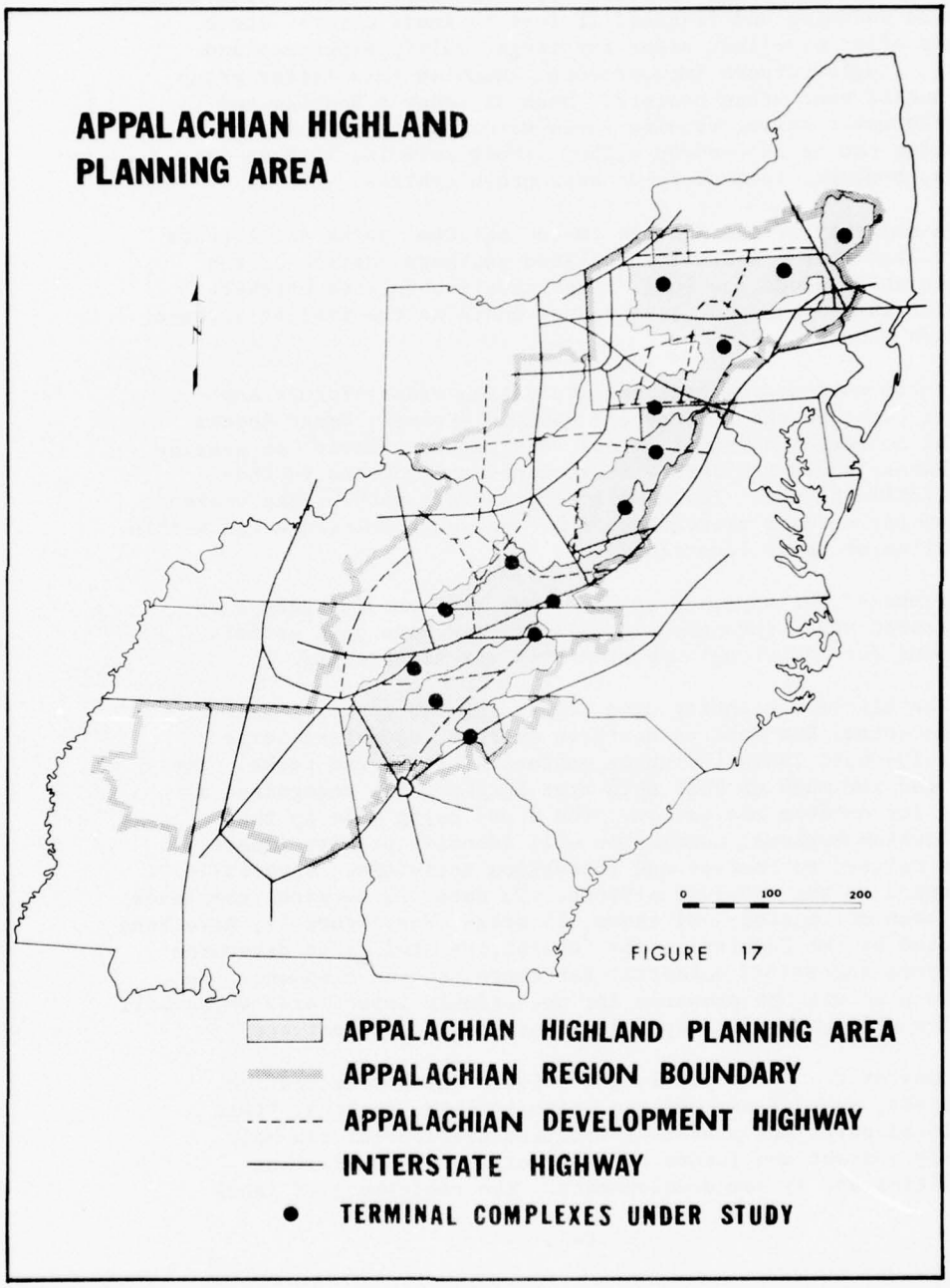

APPALACHIAN HIGHLAND
PLANNING AREA
0
100
200
APPALACHIAN HIGHLAND PLANNING AREA
APPALACHIAN REGION BOUNDARY
APPALACHIAN DEVELOPMENT HIGHWAY
INTERSTATE HIGHWAY
TERMINAL COMPLEXES UNDER STUDY

FIGURE 17

that have been subjected to surface mining can provide additional outdoor recreation resources such as parks, hunting preserves, and other public use areas.

To many people, visiting historic sites is a prime purpose of weekend or vacation excursions. Appalachia is rich in history and many such sites are being maintained for the public's enjoyment. Examples are: Cumberland Gap National Historical Park, Kentucky; Fort Necessity National Battlefield, Pennsylvania; Horseshoe Bend National Military Park, Alabama; Andrew Johnson National Historic Site, Tennessee; Allegheny Portage Railroad National Historic Site, Pennsylvania; Harpers Ferry National Historical Park, West Virginia; and Kennesaw National Battlefield Park, Georgia.

Included among the many Registered National Historic Landmarks illustrative of Appalachia's history are: Fort Toulouse, Elmore County, Alabama; the Beginning Point of the U.S. Public Land Survey, Columbiana County, Ohio; John C. Calhoun Home, Pickens County, South Carolina; Fort Loudoun, Monroe County, Tennessee; Biltmore Estate, Buncombe County, North Carolina; Alexander Wade House, Monogalia County, West Virginia; Joseph Priestley House, Northumberland County, Pennsylvania; and the X-10 Rector, Oak Ridge National Laboratory, Anderson County Tennessee.

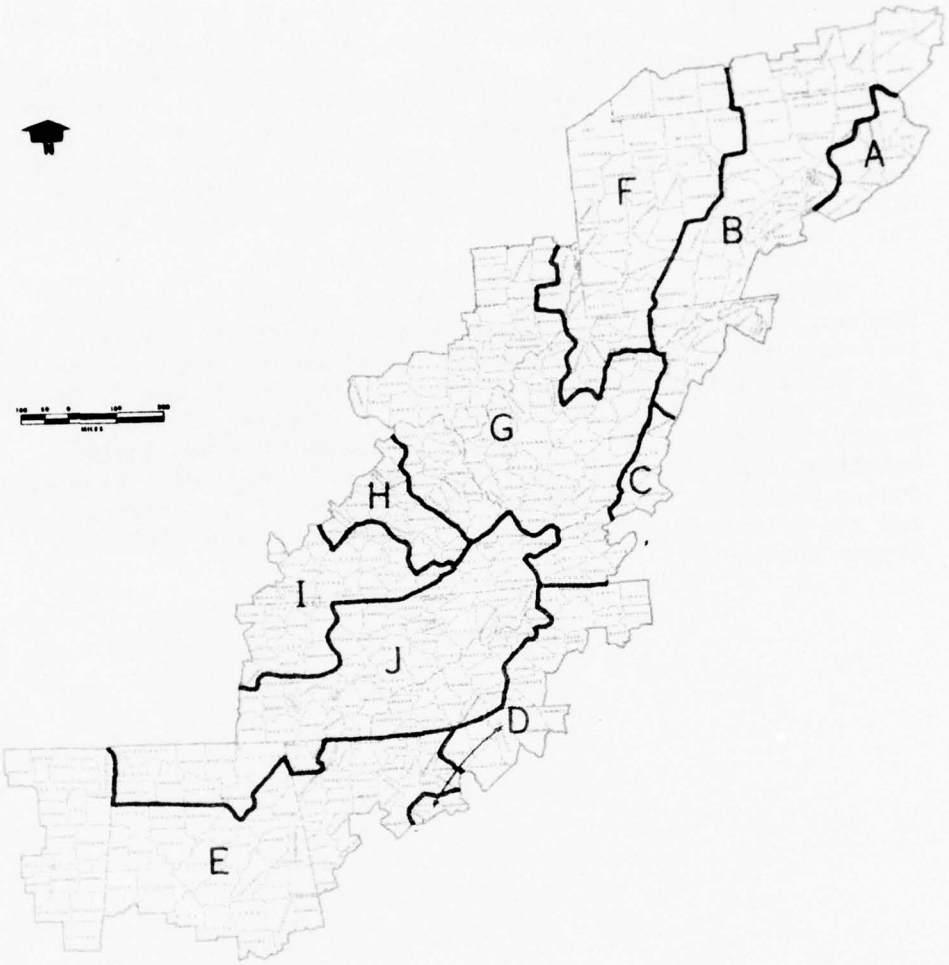


FIGURE 18

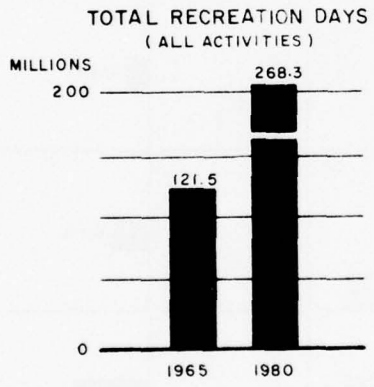
SUBREGIONS OF APPALACHIA

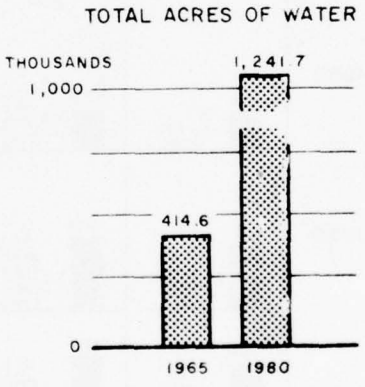
6. THE OUTDOOR RECREATION PLAN

The Objective of the Plan. The objective of the outdoor recreation plan is to show by subregion (see figure 18) those elements in the plan for development of water resources in Appalachia which help meet needs of outdoor recreation through development of projects and accelerated programs. Each project or program can help implement aims set forth by the Congress to (1) promote the development of outdoor recreation to meet needs; (2) assist the region in meeting its special needs and problems; (3) promote the region's economic development; and (4) provide outdoor recreation development compatible with these aims.

The following plan is not a comprehensive plan for the development of outdoor recreation in the Appalachian Region. Rather, it is supplementary to the plan for the development of water resources in Appalachia. Where projects and programs in the water resource plan have outdoor recreation development, the projects are shown in this part of the Appendix as the outdoor recreation plan.

Features of the Plan. For the Appalachian Region, the unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:





Figures 19 through 23 on the following pages show the demand, supply, and needs by each subregion in annual activity days.

An appraisal of the capacity of proposed projects and programs, and potential resources is shown by subregions follows. Estimates of recreation days of water resource developments are based on the assumption that the projects will be built.

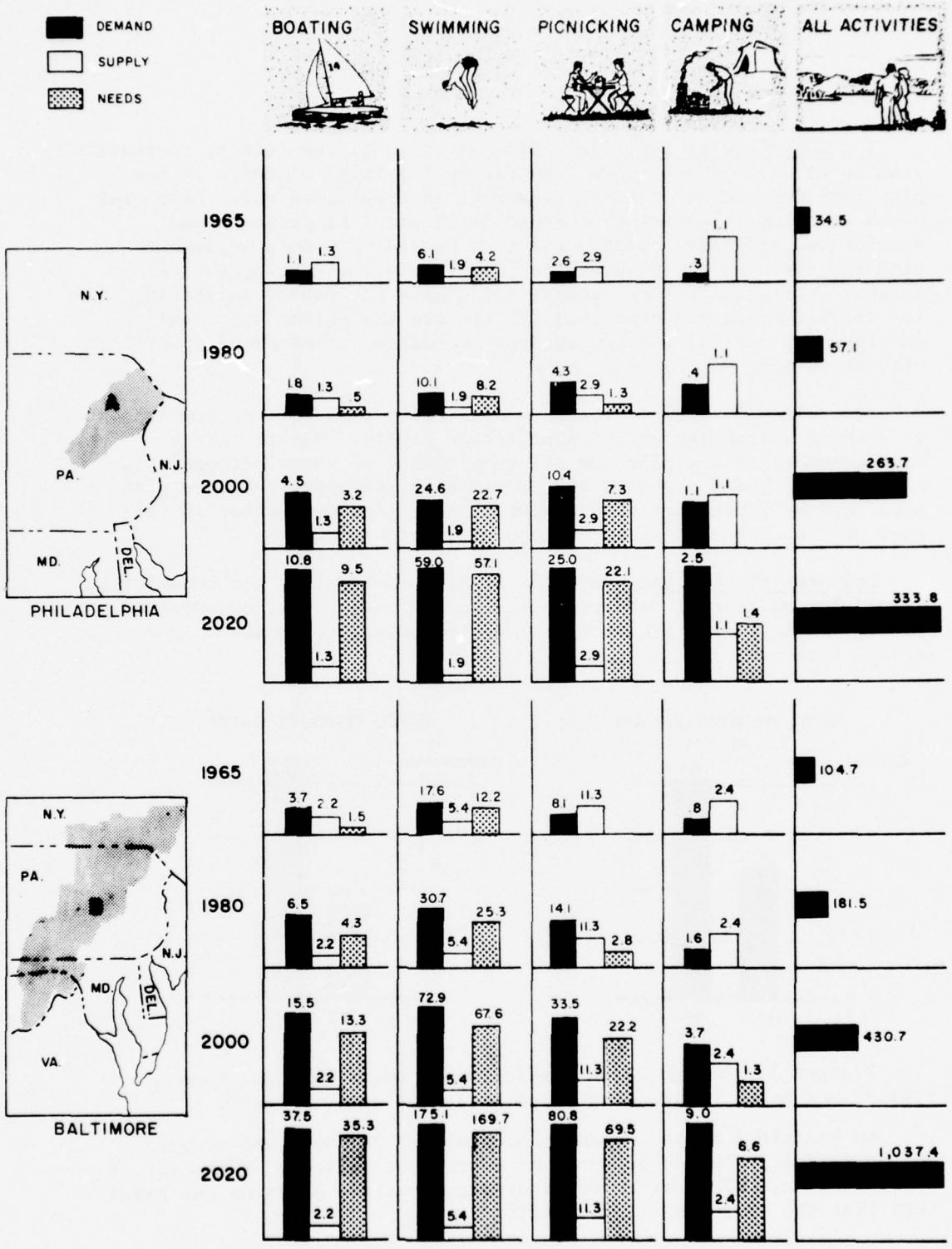

APPALACHIA SUBREGIONS
ANNUAL ACTIVITY DAYS (MILLIONS)
DEMAND
SUPPLY
NEEDS
BOATING
SWIMMING
PICNICKING
CAMPING
ALL ACTIVITIES
1965
1980
2000
2020
1.1 1.3
6.1 1.9 4.2
2.6 2.9
.3 1.1
34.5
1.8 1.3 .5
10.1 1.9 8.2
4.3 2.9 1.3
4 1.1
57.1
4.5 1.3 3.2
24.6 1.9 22.7
10.4 2.9 7.3
1.1 1.1
263.7
10.8 1.3 9.5
59.0 1.9 57.1
25.0 2.9 22.1
2.5 1.1 1.4
333.8
N.Y.
PA.
N.J.
MD.
DEL.
PHILADELPHIA
3.7 2.2 1.5
17.6 5.4 12.2
8.1 11.3
.8 2.4
104.7
6.5 2.2 4.3
30.7 5.4 25.3
14.1 11.3 2.8
1.6 2.4
181.5
15.5 2.2 13.3
72.9 5.4 67.6
33.5 11.3 22.2
3.7 2.4 1.3
430.7
37.5 2.2 35.3
175.1 5.4 169.7
80.8 11.3 69.5
9.0 2.4 6.6
1,037.4
N.Y.
PA.
N.J.
MD.
DEL.
VA.
BALTIMORE

FIGURE 19

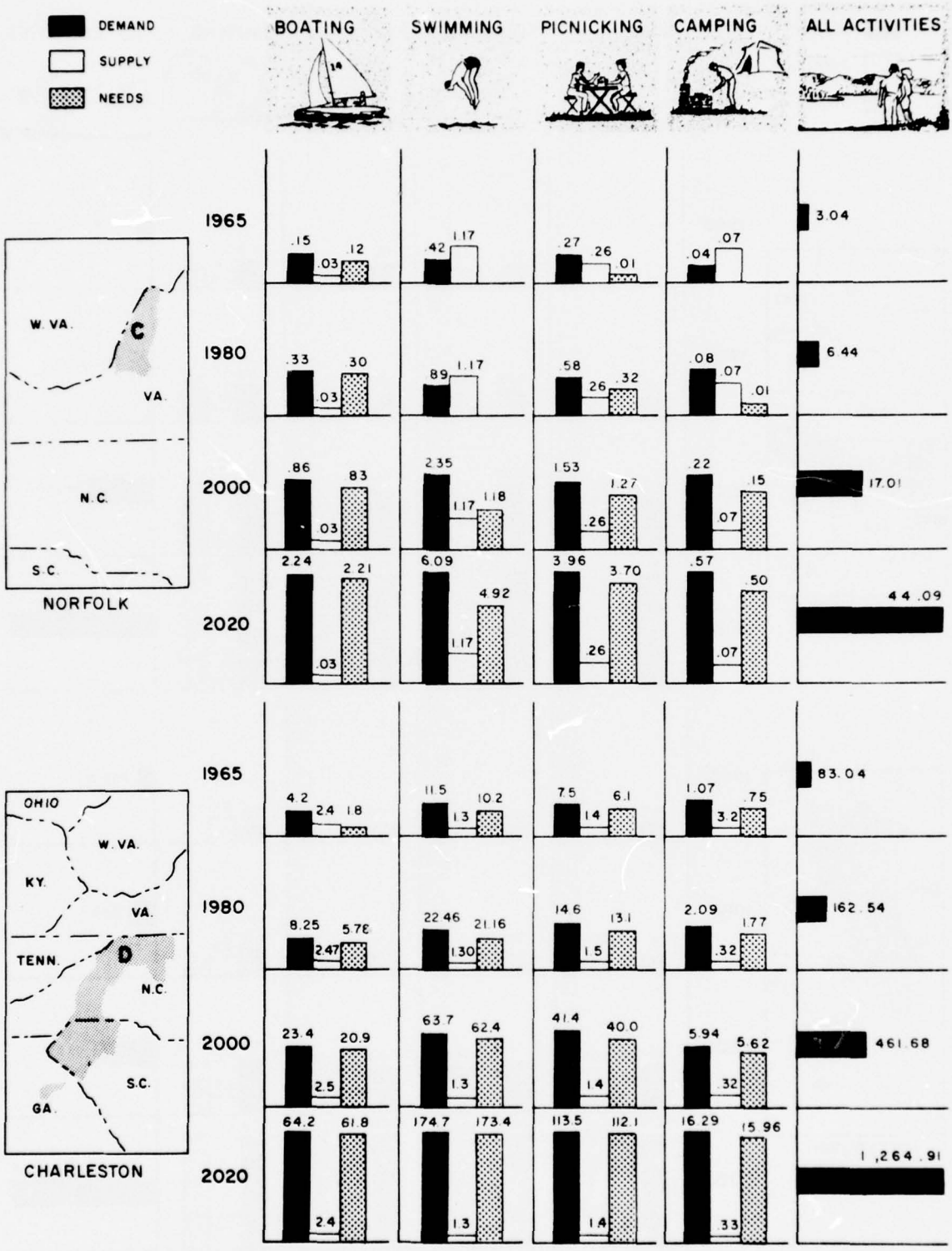

APPALACHIA SUBREGIONS
ANNUAL ACTIVITY DAYS (MILLIONS)
DEMAND
SUPPLY
NEEDS
BOATING
SWIMMING
PICNICKING
CAMPING
ALL ACTIVITIES
1965
1980
2000
2020
W. VA.
VA.
N.C.
S.C.
C
NORFOLK
.15 .03 .12
.42 1.17
.27 .26 .01
.04 .07
3.04
.33 .03 .30
.89 1.17
.58 .26 .32
.08 .07 .01
6.44
.86 .03 .83
2.35 1.17 1.18
1.53 .26 1.27
.22 .07 .15
17.01
2.24 .03 2.21
6.09 1.17 4.92
3.96 .26 3.70
.57 .07 .50
44.09
OHIO
W. VA.
KY.
VA.
TENN.
N.C.
S.C.
GA.
D
CHARLESTON
4.2 2.4 1.8
11.5 1.3 10.2
7.5 1.4 6.1
1.07 .32 .75
83.04
8.25 2.47 5.78
22.46 1.30 21.16
14.6 1.5 13.1
2.09 .32 1.77
162.54
23.4 2.5 20.9
63.7 1.3 62.4
41.4 1.4 40.0
5.94 .32 5.62
461.68
64.2 2.4 61.8
174.7 1.3 173.4
113.5 1.4 112.1
16.29 .33 15.96
1,264.91

FIGURE 20

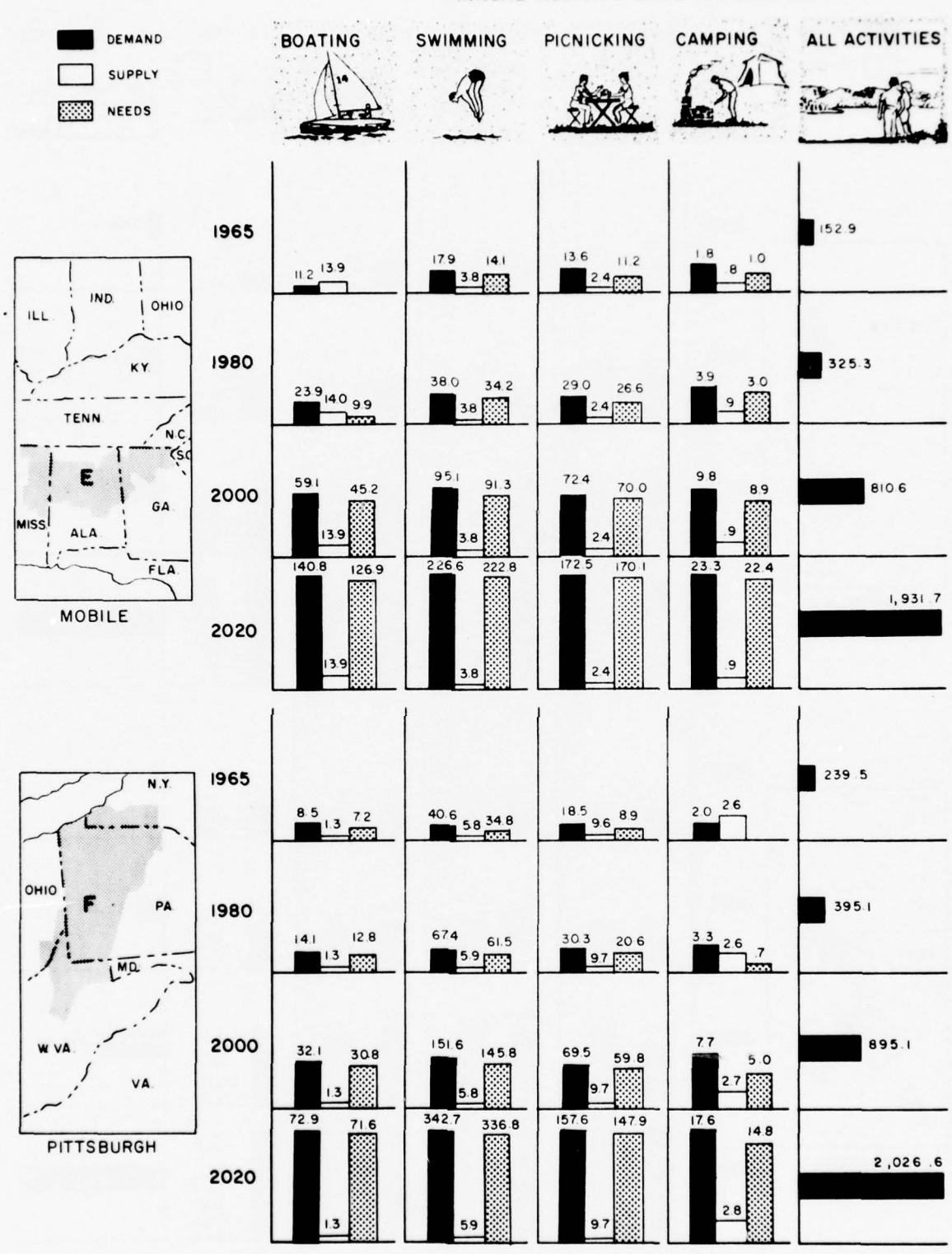

APPALACHIA SUBREGIONS
ANNUAL ACTIVITY DAYS (MILLIONS)
DEMAND
SUPPLY
NEEDS
BOATING
SWIMMING
PICNICKING
CAMPING
ALL ACTIVITIES
1965
1980
2000
2020
ILL.
IND.
OHIO
KY.
TENN.
N.C.
S.C.
E
GA.
MISS.
ALA.
FLA.
MOBILE
11.2 13.9
17.9 3.8 14.1
13.6 2.4 11.2
1.8 .8 1.0
152.9
23.9 14.0 9.9
38.0 3.8 34.2
29.0 2.4 26.6
3.9 .9 3.0
325.3
59.1 13.9 45.2
95.1 3.8 91.3
72.4 2.4 70.0
9.8 .9 8.9
810.6
140.8 13.9 126.9
226.6 3.8 222.8
172.5 2.4 170.1
23.3 .9 22.4
1,931.7
N.Y.
OHIO
F
PA.
MD.
W. VA.
VA.
PITTSBURGH
8.5 1.3 7.2
40.6 5.8 34.8
18.5 9.6 8.9
2.0 2.6
239.5
14.1 1.3 12.8
67.4 5.9 61.5
30.3 9.7 20.6
3.3 2.6 .7
395.1
32.1 1.3 30.8
151.6 5.8 145.8
69.5 9.7 59.8
7.7 2.7 5.0
895.1
72.9 1.3 71.6
342.7 5.9 336.8
157.6 9.7 147.9
17.6 2.8 14.8
2,026.6

FIGURE 21

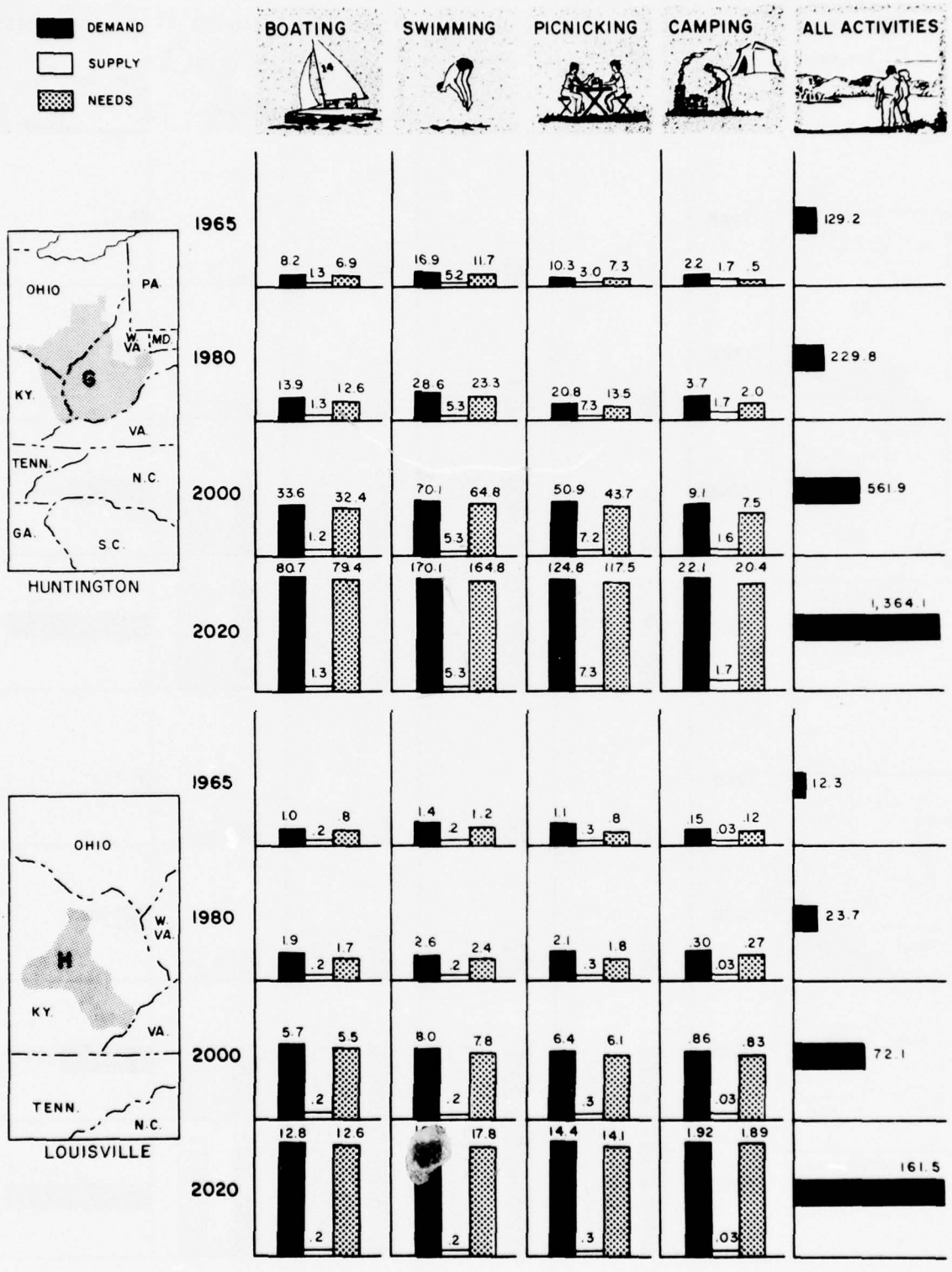

APPALACHIA SUBREGIONS
ANNUAL ACTIVITY DAYS (MILLIONS)
DEMAND
SUPPLY
NEEDS
BOATING
SWIMMING
PICNICKING
CAMPING
ALL ACTIVITIES
1965
1980
2000
2020
8.2 1.3 6.9
16.9 5.2 11.7
10.3 3.0 7.3
2.2 1.7 .5
129.2
13.9 1.3 12.6
28.6 5.3 23.3
20.8 7.3 13.5
3.7 1.7 2.0
229.8
33.6 1.2 32.4
70.1 5.3 64.8
50.9 7.2 43.7
9.1 1.6 7.5
561.9
80.7 1.3 79.4
170.1 5.3 164.8
124.8 7.3 117.5
22.1 1.7 20.4
1,364.1
OHIO
PA.
W. VA.
MD.
KY.
G
VA.
TENN.
N.C.
GA.
S.C.
HUNTINGTON
1.0 .2 .8
1.4 .2 1.2
1.1 .3 .8
.15 .03 .12
12.3
1.9 .2 1.7
2.6 .2 2.4
2.1 .3 1.8
.30 .03 .27
23.7
5.7 .2 5.5
8.0 .2 7.8
6.4 .3 6.1
.86 .03 .83
72.1
12.8 .2 12.6
17.8 2 15.8
14.4 .3 14.1
1.92 .03 1.89
161.5
OHIO
W. VA.
H
KY.
VA.
TENN.
N.C.
LOUISVILLE

FIGURE 22

APPALACHIA SUBREGIONS

ANNUAL ACTIVITY DAYS (MILLIONS)

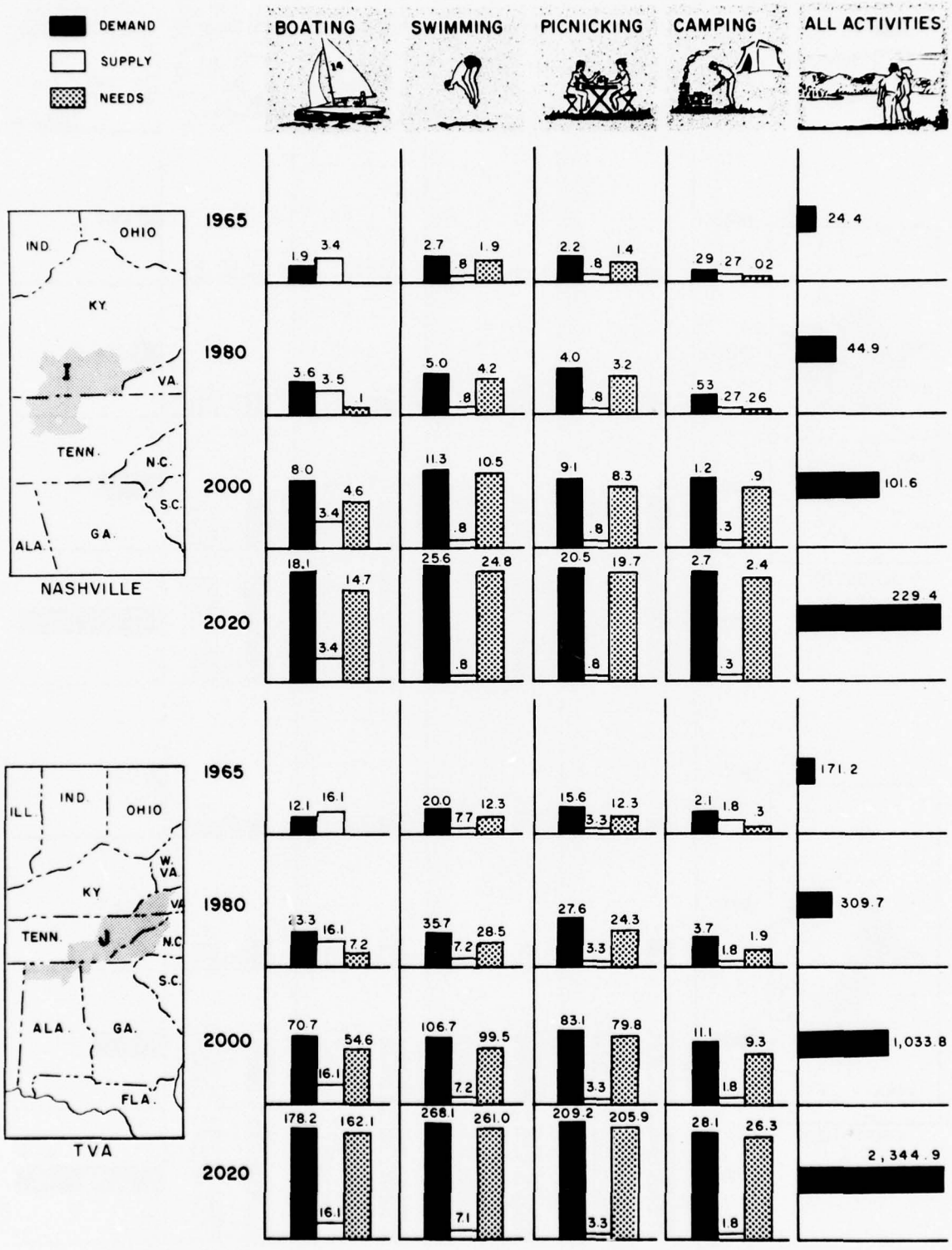
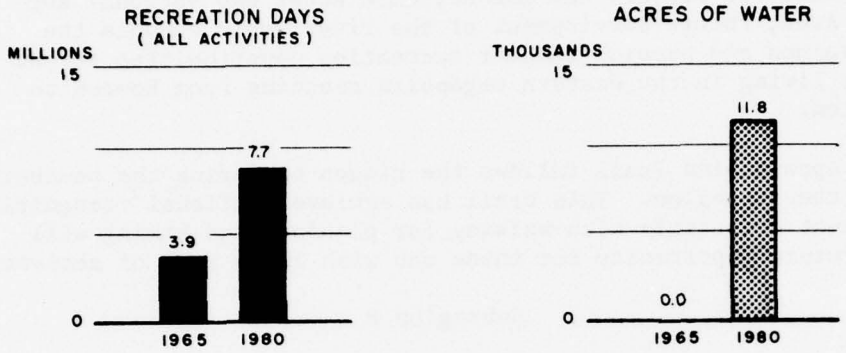


FIGURE 23

Subregion A

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:



The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

Restoration of Deer Lake east of Pottsville, Pennsylvania, would provide an 18-acre lake suitable for outdoor recreation. Size would limit boating activities to non-powered craft. The estimated number of annual recreation days that this reservoir could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
Deer Lake	33,000	33,000

The Davenport Center Reservoir project in Subregion B would also satisfy part of the outdoor recreation needs for the subregion. A large unsatisfied demand remains for outdoor recreation opportunities including a need for boating water.

Bureau of Outdoor Recreation:

Much of the demand for outdoor recreation originates in the Scranton-Wilkes-Barre area. A number of high-density recreation areas and small reservoirs averaging 100 acres in size located within an hour's driving time of these urban centers could satisfy

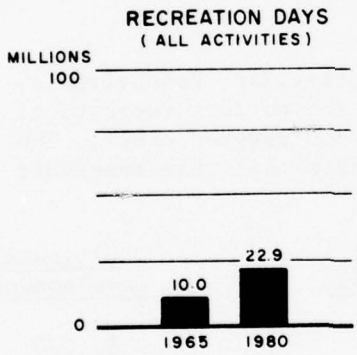
much of the demand for water-dependent and water-enhanced activities. Necessary facilities could be provided by both the public and private sectors.

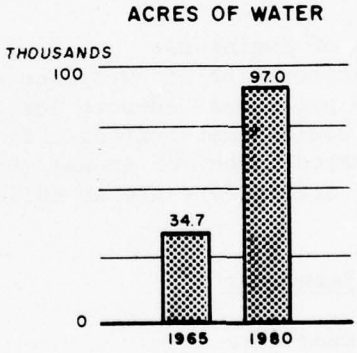
The Delaware River has been identified as having many areas of high scenic qualities. In addition to the development of the Tocks Island Reservoir project and the Delaware Water Gap National Recreation Area, future development of the river would enhance the scenic values and provide outdoor recreation opportunities to the millions living in the eastern megopolis reaching from Boston to Washington.

The Appalachian Trail follows the ridges bordering the southern part of the subregion. This trail has achieved national recognition. Development compatible with walking for pleasure and hiking will assure future opportunity for those who wish these type of activities.

Subregion B

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:





The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion.

Corps of Engineers:

Two reservoirs are being considered for this subregion. These include the 1,690-acre Davenport Center Reservoir project on Charlotte Creek in the Catskill area of New York, and the 1,150-acre Royal Glen Reservoir project located in the eastern part of West Virginia. The latter project is located on the South Fork Potomac

River in a highly scenic area. The estimated number of annual recreation days that these reservoirs could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
Davenport Center	227,400	427,400
Royal Glen	231,500	511,500

"Vacationscape for Appalachia," A Comprehensive Outdoor Recreation Study of North Central Pennsylvania, prepared by Baltimore District, includes seven complexes in Subregions B and F. These complexes will help satisfy the needs of both regions as well as the needs of outlying Standard Metropolitan Statistical Area. The 1960 population within 5 hours' driving time of these complexes was estimated at 4 million people.

Otocsin Recreation Development Center, located in Clearfield County, adjacent to Interstate 80, is proposed for development under sponsorship of the Commonwealth of Pennsylvania. Included are three major activity areas--Lakes Otocsin, Elliott Interchange, and the Wilderness Area. Initial planned development is expected to attract 7.5 million visitors annually, creating approximately 950 new jobs directly associated with the development.

Susquehannock Recreation Development Center, located near Galeton in Potter County, would offer a variety of recreation opportunities. Three potential reservoirs would be developed for recreational use and would also provide low-flow augmentation to enhance recreation uses of Pine Creek during drought periods.

Tioga-Hammond Recreation Development Center, Tioga Couty, includes two reservoirs of the planned Tioga-Hammond project of the Corps of Engineers and the recreation sites adjacent to them.

Mt. Pisgah Recreation Development Center, located approximately 12 miles west of Towanda, is currently being studied by the Commonwealth and by Bradford County for two adjacent parks. A reservoir would be developed on Mill Creek.

Tunkhannock Recreation Development Center, planned around a 1,600-acre reservoir on Tunkhannock Creek, Wyoming County, would

include marinas, beaches, camp and picnic grounds, and related outdoor recreation facilities.

Muncy Creek Recreation Development Center, located in Lycoming and Sullivan Counties, is within 15 miles of the cities of Williamsport, Montoursville, Muncy, and Hughsville.

Blanchard Recreation Development Center, located in Centre County, includes facilities for present and future construction at the 1,730-acre Blanchard Reservoir project.

Forest Service:

The Monongahela and the George Washington National Forests are located partially in Subregion B. An Accelerated program for these national forests includes construction of roads, trails, roadside developments, observation sites and other outdoor recreation developments. Further details are shown in Supplement B, Part I, of this Appendix.

Soil Conservation Service:

Five of the eight recommended upstream watersheds include outdoor recreation as a project purpose. In the five, seven multiple-purpose reservoirs would contain about 1,730 acres of water. Recreation days that would be provided are estimated to be 513,000 annually. In the eight watersheds, additional storage could be used for outdoor recreation purposes. Twelve potential watersheds studied in the Potomac River Basin would have additional storage for recreation development.

National Park Service:

Currently before the Congress are bills to authorize the Potomac National River, extending from Washington, D. C., to Cumberland, Maryland. Development includes the Chesapeake and Ohio National Historical Park. The park would enhance scenic values of the Potomac River and the Chesapeake and Ohio Canal and provide additional outdoor recreation opportunities to millions living in the Washington area.

State and Other Plans:

A planned extension of facilities in Prince Gallitzin State Park in Pennsylvania is expected to increase recreation use considerably. This extension, known as NATUREALM, is a conservation project that will instruct visitors in present and past

uses and abuses of soil, water, forests, and wildlife. Four State agencies assisting in this project are: Department of Forests and Waters, Soil Conservation Commission, Fish Commission, and Game Commission.

Bureau of Outdoor Recreation:

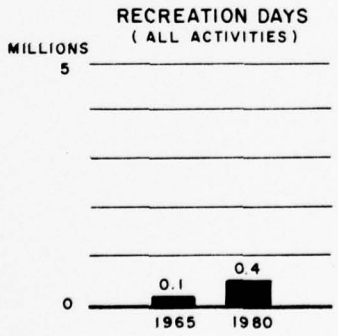
In addition to the projects listed above, high-density recreation areas and small reservoirs should be developed near Harrisburg, Pennsylvania, and Binghamton, New York, to help meet the day-use needs of these urban centers.

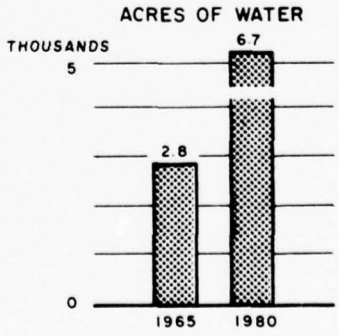
Portions of the Susquehanna River have been identified as having high scenic qualities. The reaches of the main stem--from Pittston, Pennsylvania, to Cooperstown, New York, of the West Branch from Lock Haven to Clearfield, Pennsylvania--can provide outdoor recreation resources to millions of visitors seeking these opportunities. The South Branch Potomac River, including the North Fork has also been identified as having many scenic attributes as is testified by the Spruce Knob-Seneca Rocks National Recreation Area. Alternative development of the South Branch Potomac River as a free flowing stream is also being considered.

The Appalachian Trail borders the subregion only in Maryland. However, the Potomac Heritage Trail in western Maryland and West Virginia and the North Country Trail in the heavily timbered Allegheny Mountains of northern Pennsylvania have been identified as having potentials for this type of outdoor recreation resource development.

Subregion C

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:





The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

The 4,540-acre Hipes Reservoir project on Craig Creek in western Virginia would provide residents and visitors with additional outdoor recreation opportunities in the Jefferson National Forest. The estimated number of recreation days annually that this reservoir could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
Hipes	371,600	996,600

Forest Service:

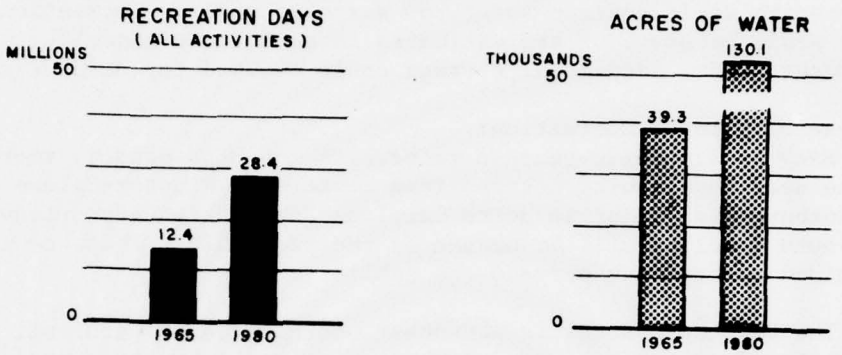
An accelerated program proposed for the Jefferson and the George Washington National Forests includes construction of roads, trails, development of special recreation projects, and development of water resources for fish and wildlife. See Supplement B, Part I, of this Appendix.

Bureau of Outdoor Recreation:

High-density recreation areas and small single-purpose reservoirs should be developed close to the city of Roanoke, Virginia, to meet outdoor recreation needs of the urban area. Since many portions of the upper James River and tributaries are located in the highly scenic mountains of western Virginia, further studies of the outdoor recreation potentials of these resources will identify reaches of rivers and streams in the subregion which could be retained in their free flowing condition. Additional trails and scenic roads will also help meet needs for opportunity in the subregion.

Subregion D

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:



The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

Three reservoirs are being considered--the 20,220-acre Clinchfield Reservoir project, located in the middle of the subregion and on the North Carolina-South Carolina State line; the 820-acre Roaring River Reservoir project in North Carolina and in the northern part of the subregion; the 5,700-acre Curry Creek Reservoir project in Georgia. The estimated number of annual recreation days that these reservoirs could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
Clinchfield	671,400	5,926,400
Roaring River	121,400	226,400
Curry Creek	400,000	1,600,000

Forest Service:

An accelerated program proposed for the Sumter and Pisgah National Forests in this subregion includes the construction of roads, trails, development of special recreation projects, and development and improvement of fish and wildlife water

resources. Further details are shown in Supplement B, Part I, of this Appendix.

Soil Conservation Service:

Five of the 10 recommended upstream watersheds include outdoor recreation as a project purpose. In the five, 10 multiple-purpose reservoirs would contain about 880 acres of water. Recreation days that would be provided are estimated to be 227,600 annually. In the 10 water sheds, additional storage could be used for outdoor recreation.

Bureau of Outdoor Recreation:

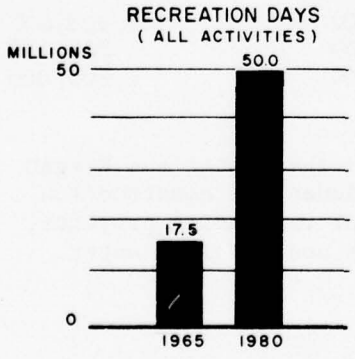
Many small single-purpose reservoirs or high-density recreation areas near the growing metropolitan centers of Winston-Salem-Greensboro-High Point in North Carolina and Spartenburg-Greenville in South Carolina will be needed by the year 2020. These could be provided by both the private and public sectors.

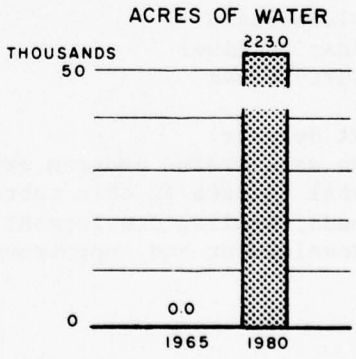
The Chattooga River in northeast Georgia, South Carolina, and North Carolina has been identified as having high scenic qualities. Its potential as a free flowing stream will help satisfy many of the needs for outdoor recreation opportunities. It is located in an 805,000-acre area described in the Southeast River Basin Study as the Highland Project and in which the principal purposes would be recreation and fish and wildlife.

Although no trails of national significance have been identified, the mountains offer a potential for trail development with links to the Appalachian Trail to the west of the subregion.

Subregion E

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:





The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

The 8,650-acre Dalton Reservoir project on the Conasauga River in northwest Georgia would provide residents and visitors with outdoor recreation opportunities to meet future needs which will increase rapidly after 1980. The estimated number of annual recreation days that this reservoir could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
Dalton	572,000	2,384,000

Forest Service:

An accelerated program proposed for the Tombigbee, Holly Springs, Bankhead, Talladega, and Chattahoochee National Forests in this subregion includes construction of roads, trails, development of six special recreation projects, and development and improvement of water resources for fish and wildlife. Further details are shown in Supplement B, Part I, of this Appendix.

Soil Conservation Service:

Six of the 17 recommended upstream watersheds include outdoor recreation as a project purpose. In the six, eight multiple-purpose reservoirs have been 780 acres of water. Recreation days that would be provided are estimated to be 125,350 annually. In the 17 watersheds, additional beneficial storage could be used for recreation. Twenty-seven potential watersheds studies in the Tombigbee River Basin would have additional storage for recreation purposes.

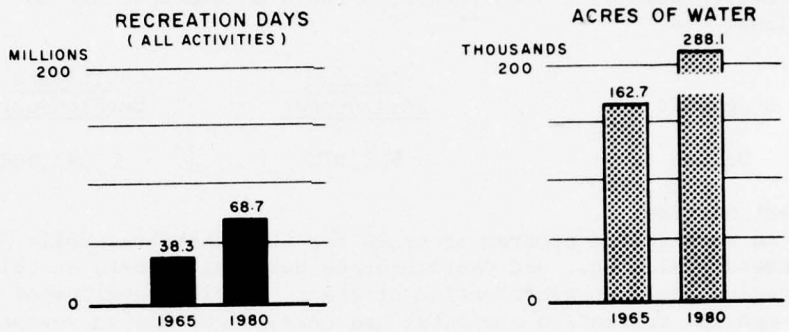
Bureau of Outdoor Recreation:

In addition to the proposed water impoundments in this subregion, expansion of facilities on existing outdoor recreation areas should meet the needs for most activities with the exception of boating until 1980. After that date, high-density recreation areas and small reservoirs would be desirable to meet needs near such urban centers as Atlanta and Birmingham. Outdoor recreation development could be provided by both the public and private sectors.

The southern terminous of the Appalachian Trail is located on Springer Mountain in North Georgia. Additional local trails linking this segment of the trail should be developed to attain the outdoor recreation potential of this resource.

Subregion F

The unsatisfied demand for additional outdoor recreation opportunities measured in recreation days, and the need for additional water, measured in acres,, are as follows:



The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

One reservoir is being considered by the Corps--the 10,104-acre St. Petersburg *Reservoir project on the* Clarion River in western Pennsylvania and the Stannard Reservoir Project on the Genesee River, New York. The estimated number of annual recreation days that the reservoir could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
St. Petersburg	3,474,000	3,474,000
Stannard	155,000	233,000

Forest Service:

An accelerated program proposed for the Allegheny National Forest includes construction of roads, trails, development of recreation use areas, recreation development of the Allegheny and Tionesta Reservoirs and development and improvement of water resources for fish and wildlife. Further details are shown in Supplement B, Part I, of this Appendix.

Soil Conservation Service:

Thirty-one of the 33 recommended upstream watersheds include outdoor recreation as a project purpose. In 31 watersheds, 43 multiple-purpose reservoirs would contain about 9,710 acres of water. Recreation days that would be provided are estimated to be 6,698,100 annually. In the 33 watersheds, additional storage could be used for outdoor recreation purposes.

Bureau of Outdoor Recreation:

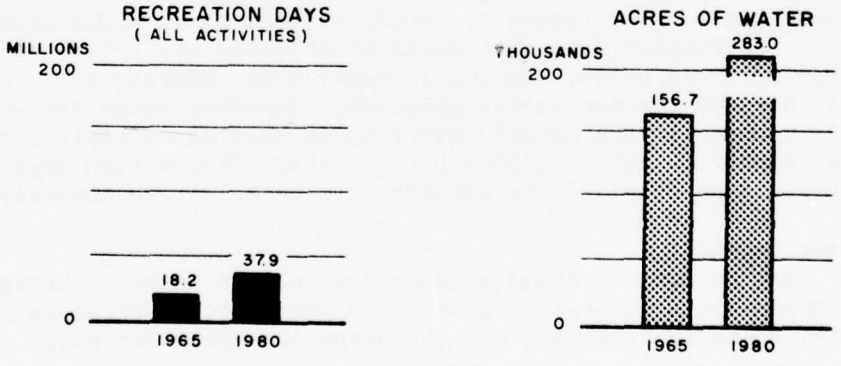
In addition to many single-purpose reservoirs needed near the urban centers of Pittsburgh and Wheeling recreation development at established high-density recreation areas should be increased. Cleanup of the Lake Erie waterfront and provision of adequate access to rivers and streams would greatly contribute to meeting the needs for outdoor recreation opportunities.

The Clarion River, on which the St. Petersburg Reservoir project is located, has been identified as having high scenic qualities. Study as a scenic river may be necessary as an alternative. The reach from Ridgeway, Pennsylvania, to the Allegheny River requires a vigorous pollution abatement program before its potential as a recreation resource may be attained.

Portions of the Potomac Heritage Trail and the North County Trail, located in the subregion, have been identified as having potentials for meeting needs for this type of outdoor recreation development.

Subregion G

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:



The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

Four projects are being considered that would include outdoor recreation development. These include a two-reservoir system in the Greenbrier River Basin, West Virginia, with 4,800-acre Greenbrier Lake and 4,500-acre Anthony Lake, selected by the Corps as an alternative means of meeting identified needs in the Kanawha River Basin, the 1,825-acre Logan Reservoir in central Ohio and Lower Knox Creek Reservoir in eastern Kentucky. The estimated number of annual recreation days that these reservoirs could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
Greenbrier Project	635,000	1,120,000
Whiteoak	707,500	707,500
Logan	539,700	1,129,700
Lower Knox Creek	103,300	103,300

Hipes Reservoir, in Subregion C, and Royalton Reservoir would also satisfy part of the outdoor recreation needs for the subregion.

Royalton Reservoir, located in Magoffin County, Kentucky, has been included as an element in the Interim Survey Report on the Upper Licking River Basin. This report, prepared by the Louisville District, Corps of Engineers, includes the outdoor recreation evaluation report, prepared by the Bureau of Outdoor Recreation, in Appendix G, Part II.

Soil Conservation Service:

Nineteen of the 23 recommended upstream watersheds include outdoor recreation as a project purpose. In the 19 watersheds, 27 multiple-purpose reservoirs would contain about 6,020 acres of water. Recreation days that would be provided are estimated to by 1,676,100 annually. In the 23 watersheds, additional storage could be used for recreation purposes. Nineteen potential watersheds studied in the Kanawha River Basin have 13 multiple-purpose reservoirs with about 2,850 acres of water. Recreation days that could be provided are estimated to be 2,175,200 annually.

Forest Service:

Part of four national forests are located in this subregion--the Monongahela in West Virginia, the Jefferson in Virginia, the Daniel Boone in Kentucky, and the Wayne in Ohio. Two major outdoor

recreation developments are proposed--the Mount Rogers National Recreation Area in the Jefferson National Forest, and the Cave Run Reservoir in the Daniel Boone National Forest. An accelerated program proposed for the national forests includes construction of roads, trails, water impoundments, five special recreation projects, recreation facility development, and improvement of water resources for fish and wildlife. Further details are shown in Supplement B, Part I, of this Appendix.

National Park Service:

Portions of the proposed Allegheny Parkway, extending from Harper's Ferry to Cumberland Gap, pass through the subregion and will offer many outstanding opportunities for sightseeing.

Southeastern Power Administration:

Storage projects are being considered in the Greenbrier River Basin as an alternative to the Corps proposals. Low flow augmentation downstream and pump storage would be an integral part of the proposal. Time has prevented outdoor recreation evaluations of these alternative developments. However, these alternatives would be coordinated within the framework of the comprehensive Kanawha River Basin Study.

Bureau of Outdoor Recreation:

Outdoor recreation needs other than boating will have to be accomplished through construction of high-density recreation areas and single-purpose reservoirs near urban centers, through development of facilities on streams, and through expansion of existing resources and facilities. The Appalachian Trail traverses the southern part of the subregion and the North County Trail would extend south through Ohio in the northwest part of the subregion.

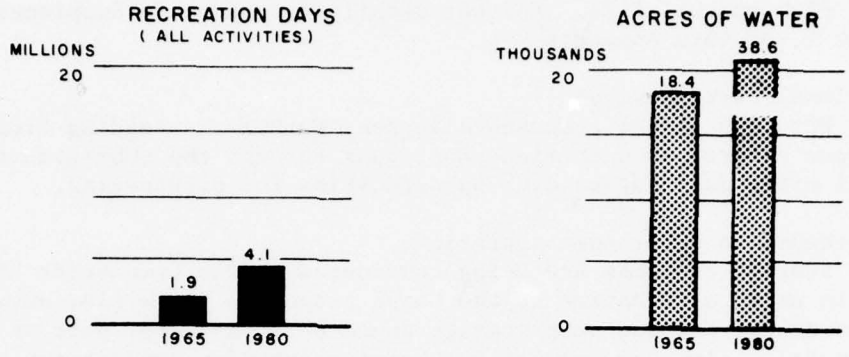
The Greenbrier River in West Virginia has been identified as having high scenic qualities. Preservation as a free flowing stream would assure outdoor recreation opportunities for related activities if selected for this type of development.

Private Development:

The proposed 42,000-acre Blue Ridge Project located on the New River in soutwestern Virginia and northwestern North Carolina is expected to provide 26,000 acres of water suitable for outdoor recreation activities in the upper pool. Recreation development at this project will help satisfy future regional and national needs, when operated in conjunction with hydroelectric development and low flow requirements downstream.

Subregion H

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:



The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

The Parker Branch Reservoir in Subregion I will satisfy part of the outdoor recreation needs for the subregion.

Forest Service:

The Red River Gorge project is a major outdoor recreation development proposed in the Daniel Boone National Forest. The accelerated program includes construction of roads, trails, development of public use areas, development of four special recreation projects, and development and improvement of water resources for fish and wildlife. Further details are shown in Supplement B, Part I, of this Appendix.

Soil Conservation Service:

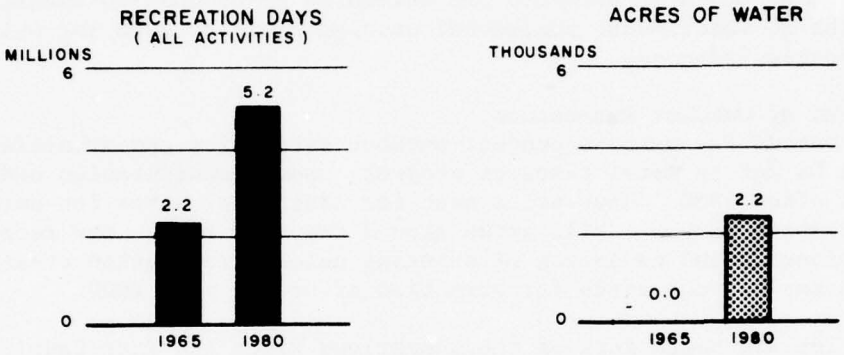
Five recommended upstream watersheds include outdoor recreation as a project purpose. Five multiple-purpose reservoirs would contain about 540 acres of water. Recreation days that would be provided are estimated to be 90,000 annually. In the five watersheds, additional storage could be used for outdoor recreation purposes.

Bureau of Outdoor Recreation:

Full development of existing outdoor recreation resources, such as State parks and national forests, are needed. Also, to help meet the growing needs of the Lexington, Louisville, and Cincinnati metropolitan areas, additional recreation areas and single-purpose reservoirs are needed. Development could be provided by both the public and private sectors.

Subregion I

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:



The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Corps of Engineers:

One reservoir project being considered is the 8,710-acre Parker Branch Reservoir project, located in southeastern Kentucky. The estimated number of annual recreation days that this reservoir could accommodate are as follows:

Reservoir	Initial Development	Ultimate Development
Parker Branch	412,900	1,298,900

Forest Service:

An accelerated program proposed for the Daniel Boone National Forest includes immediate outdoor recreation development on the Laurel River Reservoir. Then, when the Parker Branch Reservoir project is authorized and built, outdoor recreation development should be planned and installed in the national forest.

An accelerated program includes the construction of roads, trails, development of public use areas, and development and improvement of water resources for fish and wildlife. Further details are shown in Supplement B, Part I, of this Appendix.

Soil Conservation Service:

Eight of the 10 recommended upstream watersheds include outdoor recreation as a project purpose. In the eight, 12 multiple-purpose reservoirs would contain about 2,450 acres of water. Recreation days that would be provided are estimated to be 307,500 annually. In the 10 watersheds, additional storage could be used for outdoor recreation purposes.

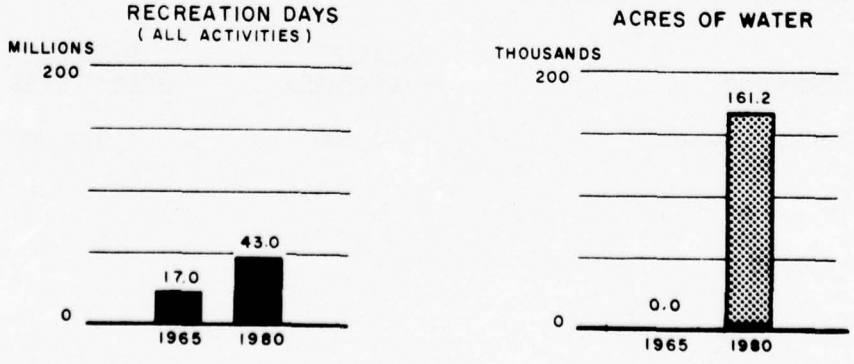
Bureau of Outdoor Recreation:

Demand for water-dependent outdoor recreation opportunities will be met by water resource projects under consideration until well after 1980. However, a need for additional water for outdoor recreation purposes will arise around the year 2000. New recreation development and expansion of existing outdoor recreation areas will help satisfy the needs for some time after the year 2000.

The Big South Fork of the Cumberland River and Rock Castle River have been identified as having high scenic qualities. Preservation as free flowing streams of designated reaches of these rivers would assure outdoor recreation opportunities for related activities.

Subregion J

The unsatisfied demand for additional outdoor recreation opportunities, measured in recreation days, and the need for additional water, measured in acres, are as follows:



The following agencies have suggested recreation developments described below as alternative means of meeting outdoor recreation needs of the subregion:

Tennessee Valley Authority:

The Upper French Broad River project in western North Carolina includes 13 reservoirs having a total of 6,750 acres of water. All 13 impoundments will have fishing, and 11 will have general recreation. Visits to these recreation developments on the reservoirs are expected to exceed 650,000 recreation days annually, including both fishing and general recreation. See Supplement A of this Appendix for details.

Forest Service:

Portions of the Jefferson, Bankhead, Chattahoochee, Pisgah, Nantahala, and Cherokee National Forests are included in the subregion. An accelerated program includes construction of roads, trails, development of public use areas, development of water resources for fish and wildlife. Further details are shown in Supplement B, Part I, of this Appendix.

Soil Conservation Service:

Twelve of the 24 recommended upstream watersheds include recreation as a project purpose. In the 12 watersheds, 14 multiple-purpose reservoirs would contain about 980 acres of water. Recreation days that would be provided are estimated to be 269,200 annually. In the 24 watersheds, additional storage could be used for outdoor recreation purposes.

National Park Service:

Two proposals currently before the Congress are an extension of the Blue Ridge Parkway and an extension of existing boundaries of the Chickamauga and Chattanooga National Military Park. The former provides for a 190-mile extension from Beech Gap, North Carolina, to Kennesaw Mountain National Battlefield Park near Atlanta, Georgia. The latter would provide for a 70-acre expansion of the park.

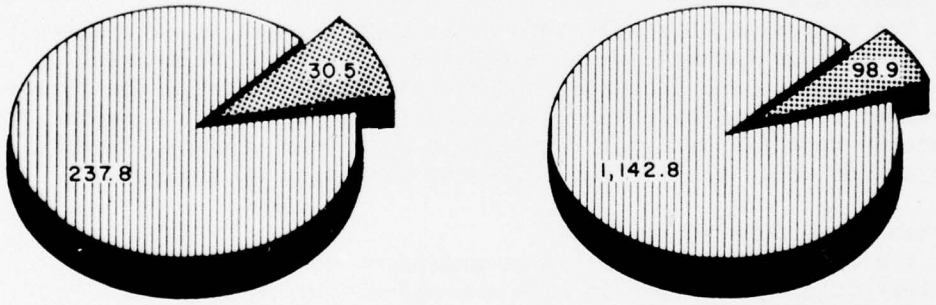
Bureau of Outdoor Recreation:

The current demands for water dependent outdoor recreation activities are being met in this subregion. Needs in other activities such as picnicking and camping could be met through expansion of existing resources. Around 1980, estimates indicate there will be needs in both water-dependent as well as other activities. Full development or expansion of existing outdoor recreation resources and for construction of small reservoirs and high-density outdoor recreation developments near urban centers could help meet these needs. Necessary facilities could be provided by both public and private sectors.

The Obed River in central Tennessee and the French Broad River in North Carolina and Tennessee, have been identified as having high scenic qualities. Preservation as free-flowing streams of designated reaches of these rivers would assure outdoor recreation opportunities for related activities. The Appalachian Trail extends through the eastern part of the subregion. Additional local trails, linking this segment of the trail to surrounding mountains and scenic areas, will assure opportunities for related activities.

Appraisal of Capacity to Meet Needs. Water resource projects and proposed outdoor recreation programs under consideration by public agencies as part of the Appalachian program could meet only a portion of future needs. The thirteen States in the Appalachian Region have compiled comprehensive statewide outdoor recreation plans in conjunction with the Land and Water Conservation Fund Act of 1965 (49 Stat. 163; 16 U.S.C. 590a - 590f). These plans include 5-year action programs for acquisition and construction and should be carefully considered in determining resources to be developed for outdoor recreation use.

The unsatisfied demand in recreation days and water acreage for 1980 and the needs as they are being met by projects included in the Plan of Development for Water Resources in Appalachia are shown in the illustration below. The projects have been proposed by the Corps of Engineers, the Soil Conservation Service, and the Tennessee Valley Authority.



Beyond 1980, unsatisfied demand for additional outdoor recreation opportunities becomes staggering. Those demands for water-dependent activities are substantial and may never be met through public programs. However, some of the demand could be met by expansion of existing and/or acquisition of additional outdoor recreation areas on rivers, streams, and existing reservoirs and by development of additional water resource projects. Unsatisfied demand for most other outdoor recreation activities probably could be met by full development of existing and/or acquisition of additional outdoor recreation areas.

Under existing socioeconomic conditions, estimates indicate that a 100-acre single-purpose reservoir properly developed for day-use activities could satisfy some 200,000 recreation days a year. Accordingly, a number of these reservoirs could be strategically located around urban centers such as Pittsburgh and Scranton, Pennsylvania; Morgantown, West Virginia; and Birmingham, Alabama. Much of the unsatisfied demand for such activities as swimming, bicycling, golf, and other participant sports must be met within the urban centers themselves. In addition to the public sector, the private sector has an important part to play in helping to meet the needs.

Impounded waters are becoming ubiquitous. Consequently, free-flowing streams are disappearing from the national scene. Especially desirable ones such as the South Branch Potomac, Greenbrier, French Broad, Chattooga, Obed, Big South Fork Cumberland, Rockcastle, and Clarion represent values which should be very carefully considered before a decision is reached to alter their natural characteristics.

Alternatives. Section 206 of the Appalachian Regional Act of 1965 authorizes the Secretary of the Army, in consultation with the Appalachian Regional Commission and all appropriate Federal and State agencies, to prepare a comprehensive plan for the development and efficient use of water and related resources as an integral and harmoneous component of the Appalachian regional economic development program. Senate Document No. 97 states that the basic objective in the formulation of plans is to provide the best use, or combination of uses, to meet foreseeable short- and long-term needs. Compliance with these directives requires consideration of reasonable alternatives unimpaired by highly restrictive formulation procedures.

The Appalachian Region offers an infinite variety of opportunities for developing an outdoor recreation plan including water resources having recreation potentials. Alternatives range from development of large reservoirs to preservation of free-flowing streams, from expansion of existing resources to construction of new development

at newly available resources, from early action programs to long-range programs to meet future needs, to name a few. In addition, public investment in recreation at water resource developments serve as a basis for comparison of outdoor recreation alternatives. Although the well-being of all the people is an overriding determinant, an environment favorable to outdoor recreation development provides the most satisfactory basis for comparison in selecting an alternative to an identified project.

Where choices are not possible because of the lack of information, appropriate action requires further study. Ultimately, however, choices must be defensible on the basis of purpose and outdoor recreation goals. Where conflict arises between outdoor recreation development and economic development, both alternatives must be comparable in order to make a choice.

In project formulation, the Corps has derived an alternative cost representing the least costly single-purpose alternative source of benefits of the same kind, quality, and magnitude as those provided by the multiple-purpose project being studied. This alternative source generally was derived from costs associated with a State park and is based on the assumption that this source should be one that can be expected to develop.

Administrative, Cost-Sharing, and Funding Arrangements. The administrative, cost-sharing, and funding arrangements for outdoor recreation development may be handled in several ways. (See figure 24.) The principal agencies for administration would be State and local units of government. The ultimate scale of outdoor recreation development should be fully coordinated with all interested agencies to realize the potential of the region's resources. However, in many instances adequate legal and financial capability does not exist for the local public bodies to undertake outdoor recreation development. Cost sharing and funding for public outdoor recreation development should follow the procedures as shown.

ADMINISTRATIVE ARRANGEMENTS
COST SHARING AND FUNDING

Construction Agency	Recreation Area to be Administered by:	Cost Sharing or Funding of Recreation Development by:
Corps of Engineers	Non-Federal public bodies, according to Public Law 89-72 (Federal Water Project Recreation Act) where a cost-sharing and administration agreement has been obtained.	Non-Federal public bodies as set forth in Public Law 89-72 (Federal Water Project Recreation Act) where a cost-sharing and administration agreement has been obtained. (For projects after January 1, 1966)
	The U.S. Forest Service under terms of August 13, 1964, memorandum of agreement between the Secretary of the Army and the Secretary of Agriculture of those project areas appropriate for administration by the U.S. Forest Service as part of a national forest system.	U.S. Forest Service.
		Various methods according to category of project. Corps of Engineers memorandum dated August 5, 1965, subject: "Implementation of the Federal Water Project Recreation in Previously Authorized Projects" makes distinction between categories. (For projects prior to January 1, 1966)
	The Corps of Engineers of recreation areas at projects that are not affected by Public Law 89-72 until June 30, 1980. After that time, the administration policies of Public Law 89-72 shall apply.	
Local Organizations Under Public Law 566	Local organizations according to Section 4 of the Watershed Protection and Flood Prevention Act as amended September 27, 1962.	Local organizations and the U.S. Soil Conservation Service according to Section 4 of Public Law 566. The Act may be supplemented by developments funded by the Land and Water Conservation Fund Act and the Housing and Development Act of 1965. In many cases, local costs may be financed through loan programs of USDA Farmers Home Administration.
	Privately owned and operated recreation areas administered by landowners.	Landowners.
	U.S. Forest Service when area is located on national forest land.	U.S. Forest Service.
U.S. Forest Service	U.S. Forest Service on national forest land.	U.S. Forest Service.
		Land acquisition may be financed by the Land and Water Conservation Fund Act of 1965 (Public Law 88-578) and the Weeks Law of 1911.
States	State park agencies.	State park systems under provisions of the Land and Water Conservation Fund Act of 1965 and the Housing and Development Act of 1965.
	State Game and Fish agencies.	Fishing areas under provisions of the Dingell-Johnson Act, and hunting areas under provisions of the Pittman-Robertson Act. State funds may also be used for both types areas.
Local Governmental Bodies	Local governmental bodies.	Local governmental bodies under provisions of the Land and Water Conservation Fund Act of 1965, and the Housing and Development Act of 1965.
Bureau of Sport Fisheries & Wildlife	Bureau of Sport Fisheries and Wildlife.	Land acquisition may be financed by the Land and Water Conservation Fund Act of 1965.
Tennessee Valley Authority	(1) Federal, State, or local agency to which areas have been transferred. (2) Local agencies or private individuals under license or lease agreements. (3) Tennessee Valley Authority.	Local participation in the cost of a TVA multiple-purpose project is based on the total project rather than individual purposes. Recreation as well as other facilities may be managed to produce revenues as a source of participating funds. Cooperative agreements with local tributary area development agencies usually provide for recapture of some project benefits through agency activities and for reimbursement of TVA by the agency for part of the project cost.

Figure 24

Program for Public Investment. Summarized proposals for public outdoor recreation investment were prepared for general recreation development of water resource projects having outdoor recreation evaluation reports. These proposals suggest the time-phasing of action. Due to the complexity of the Appalachian Water Resource Studies, a comprehensive outdoor recreation program for public investment has not been prepared. Information and data necessary to complete this program were not available within time and funds allotted to the Bureau to complete this aspect of its assignment.

Evaluation. Among the projects proposed for development by the Corps of Engineers in the plan, 12 dams and reservoir projects include recreation as a project purpose. The following summary of recreation benefits and general recreation development costs is based on proposed engineering plans:

Recreation Benefits

Tangible user benefits have been derived by estimating the number of recreation days that can be expected at a given outdoor recreation project at a given time. In keeping with Supplement 1 of Senate Document 97, monetary unit values have been assigned to each estimated recreation day at both minimum and maximun levels of outdoor recreation development for each project. The annual recreation days expected to occur at a given project have been multiplied by the assigned monetary unit value. The primary annual recreation benefits thus obtained have been shown in annual equivalents computed by the Corps of Engineers.

The annual outdoor recreation use, including hunting and fishing, estimated for twelve large reservoir projects included in the Plan for Development of Water Resources in Appalachia at ultimate development are 19,803,500 recreation days. The total primary recreation benefits for these projects in annual equivalent benefits are $16,062,700.

Expansion benefits, derived from estimates of visitor origin, have been developed by the Corps of Engineers using methodologies described in Evaluation Procedures for Water Resource Planning prepared by the Office of Appalachian Studies. These benefits are shown in the Main Report, Part III, Project Analysis.

Intangible benefits have been briefly described for each project where characteristics have been considered significant.

Examples of such benefits that occur from outdoor recreation experiences are improved public health and welfare, and better appreciation of our national heritage. Intangible characteristics that are important to an outdoor recreation area are natural beauty and scenery, fresh air and sunshine, location, and flora and fauna. Indeed, an area that does not possess some of these qualities would not rate as an outdoor recreation area.

In the interest of providing recreation opportunities of all types, ranging from high-intensity use areas to wilderness experience areas, it is essential that significant stream reaches be retained in a free-flowing condition. The tangible and intangible values given up, or lost, through establishment of a dam and reservoir project add greatly to the economic cost of project development. The values stemming from public use and enjoyment of stream recreation resources are lost forever and are not adequately reflected in financial costs of project development. Benefits would accrue when the suggested level of recreation developments are incorporated. However, certain projects would inundate outstanding reaches of free-flowing streams.

General Recreation Development Costs

Total project cost estimates, including project costs allocated to recreation, have been developed by the Corps of Engineers. These costs are shown in detail in the Main Report, Part III, Project Analysis. Specific costs chargeable to recreation are shown for those projects which have recreation as a project purpose and are included as elements in the Plan for Development of Water Resources in Appalachia. The method of cost allocation is described in Part IV, Concepts and Methods.

First costs for the dam and reservoir and allocated to recreation are not shown in this Appendix. However, first or capital costs for the outdoor recreation development at each of the 12 reservoir projects, described in detail in Section 8 of this Appendix, are estimated to be $111,091,250 at the maximum level of outdoor recreation development. Maintenance and operation and major replacement costs are shown in annual equivalents to be $2,377,400 and $517,200 respectively. Construction and/or installation of facilities is phased to coincide with estimates of annual recreation days for both initial and ultimate stages of development.

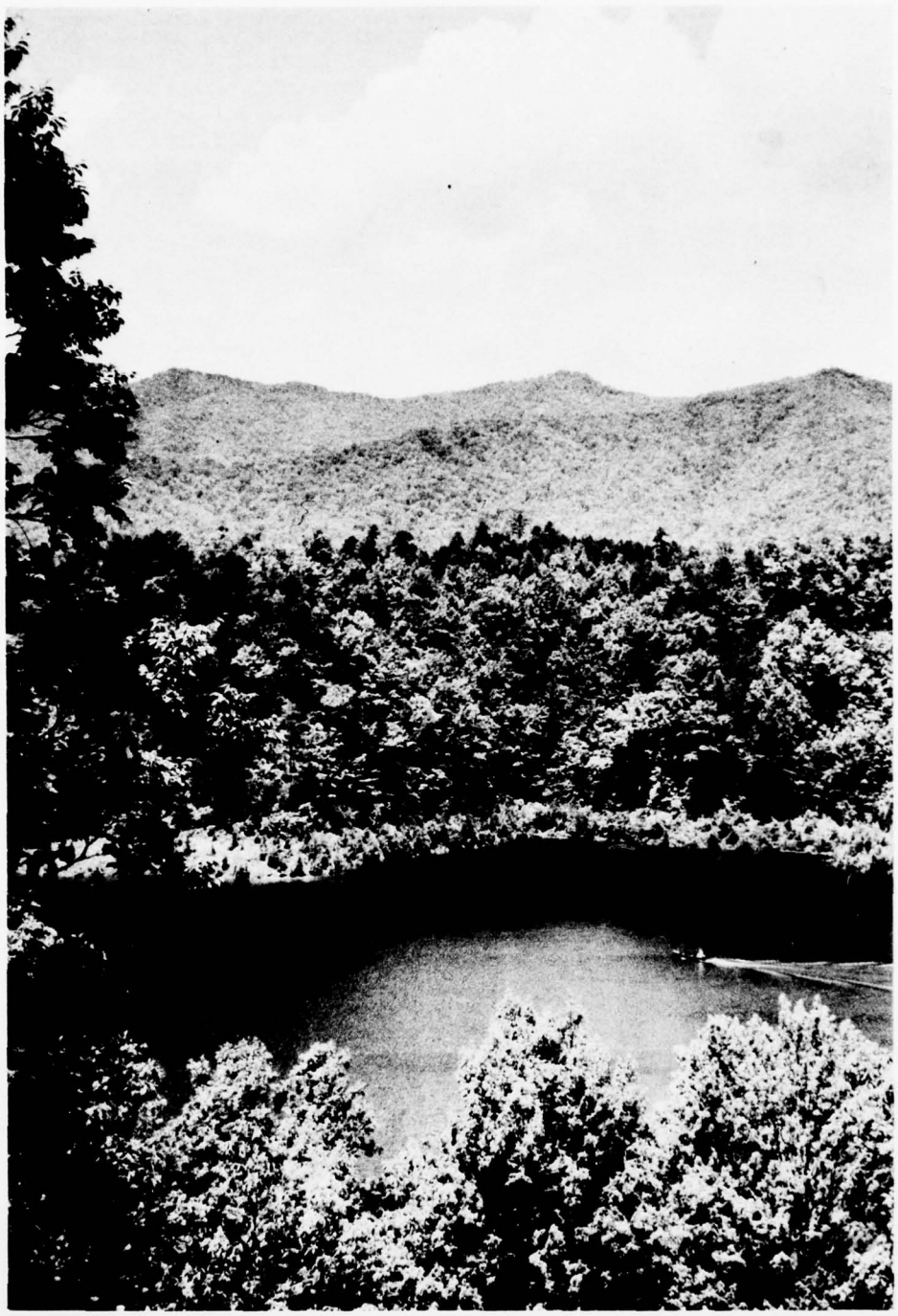


Figure 25 - Lake and Mountains in Appalachia

7. INDIVIDUAL STUDIES - PROJECT ANALYSIS AND PROPOSALS

Introduction. The Bureau of Outdoor Recreation, as part of its assignment in the Appalachian Water Resource Survey, has prepared outdoor recreation evaluation reports and preliminary evaluation summaries for certain water resource projects considered for inclusion in the survey. Work was undertaken to assist the Corps of Engineers in formulating plans called for in Section 206 (c) of the Appalachian Regional Development Act. Evaluations were based on the assumption that an impounement of a given size would be constructed at a predetermined site. Adequate consideration of alternatives or a truly comprehensive approach to planning water development projects to meet outdoor recreation needs was limited by both time and funds.

Outdoor Recreation Evaluation Reports. The purpose of the reports is to identify the outdoor recreation needs in the recreation market area of each project and to appraise the recreation potential of each to meet the needs. Unless otherwise specified, the outdoor recreation proposals in each report are in harmony with the objectives of the comprehensive statewide outdoor recreation plans of each concerned State.

To identify outdoor recreation demand, only boating, swimming, camping, and picnicking have been quantified. These projects, however, may support a wide range of other outdoor recreation activities, such as fishing, hunting, sightseeing, hiking, and driving for pleasure. To identify supply, nonurban outdoor recreation opportunities within 1 hour's driving time of each project have been quantified. Consideration has been given to significant existing and potential public outdoor recreation resources beyond 1 hour's driving time, but less than 2½ hours.

Analysis of demand and supply shows the present and future need for outdoor recreation opportunities for the four water-based activities in the recreation market area. This area includes the participating population who are expected to visit the project. Most reside in counties within an hour's drive of the project. An appropriate portion resides within 1 hour's driving time and 2½ hours' driving time from the project, and an additional number will come beyond 2½ hours' driving time. The people who are expected to visit the project are measured in terms of recreation days.

Current needs exist in some subregions and future needs in all. The same is true for the market area of each project evaluated. Much of these needs are generated by the urban populations in the subregions

or market areas. Generally speaking, these people could satisfy their needs at alternate locations either within or outside the region if a water resource project or similar water area were situated within approximately the same driving distance.

At the minimum level of outdoor recreation development, facilities for health and safety will be provided by the action agency such as access roads, barriers, and sanitary facilities. At the maximum level of development, facilities, when provided by appropriate sponsoring agencies, would include, but not be limited to, launching ramps, swimming beaches, bathhouses, camping and picnicking units, utilities, and administration buildings and/or maintenance facilities.

Hunting, fishing, and archeological and historical resources have been evaluated by the Bureau of Sport Fisheries and Wildlife and the National Park Service, respectively. Findings pertinent to outdoor recreation development have been summarized in the evaluation reports. Copies of the conservation and development reports prepared by the Bureau of Sport Fisheries and Wildlife are included in Appendix E, Fish and Wildlife Resources, to the Report for Development of Water Resources in Appalachia. Copies of archeological studies made by the National Park Service are on permenent file with its Archeological Center, Ocmulgee National Monument, Post Office Box 4547, Macon, Georgia 31208.

The Bureau completed 16 outdoor recreation evaluation reports for reservoir projects considered as elements in the Appalachian Water Resource Survey. Four of these projects have not been included in the plan of development of water resources. These projects are (1) Prompton Reservoir Modification, Subregion A; (2) North Mountain Reservoir, Subregion B; (3) Celina Reservoir, Subregion I; and (4) Devils Jumps Reservoir, Subregion I. Prompton Reservoir Modification involves water supply needs which are, at the present writing, undetermined. North Mountain Reservoir is included as part of the Potomac River plan of development. Celina Reservoir has been authorized as part of the Cumberland River plan of development. Devils Jumps Reservoir is located on the Big South Fork Cumberland River. This project will receive additional study, especially in regard to alternative scenic river development. Working drafts have been prepared and submitted to the District Engineer.

In addition, the Bureau prepared an evaluation report on the Royalton Reservoir Project in Subregion G. This report is included in Appendix G, Part II, of the Interim Survey Report of the Upper Licking River Basin prepared by the Louisville District, Corps of Engineers. The outdoor recreation evaluation reports for the 12 major reservoir projects included in the Appalachian Water Resource Plan of Development follow:

DAVENPORT CENTER RESERVOIR
Subregion B

General Description

The damsite for the project is approximately 7 miles east of Oneonta, New York, and 175 miles northwest of New York City. The dam would impound water on Charlotte Creek, a tributary of the Susquehanna River, between the towns of West Davenport and Davenport in northern Delaware County. The landscape, generally, is composed of dairy farms in the valley floor, homesteads on the lower terrace, with hardwood forests and pastures covering the steeper slopes.

State Highway 23 serves as the primary route of access to the area from both east and west. State Highway 7 passes 5 miles north of the reservoir and is separated from it by South Hill, a ridge paralleling and rising about 700 feet above Charlotte Valley. The site is located approximately 75 miles from Albany-Troy-Schenectady and approximately 65 miles from Binghamton.

The topography of the area is characterized by a broad valley. The creek follows a well-defined channel and is narrow and winding, and runs clear in the reservoir area and downstream from the site. The reservoir, about 7 miles in length, would have a conservation pool area of 1,690 acres at elevation 1,259 feet m.s.l. The shoreline would be relatively regular and the shape of the reservoir would be long and narrow, averaging about 2,500 to 3,000 feet in width. Three sites have favorable outdoor recreation potential for development.

Purposes of the project are to provide flood control, low-flow augmentation for downstream water quality control, water supply, recreation and fish and wildlife enhancement. The area that would be inundated and the adjacent land appear suitable for outdoor recreation activities, including pleasure boating, picnicking, fishing, swimming, and camping. Under normal operating conditions, a moderate drawdown may be expected during the recreation season from June through August to meet low-flow requirements downstream after the year 2000.

An archeological survey of the area showed that only minor campsites were found and that these sites did not warrant further investigation. No historical and natural science resources of value were found to exist in the area on which salvage and preservation would be necessary.

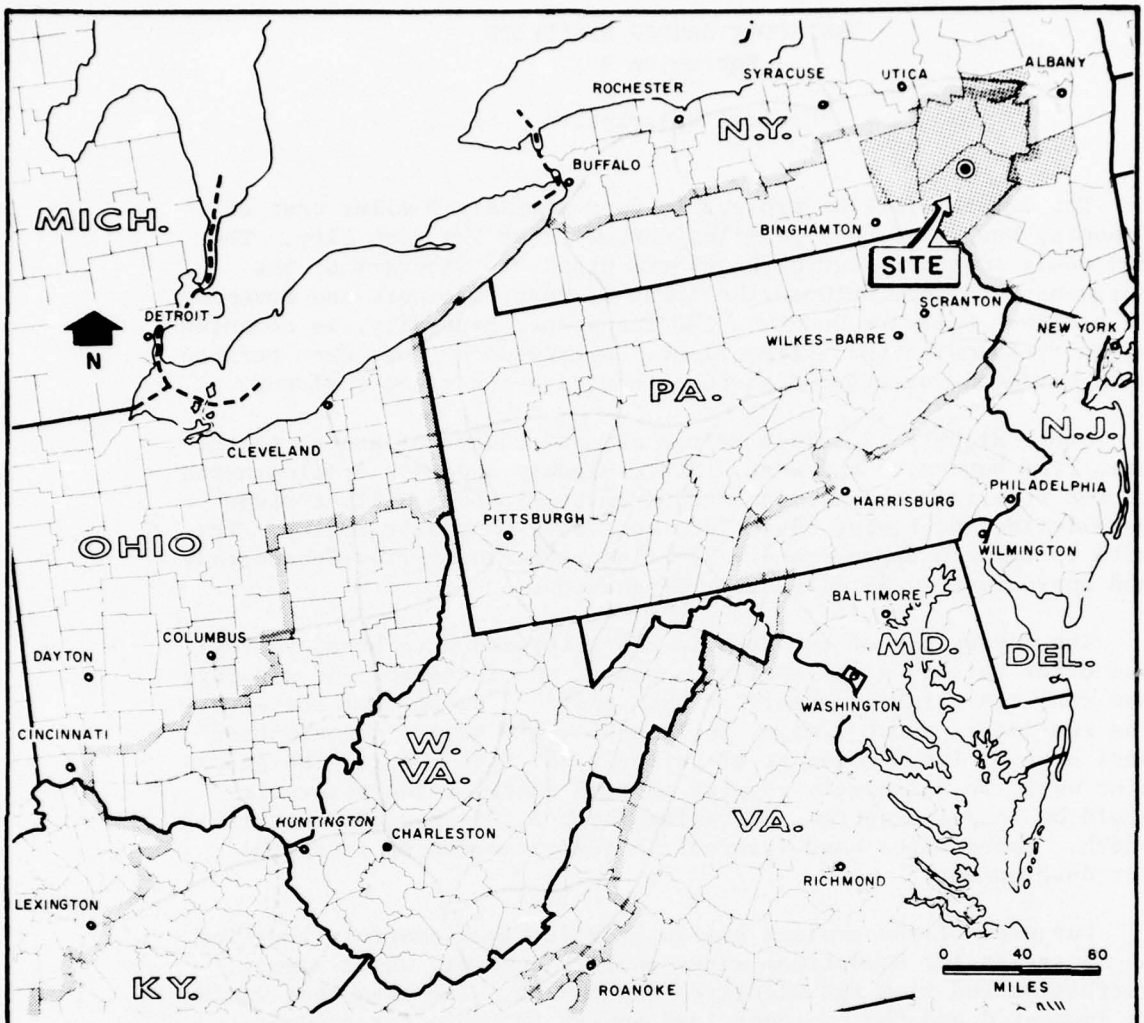


FIGURE 26

Appalachian Water Resource Survey

LOCATION MAP

DAVENPORT CENTER RESERVOIR

NEW YORK

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

The Recreation Market Area

Present participating population at the outdoor recreation development of the project is estimated to be about 667,000 people. About 70 percent of these people reside outside the Appalachian Region. The population of the recreation market area is expected to double by the year 2000. However, most of this increase will be found in the larger metropolitan areas outside the Appalachian Region. Average per capita income for this area in 1960 was $1,611, which was below the national average of $1,850 and well below the northeast regional average of $2,092. Composition of the work force is also expected to change with a larger percentage of the workers employed in nonagricultural pursuits than at present. The present sharp decline in agricultural employment is expected to continue to the year 1980 when it is expected to level off.

Extimated gross demand for the four activities generated within the six-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS
(1,000's)

Activity:	1980	2000	2020
Boating	1,480	2,760	4,030
Swimming	7,660	13,820	19,990
Picnicking	2,750	4,540	6,330
Camping	460	970	1,470
Total Activity Days	12,350	22,090	31,820

At the present time, almost 19,000 acres of impounded water suitable for boating and other water-dependent activities are available for outdoor recreation use. However, much of this water is used for water supply, limiting outdoor recreation opportunities and potentials for future development. On the other hand, over 160,000 acres of land suitable for various outdoor recreation activities are available, most of which are located in the Catskill Forest Preserve and State reforestation areas. Facilities and opportunities for the four selected activities have been estimated to be sufficient to support the following in annual activity days: boating - 607,000; swimming - 337,000; picnicking - 317,000; and camping - 209,000; totaling 1,470,000 annual activity days.

Proposed and authorized water resource projects like the 2,200-acre Copes Corner and the 2,800-acre West Oneonta Reservoir and several small reservoirs included in small watershed projects will provide additional water. Land being considered for acquisition around these projects will provide additional opportunities for outdoor recreation. The present needs in annual activity days for the four water-based activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS
(1,000's)

	Boating	Swimming	Picnicking	Camping
Demand	590	3,250	1,370	140
Supply	610	340	320	210
	Excess	2,910	1,050	Excess

Outdoor Recreation Plan

Outdoor recreation is, and will continue to be, important to Water Subregion B. Estimates indicate that there are needs in water-dependent activities in the subregion. The Davenport Center Reservoir can contribute toward meeting these needs through the provision of facilities for fishing, boating, swimming, camping, picnicking, sightseeing, and hiking.

An estimated 800 acres of land suitable for outdoor recreation is required at the suggested locations shown on the Reservoir Map to support the facilities. Some of the land acquired normally for other project purposes may be used for outdoor recreation. Additional land may be considered to preserve and enhance the scenic and aesthetic qualities of the site as a management unit after detailed studies. Provision of access to the north side of the reservoir would make several areas available for the type of outdoor recreation development envisioned. Also, access to the creek below the damsite should be provided as one means of affording opportunities for outdoor recreation use.

Requirements for water quality control releases to meet the low-flow requirements downstream after the year 2000 would have a moderate effect on the outdoor recreation potential of the reservoir. The anticipated seasonal drawdown during the recreation season from June through August would affect the selection and choice of the outdoor recreation facilities that should be installed, such as restricting

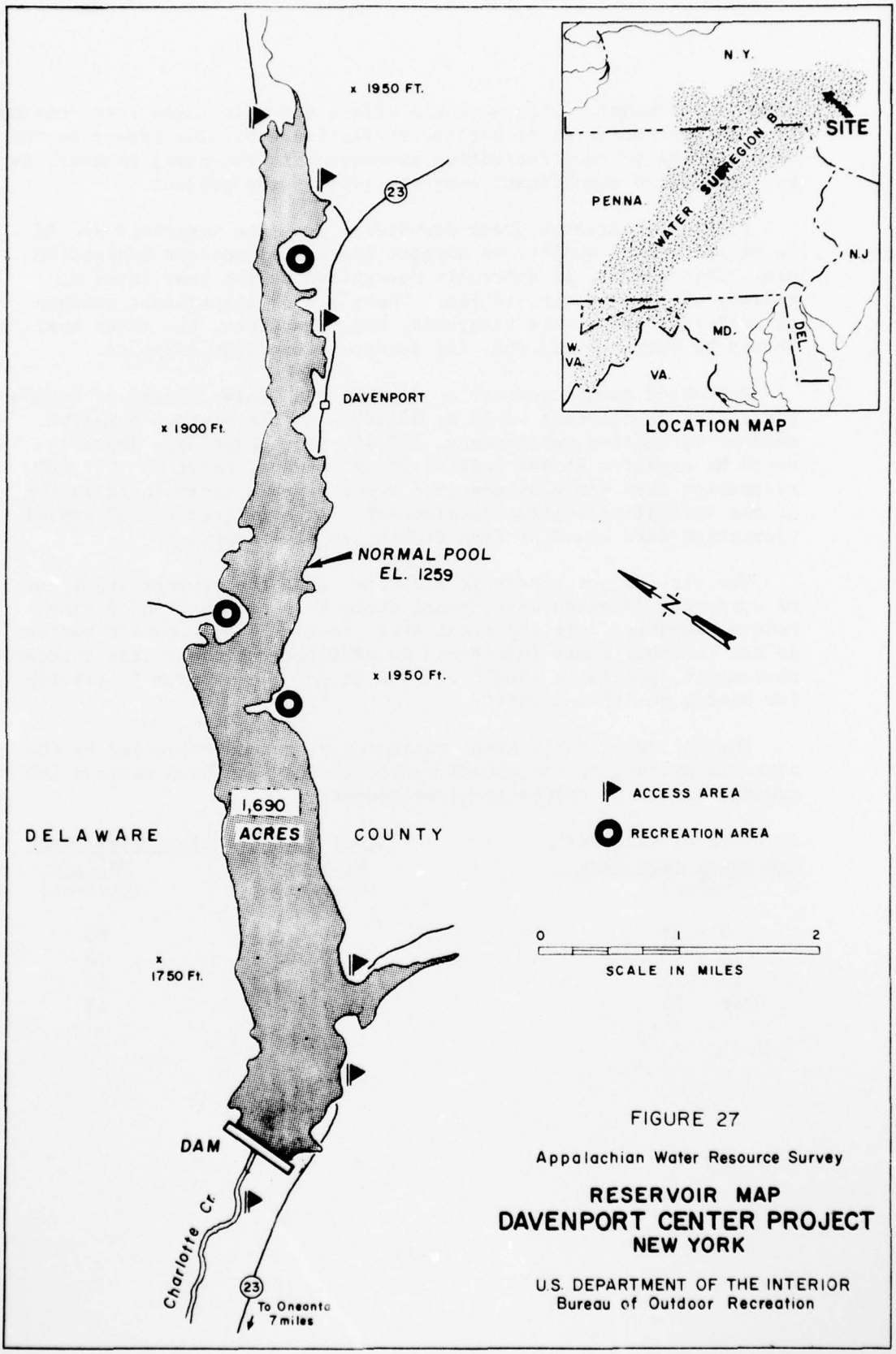


FIGURE 27

Appalachian Water Resource Survey

RESERVOIR MAP
DAVENPORT CENTER PROJECT
NEW YORK

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Bureau of Outdoor Recreation

beach development. This moderate effect has been taken into consideration in the estimates of outdoor recreation use. The effect on the value of the outdoor recreation experience to the user, however, is not considered significant over the life of the project.

Flows on Charlotte Creek downstream from the reservoir should be of sufficient quality to support incidental outdoor recreation use. This quality is generally recognized as the same level of quality which supports fishing. There are no significant sources of pollution above this reservoir, and, therefore, the water quality should be very satisfactory for outdoor recreation purposes.

Estimated annual recreation days at the minimum level of outdoor recreation development would be 35,000. At the maximum level of outdoor recreation development, 227,400 recreation days annually would be expected at the initial stage of development and 427,400 recreation days would be expected about 5 years after installation of the initial recreation development. An estimated 27,400 annual recreation days would be from fishing at the reservoir.

The size of the reservoir indicates that the appropriate level of outdoor recreation development would be a combination of non-Federal agencies. In the event that the non-Federal public bodies do not indicate their intentions to administer project area outdoor recreation, provision should be made to provide minimum facilities for public health and safety.

The following table gives estimated distances travelled by the users in percent of the annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site (miles)	Level of Recreation Development	
	Minimum (percent)	Maximum (percent)
0 - 25	80	60
26 - 50	10	10
51 - 75	5	15
Over 75	5	15

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DAVENPORT CENTER RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	35,000	200,000	200,000	400,000
Fishing and Hunting -	---	24,700	---	24,700
Annual Benefits -	$17,500	$299,400	$250,000	$433,700[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$2,500,000	$1,600,000	$4,100,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$40,000	200,000
Future Increment	$22,000	200,000
Ultimate[2]	$62,000	400,000
Fishing and Hunting (gross)	(included above)	27,400
	Total - $62,000	Total - 427,400

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$16,000
Future Increment	7,000
	Total -$23,000

1. Initial - Concurrent with construction of project.
2. Ultimate - Five years after initial stage.
3. Average Annual Equivalent

ROYAL GLEN RESERVOIR
Subregion B

General Description

The damsite for the project is located on the South Branch Potomac River in Grant County about 3½ miles west of Petersburg, West Virginia, and approximately 120 miles west of Washington, D. C. The terrain is rugged with mountains rising to elevations of 3,000 to 4,000 feet above sea level. Some areas, especially on the north and northeast sides of the reservoir site have moderate slopes. However, the steep slopes for the remaining areas are generally over 15 percent.

The reservoir would vary in width from about a mile a short distance above the damsite to an average 800 feet in the two major arms extending along the South Branch Potomac River and the North Fork South Branch Potomac River. It would be about 1,150 acres at elevation 1,060 feet m.s.l. The site is located within the boundary of the Monongahela National Forest and the Spruce Knob-Seneca Rocks National Recreation Area. Most of the lands now owned by the Federal Government and administered by the Forest Service are confined to the upper reaches of the rivers outside the reservoir area and to the mountain ridges.

The area surrounding the project is highly scenic. The hillsides are covered by mixed hardwoods and pines, except for occasional remote clearings and rock outcroppings. The flood plain and the more moderate slopes, especially in the northeastern area, are used for agricultural purposes. Rural residences, commercial establishments, and associated recreation enterprises are generally confined to the valley floor and to lands adjacent to State Highway No. 4. In addition to the scenic qualities of the escarpments and mountains, the Smoke Hole Caverns and the unique character of the South Branch Potomac River dominates the upper reaches of the reservoir area.

The South Branch Potomac River has been identified as having a high outdoor recreation potential as a free-flowing stream. "Parks for America"[1] and "Wild Rivers"[2] identified and South Branch Potomac River as having these high potentials and indicate that further studies may need to be made. No archaeological, historic and natural science resources of value other than those noted in this report exist in the area on which salvage and/or preservation may be necessary.

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1. National Park Service survey, 1964.
2. A joint report by the Department of Agriculture and the Department of the Interior, 1965.

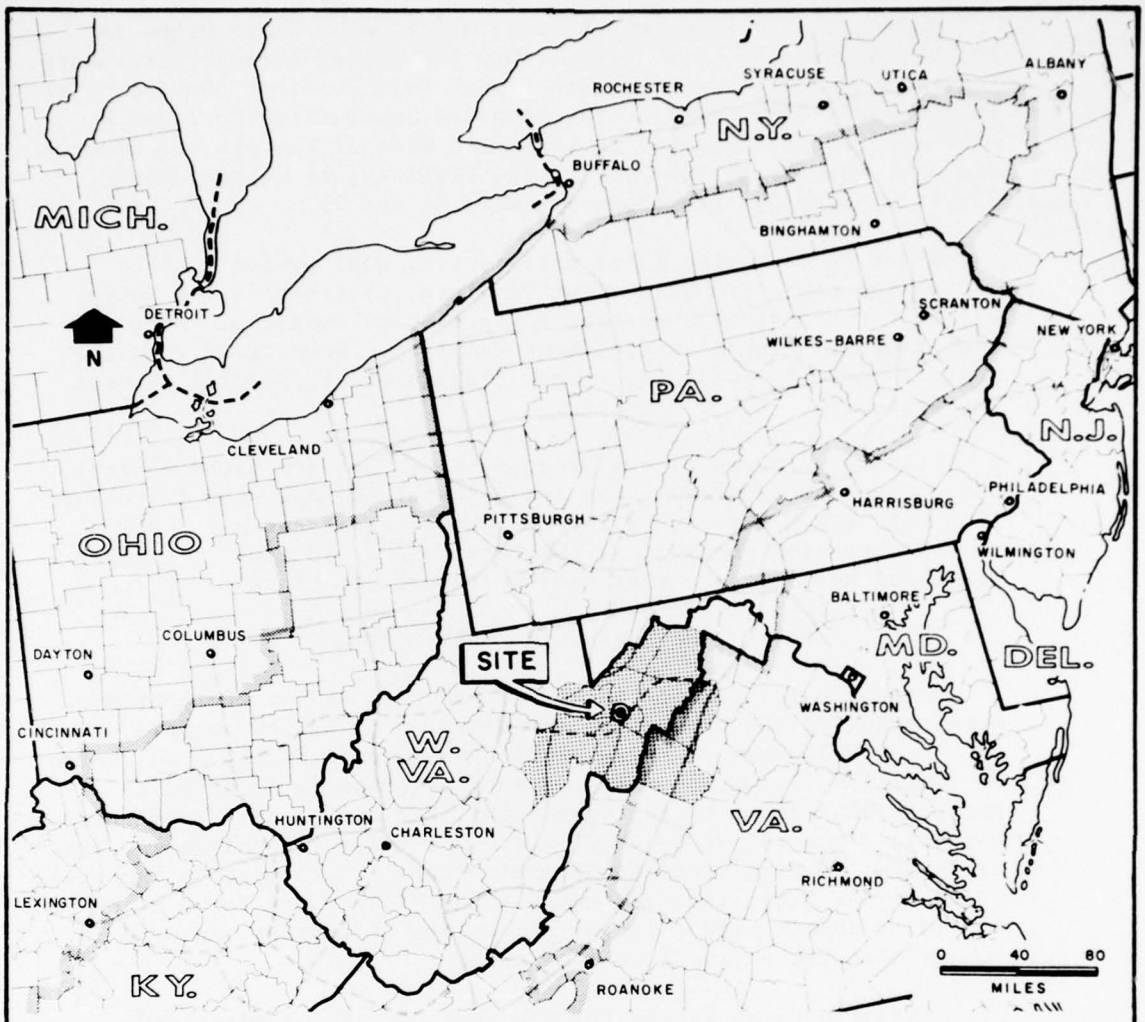


FIGURE 28

Appalachian Water Resource Survey

LOCATION MAP

ROYAL GLENN RESERVOIR
WEST VIRGINIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Access to the reservoir site is afforded by State Highways No. 42, 4, and 28. U.S. Highway No. 220 passes through Petersburg, generally paralleling the South Branch Potomac River about 3 miles to the west. The route of the proposed Appalachian Corridor H has been located adjacent to the north side of the project area on its east-west route from Strasburg, Virginia, to Weston, West Virginia, linking Interstate Highways 81 and 79.

Water at this site is of satisfactory quality for outdoor recreation use. Franklin, West Virginia, upstream on the South Branch Potomac River, had been a significant source of waste until installation of a treatment facility. Downstream from the damsite there is evidence of bank fishing and incidental outdoor recreation.

Primary purposes of the project are to provide flood control, and outdoor recreation. This project would be operated in conjunction with other structures in the Potomac River Basin. Under normal operating conditions, the reservoir would have only minor drawdowns during the summer outdoor recreation season.

The Recreation Market Area

Present participating population at the outdoor recreation development of the project is estimated to be 412,000 people. About three-fourths of these people reside outside the Appalachian Region. The recreation market area population is expected to increase 60 percent by the year 2020. Per capita income of this population was $1,674 in 1960, which was below the national average of $1,850. Current decline in agricultural employment is expected to level out after 1980 and composition of the work force is expected to change with a larger percentage of workers employed in nonagricultural pursuits than at present.

Estimated gross demand for the four activities generated within the nine-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS (1,000's)

Activity	1980	2000	2020
Boating	1,910	3,550	5,200
Swimming	4,910	8,870	12,820
Picnicking	2,710	4,480	6,240
Camping	640	1,340	2,040
Total Activity Days	10,170	18,240	26,300

At present, 150 acres of impounded water within a 40-mile radius suitable for boating and other water-dependent activities are available for outdoor recreation use. Much of this acreage is confined to small impoundments under 25 acres. In addition, approximately 2,900 miles of stream are suitable for canoeing and similar boating activities in the upper Potomac River basin. On the other hand, almost 560,000 acres of land suitable for a variety of outdoor recreation activities are available, most of which are located in the Monongahela and George Washington National Forests, the Blackwater Falls Park and the Lost River State Park in West Virginia. Facilities and opportunities for the four selected activities have been estimated to be sufficient to support the following in annual activity days: boating - 4,400; swimming - 646,250; picnicking - 412,000 and camping - 196,600, for a total of about 1,260,000 annual activity days.

Proposed and/or authorized water resource projects like the 1,000-acre Bloomington Reservoir and small structures included in the Upper Potomac River small watershed projects will provide additional water. Land considered for acquisition around these projects will also provide opportunities for outdoor recreation. In addition, the management plan for the Spruce Knob-Seneca Rocks National Recreation Area indicates a need for water-based outdoor recreation opportunities. The present needs in annual activity days for the four water-based activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS (1,000's)

	Boating	Swimming	Picnicking	Camping
Demand	770	2,080	1,350	190
Supply	5	650	410	200
Needs	765	1,430	940	Excess

Outdoor Recreation Plan

Outdoor recreation is, and will continue to be, important to Water Subregion B. Estimates indicate that there are needs in water-dependent and most water-enhanced activities in the subregion. In a section of Appalachia with little impounded water, the proposed Royal Glen Reservoir, if retained in the plan, would contribute toward meeting a portion of the needs through the provision of facilities for limited boating, swimming, picnicking, camping, hiking, fishing, and sightseeing.

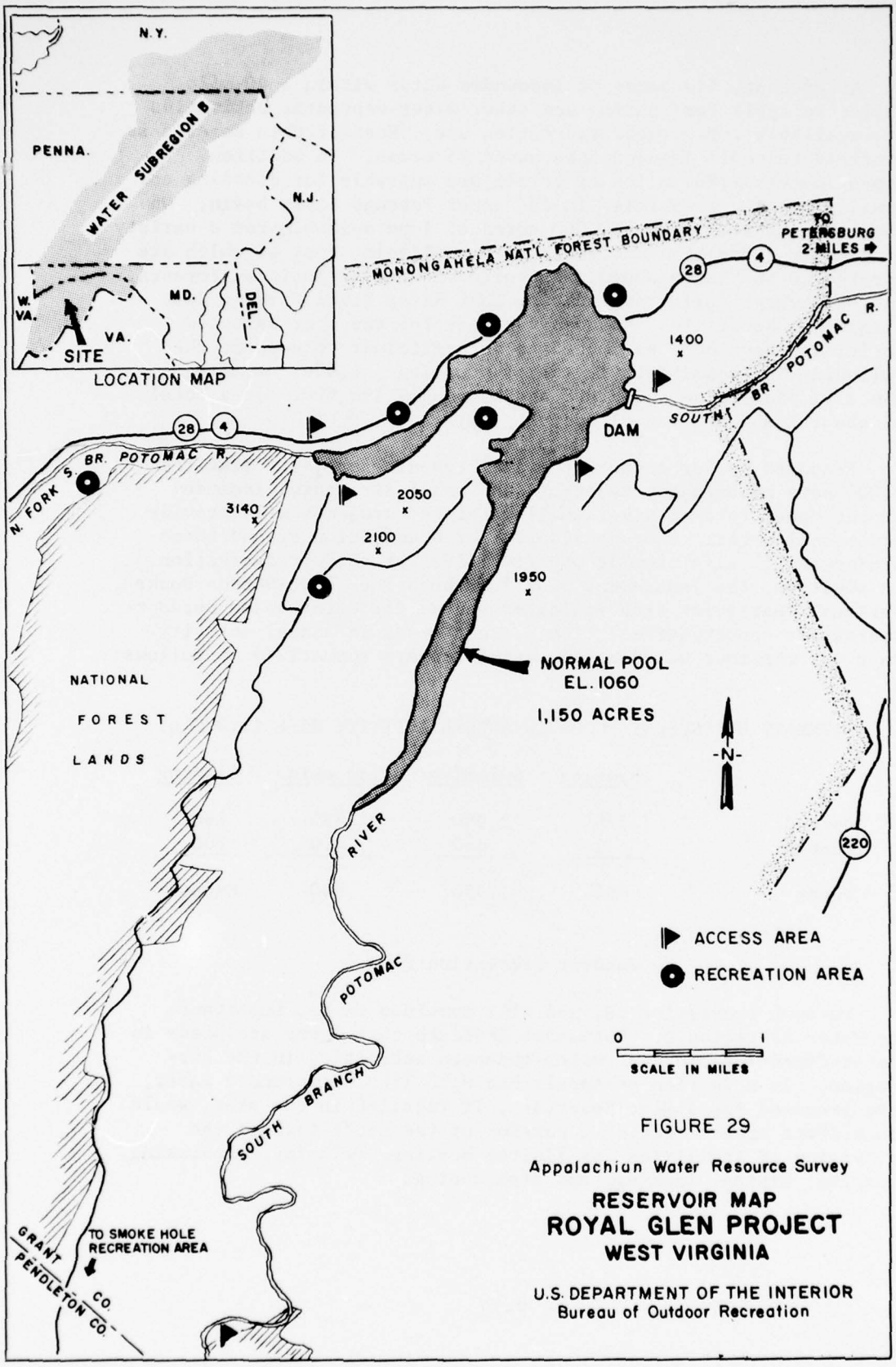


FIGURE 29

Appalachian Water Resource Survey

RESERVOIR MAP
ROYAL GLEN PROJECT
WEST VIRGINIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

An estimated 500 acres of land suitable for outdoor recreation is required at the suggested locations shown on the Reservoir Map to support the facilities. Some of this acreage is outside the boundary of the Monongahela National Forest adjacent to the northeast side of the reservoir. Although some of the land proposed to be acquired normally for other project purposes may be used for outdoor recreation, land suitable for outdoor recreation development above flood pool crest elevation is very limited. This land would only support the type of development envisioned if unimpaired by road relocations, transmission lines, and other incompatible features. Planning should be limited to facilities for small outboard motorboats, canoes, rowboats and similar craft. Drawdown would not have a significant effect on the development and use of outdoor recreation facilities. Flows on the South Branch Potomac River downstream from the reservoir should be of sufficient quality to support fishing and incidental outdoor recreation. Outdoor recreation administration would be the Forest Service.

Estimated annual recreation days at the minimum level of outdoor recreation development would be 20,000. At maximum development, 231,500 recreation days annually would be expected at the initial stage of development and 511,500 at ultimate development about 5 years after installation of the project. An estimated 31,500 recreation days annually of maximum use would be derived from fishing.

The following table gives estimated distances traveled by the users in percent of the annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site (miles)	Level of Recreation Development	
	Minimum (percent)	Maximum (percent)
0-25	75	40
26-50	5	10
51-75	5	20
Over 75	15	30

The unique scenic qualities of the South Branch of the Potomac and its North Fork tributary together with the availability of alternate locations in providing recreation water combine to raise serious questions as to the appropriateness of an impoundment at the Royal Glenn site. Further, the complete compatibility of this project with the overall management objectives of both the Spruce Knob-Seneca Rocks National Recreation Area and the entire Potomac River Basin must be demonstrated before a sound decision can be reached.

ROYAL GLEN RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	20,000	200,000	280,000	480,000
Fishing and Hunting -	---	31,500	---	31,500
Annual Benefits -	$10,000	$391,300	$420,000	$645,000[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$2,350,000	$1,570,000	$3,920,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 48,000	200,000
Future Increment	$ 26,000	280,000
Ultimate[2]	$ 74,000	480,000
Fishing and Hunting (gross)	(included above)	31,500
	Total - $74,000	Total - 511,500

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 19,000
Future Increment	$ 7,000
	Total - $ 26,000

1. Initial - Concurrent with construction of the project.
2. Ultimate -Five years after installation of the project.
3. Average Annual Equivalent

HIPES RESERVOIR
Subregion C

General Description

The damsite for Hipes Reservoir project is located on Craig Creek, Botetourt County, Virginia, about 15 miles above the confluence with the James River. The reservoir lies within the boundaries of the Jefferson National Forest. Except for a few small tracts of land in the valley floor and abutting the project, land owned by the Federal Government is confied to the adjacent ridges.

The city of Roanoke is located about 1 hour's driving time to the south. Access is presently afforded by secondary State Highway Routes 615 and 606. These roads, although hard surfaced, are narrow and winding. The town of New Castle is about 14 miles southwest of the proposed damsite, and the town of Eagle Rock is about 6 miles east. Interstate Highways 64 and 81 follow routes passing about 15 miles to the north and east, providing access into the Appalachian Region from the more distant population centers of Washington, D.C., and Richmond, Virginia.

Topography of the area is characterized by a broad valley floor at an average elevation of 1,100 feet m.s.l. and between 3,000 and 7,500 feet in width in which Craig Creek meanders. The ridges on each side of the valley reach elevations of 2,000 to 3,000 feet. Mixed hardwood and pine forests cover the area except for cleared fields in the valley floor. Craig Creek downstream has the same physical characteristics as those found in the project--shallow, clear running, and narrow, following a well defined channel. No serious source of pollution has been identified in the creek in the project area.

The reservoir would be about 9 miles in length and have a conservation pool of 4,540 acres at 1,260 feet m.s.l. The shoreline would be varied and interesting because of the unique topographic characteristics formed by Craig Creek and the adjacent mountains. The reservoir would contain ten sizeable necks of land and several islands. These features are outdoor recreation resources generally recognized as having a high potential for a wide range of outdoor recreation activities.

Purposes of the project are to provide flood control, outdoor recreation, and water quality control. The area proposed for inundation and the adjacent land appear suitable for a wide range of outdoor recreation activities, including sightseeing,

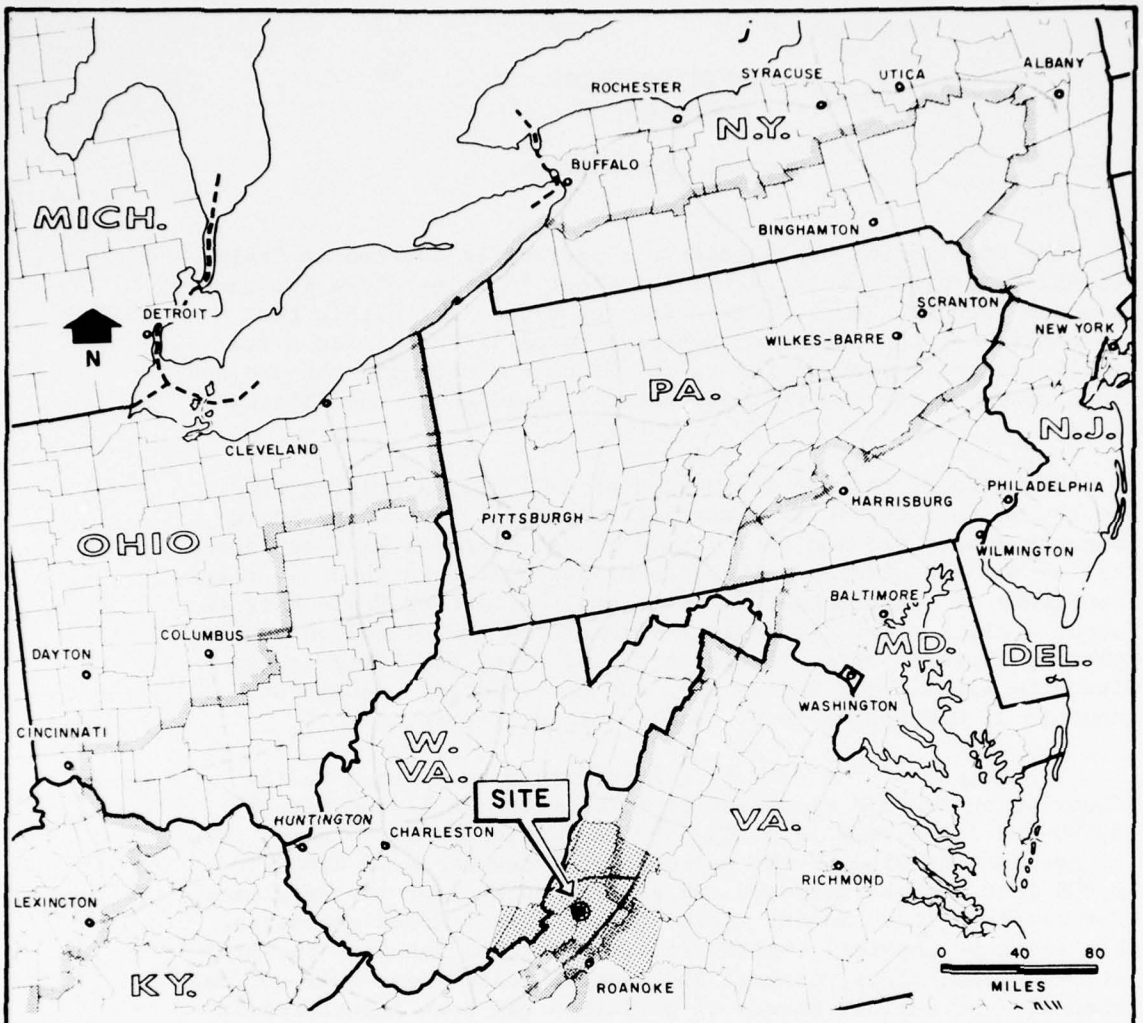


FIGURE 30

Appalachian Water Resource Survey

LOCATION MAP

HIPES RESERVOIR
VIRGINIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

hiking, driving for pleasure, boating, swimming, fishing, picknicking, and camping. Scattered dwellings appear to be used for summer houses. Evidence at road crossings and along the banks of Craig Creek shows that fishing and other incidental outdoor recreation uses occur.

Historic low-flow records show that reduction of reservoir water levels due to water quality releases of over 10 feet may be expected once in 6 years. This condition could occur generally toward the end of the recreation season in August. A drawdown over 15 feet may be expected once in 12 years and then only during extended dry periods. Under normal operating conditions, this pool would be full at least 50 percent of the period of evaluation. For the remaining time, the pool would still be substantially full and available to a wide range of outdoor recreation activities.

Archeological investigations have produced evidence of aboriginal occupation among the recorded sites indicating archeological values do exist. Five sites to be covered by water should be considered for further archeological investigation. Since iron deposits were responsible for several furnaces being constructed in the mid-nineteenth century, several associated sites have also been identified as having possible historic significance, such as Roaring Run Furnace and Lignite and the nearby iron mines.

The Recreation Market Area

Present participating population at the outdoor recreation development of the project is estimated to be 315,000 people. About three-quarters of these people reside outside the Appalachian Region. Recreation market area population, because of the urban composition of Roanoke and Lynchburg, is expected to double by the year 2000, although the population in the Appalachian counties of the market area are expected to increase only 20 percent. Average per capita income for this area in 1960 was $1,384, which was well below the national average of $1,850. Composition of the work force is also expected to change with a larger percentage of the workers employed in nonagricultural pursuits than at present. A sharp decline in agricultural employment is expected.

Estimated gross demand for the four activities generated within the eight-county recreation market area follows:

ESTIMATED CROSS DEMAND IN ANNUAL ACTIVITY DAYS
(1,000's)

Activity	1980	2000	2020
Boating	1,390	2,590	3,780
Swimming	3,570	6,450	9,330
Picnicking	1,970	3,260	4,540
Camping	470	980	1,480
Total Activity Days	7,400	13,280	19,120

At present, just over 10,500 acres of impounded water suitable for boating and other water-dependent activities are available to the people living in the recreation market area. Smith Mountain Reservoir southeast of Roanoke accounts for the largest acreage of which only a portion is within the market area. Likewise, approximately 640,000 acres of land suitable for various outdoor recreation activities are available, most of which is located in the Jefferson and George Washington National Forests. Facilities and opportunities for the four selected activities have been estimated to be sufficient to support the following in annual activity days:

Boating	434,000
Swimming	552,000
Picnicking	306,000
Camping	80,000
Total	1,372,000 Annual Activity Days

Proposed and authorized water resource projects, like the 2,500-acre Gathright Reservoir under construction and several small reservoirs included in the U.S. Department of Agriculture's upstream watershed projects, will provide additional water. Land being considered for acquisition around these projects will provide additional opportunities for outdoor recreation. The present needs in annual activity days for the four water-based activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS
(1,000's)

	Boating	Swimming	Picnicking	Camping
Demand	560	1,510	980	140
Supply	430	550	310	80
Needs	130	960	670	70

Outdoor Recreation Plan

Outdoor recreation is, and will continue to be, important to Water Subregion C. Estimates indicate that there are needs in water-dependent and water-enhanced activities in the subregion. The Hipes Reservoir project can contribute toward meeting these needs through the provision of facilities for boating, swimming, camping, fishing, picnicking, sightseeing, and hiking.

An estimated 1,500 acres of land, including the islands in the reservoir, are required at the suggested locations shown on the reservoir map to support the facilities. Some of the land acquired normally for other project purposes may be used for outdoor recreation. Provision of access to the east shore would open up large areas for the type of development envisioned. In addition, access to the creek below the damsite should be provided as one means of affording opportunities for outdoor recreation use.

Drawdown would have only a modest effect on the selection and choice of outdoor recreation facilities. It would also have a small effect on the ultimate outdoor recreation use which has been taken into consideration in the estimates of outdoor recreation use. The effect on the value of the outdoor recreation experience to the user is not considered significant over the life of the project.

Flows on the Craig Creek downstream from the reservoir should be of sufficient quality to support fishing and incidental outdoor recreation use. Although some minor pollution has been reported from upstream sources, these sources are not expected to discharge organic wastes in sufficient quantities to reduce outdoor recreation potentials.

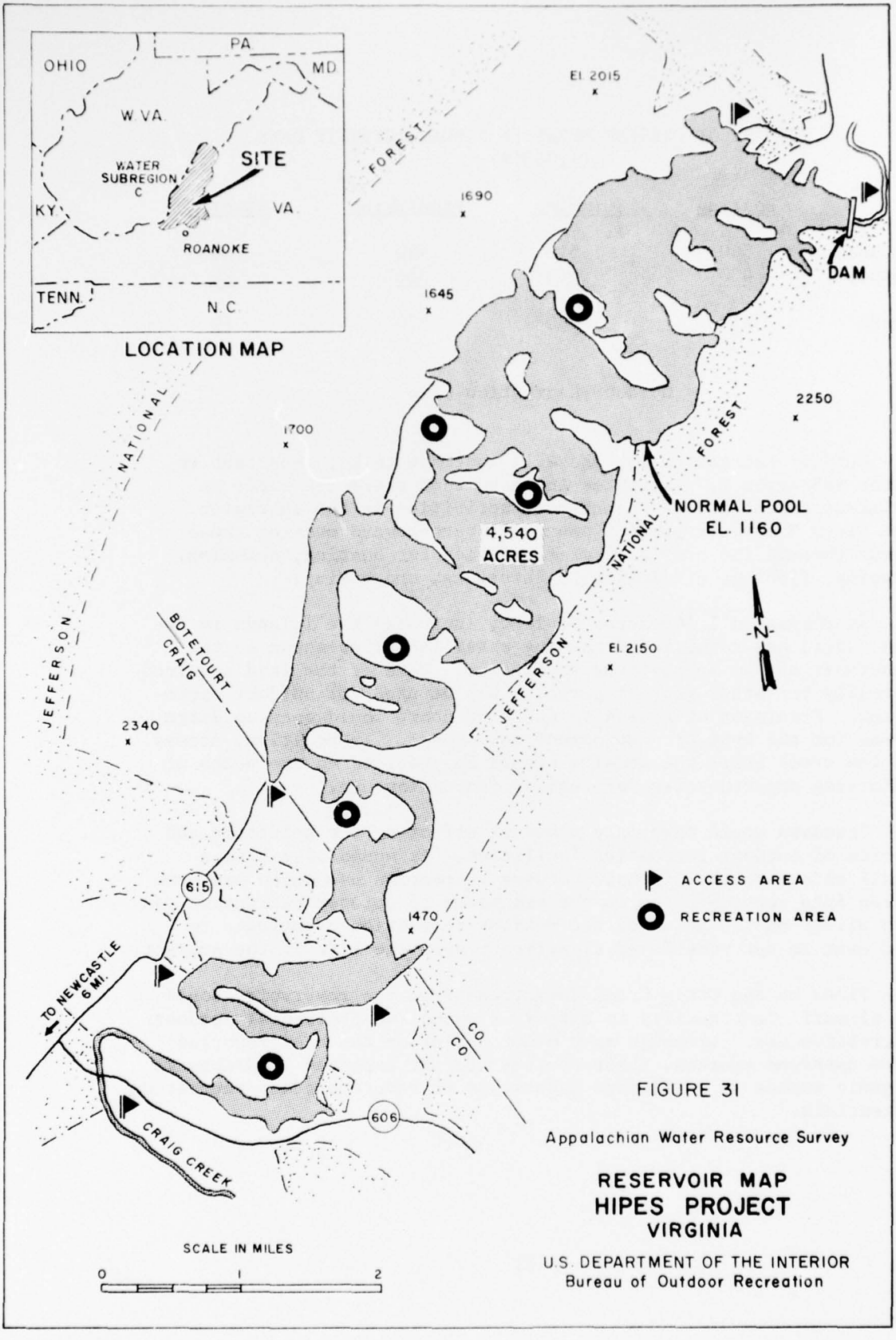


FIGURE 31

Appalachian Water Resource Survey

RESERVOIR MAP
HIPES PROJECT
VIRGINIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Estimated annual recreation days at the minimum level of outdoor recreation development would be 70,000. At maximum development, 371,600 recreation days annually would be expected at the initial stage of development and 996,600 at ultimate development by the year 1990. An estimated 71,600 recreation days of fishing would be derived annually at the reservoir.

Under an accelerated program, the U.S. Forest Service is proposing two major outdoor recreation complexes, including a small reservoir, in Jefferson National Forest, or recreation developments for Hipes Reservoir in lieu therof. These complexes are located near New Castle, Virginia, and Buchanan, Virginia, about 15 miles from the project area. To meet estimated long-range needs in the recreation market area, the complexes proposed by the Forest Service equivalent developments on Hipes Reservoir, including development by non-Federal agencies, or a combination of these will be required.

The size of the reservoir and the proximity to the Federally-administered recreation areas in Jefferson National Forest indicate that the appropriate level of outdoor recreation administration would be a combination of Federal and non-Federal agencies. The U.S. Forest Service has indicated its interest and intent to sponsor the principal outdoor recreation development of the reservoir. Since non-Federal public bodies have not yet indicated their intentions to administer project areas for outdoor recreation, some provision should be made for these non-Federal agencies until they are able to participate in future outdoor recreation development.

The following table gives estimated distances travelled by the users in percent of the annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site	Level of Recreation Development	
	Minimum	Maximum
(miles)	(Percent)	(Percent)
0 - 25	60	40
26 - 50	30	30
51 - 75	5	10
75 - Over	5	20

HIPES RESERVOIR*

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	70,000	300,000	625,000	925,000
Fishing and Hunting -	---	68,000	---	68,000
Annual Benefits -	$35,000	$516,200	$937,500	$1,012,200[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	2,760,250	2,638,000	5,398,250

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	120,000	300,000
Future Increment	61,700	625,000
Ultimate[2]	181,700	925,000
Fishing and Hunting (gross)	(included above)	71,600
	Total - 181,700	Total - 996,600

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	22,400
Future Increment	11,700
	Total - 34,100

1. Initial - Concurrent with construction of project.
2. Ultimate - By 1990.
3. Average Annual Equivalent

*Does not include effects of downstream fishery development.

ROARING RIVER RESERVOIR
Subregion D

General Description

The damsite for the Roaring River Reservoir is located in Wilkes County, North Carolina, approximately 50 miles west of Winston-Salem, North Carolina, and 10 miles northeast of Wilkesboro, North Carolina. Land uses are predominantly woodland of mixed hardwoods and pines broken by open fields for agriculture consisting of row crops and pasture areas.

Many rural residences are scattered throughout the area, mainly along the secondary paved roads. The terrain of the reservoir area is a rolling plateau with Roaring River flowing in a steep-walled, narrow valley. No resources of historical or archeological value have been identified in the proposed reservoir on which salvage or preservation would be necessary.

The Roaring River Reservoir would have an 821-acre summer recreation pool at elevation 1053 feet m.s.l. The reservoir would be long and narrow, the widest point being less than 1,000 feet. The shoreline would tend to be irregular and steep, which would restrict access to the water and related outdoor recreation development use. Primary purposes of the project are to provide flood control, water supply, water quality control, and recreation.

Drawdown during the summer recreation season would not be of any significance. The quality of the water of Roaring River should not restrict recreational activities on the proposed reservoir even though the river is presently turbid. Access to the reservoir site is by local secondary roads in connection with U.S. Highway 421, 10 miles south, and U.S. Highway 21, 10 miles east of the site. State Highways 18 and 268 are each within 5 miles of the site. The Blue Ridge Parkway is approximately 15 miles north of the proposed reservoir site.

The Recreation Market Area

Present participating population for the Roaring River Reservoir recreation market area is estimated to be 494,000. Approximately 50 percent of this population reside beyond 1 hour's driving time of the project. The population of this section of North Carolina and Virginia is expected to more than double by the year 2000. The per capita income for this area in 1960 was approximately $1,650, which

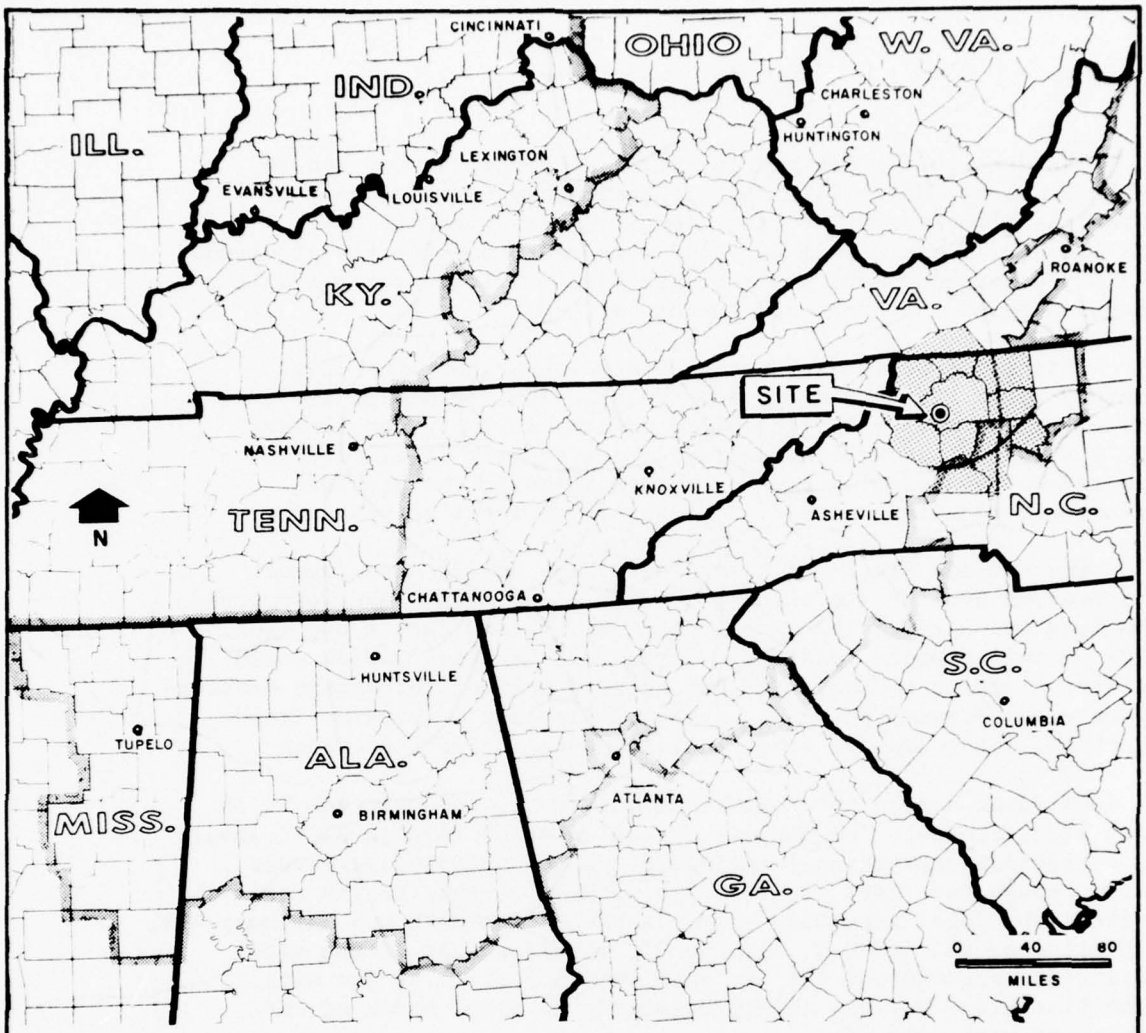


FIGURE 32

Appalachian Water Resource Survey

LOCATION MAP

ROARING RIVER RESERVOIR
NORTH CAROLINA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

was somewhat less than the United States average of $1,850; however, projections indicate this income of $1,650 will continue to increase and approach the national average by the year 2020. A decline in agricultural employment along with a substantial increase in non-agricultural employment is projected.

Estimates gross demand for these four activities generated within the twelve-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS

(1,000's)

Activity:	1980	2000	2020
Boating	2,090	3,880	5,680
Swimming	5,370	9,690	14,010
Picnicking	2,950	4,890	6,810
Camping	700	1,470	2,230
Total Activity Days	11,110	19,930	28,720

At present, about 3,700 acres of impounded water and about 163,000 acres of land are available for outdoor recreation use. Most of these lands are within the Pisgah National Forest. Resources and facilities are capable of supporting the following in annual activity days: boating, 120,000; swimming, 440,000; picnicking, 845,000; and camping, 300,000; totaling 1,705,000 annual activity days.

Impoundments being considered on the upper New River in North Carolina and Virginia, and on Fisher River, Mitchell River, and Reddies River would add approximately 19,000 acres of water. Several U.S. Department of Agriculture's upstream watershed projects will also provide water suitable for outdoor recreation. Lands being considered for acquisition around these sites will provide additional opportunities for the recreation market area. The present needs in annual activity days for the four activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS

(1,000's)

	Boating	Swimming	Picnicking	Camping
Demand	835	2,274	1,477	212
Supply	121	439	845	302
Needs	714	1,835	632	Excess

Outdoor Recreation Plan

Outdoor recreation is and will continue to be important to Water Subregion D. Estimates indicate that there are needs in the water-dependent and most water-enhanced activities in this portion of the subregion. The Roaring River Reservoir project can contribute toward meeting these needs through the provision of facilities for boating, swimming, camping, fishing, picnicking, sightseeing, and hiking. An estimated 300 acres of land are required at the suggested locations shown on the Reservoir Map to support the facilities in addition to land normally acquired for other project purposes. Access to the river below the damsite should be provided as one means of affording opportunities for incidental outdoor recreation use.

Estimated annual recreation days at the minimum level of outdoor recreation development would be 10,000. At the maximum level of outdoor recreation development, 121,000 recreation days annually are anticipated at the initial stage of development and 226,000 annual recreation days are anticipated 5 years after the initial stage, of which an estimated 16,000 recreation days are from fishing.

Flows of Roaring River downstream from the reservoir should be of sufficient quality to support incidental outdoor recreation use. This quality is generally recognized as the same level of quality which supports fishing. The size of the reservoir, its location, general characteristics of the area, and other factors indicate that the appropriate level of outdoor recreation administration should be non-Federal.

The following table gives the estimated distances travelled by the users at both minimum and maximum levels of recreation development by percent of annual recreation days:

Distance of Visitors' Residence from Site (miles)	Level of Recreation Development	
	Minimum (percent)	Maximum (percent)
0 - 25	85	60
26 - 50	5	15
51 - 75	5	15
Over 75	5	10

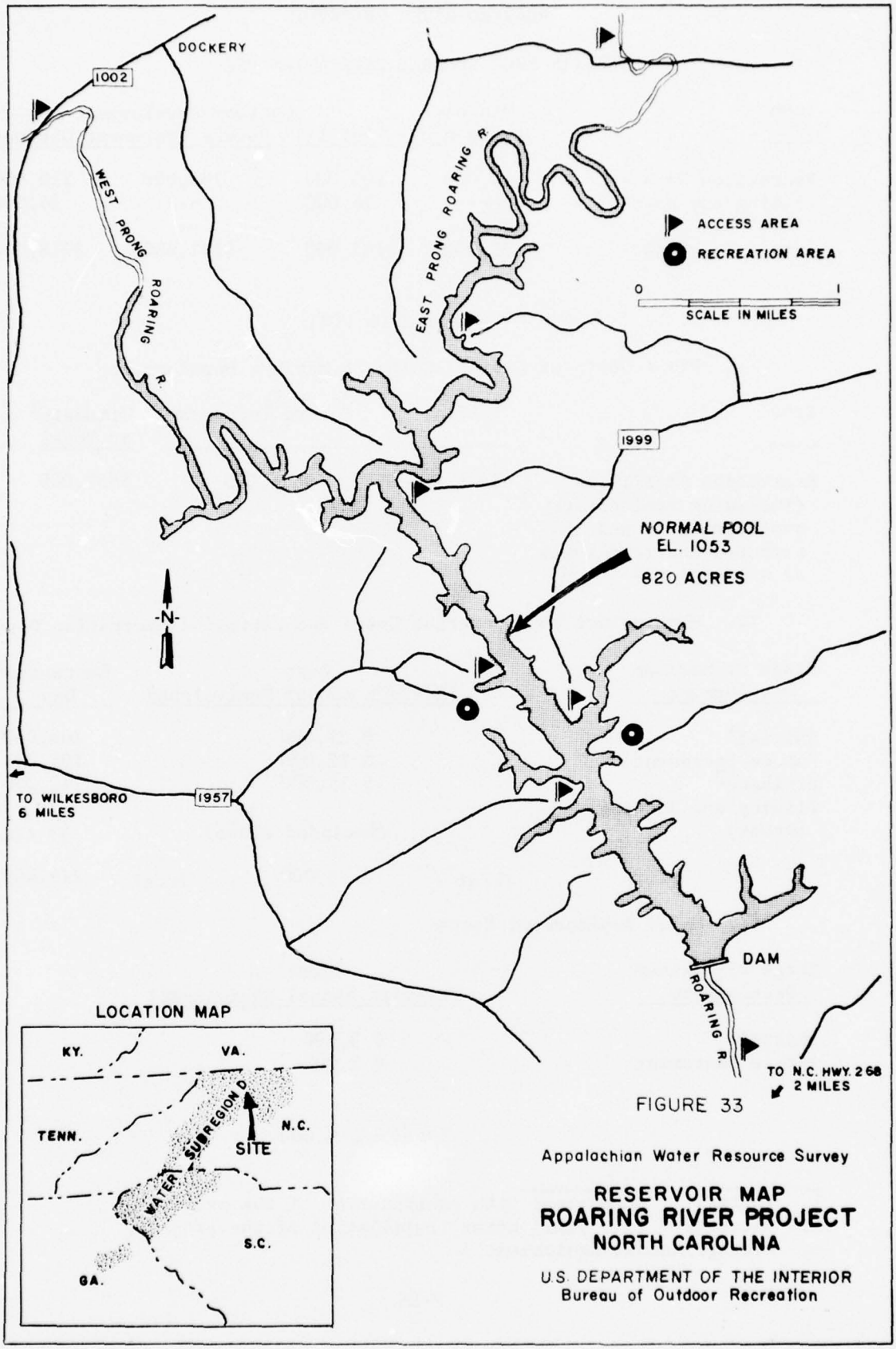


FIGURE 33

Appalachian Water Resource Survey

RESERVOIR MAP
ROARING RIVER PROJECT
NORTH CAROLINA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

ROARING RIVER RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	10,000	105,000	105,000	210,000
Fishing and Hunting -	---	16,000	---	16,000
Annual Benefits -	$5,000	$147,000	$131,000	$218,000[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$446,000	$411,000	$857,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 23,000	105,000
Future Increment	$ 12,000	105,000
Ultimate[2]	$ 35,000	210,000
Fishing and Hunting (gross)	(included above)	16,400
	Total - $ 35,000	Total - 226,400

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 3,000
Future Increment	$ 2,000
	Total - $ 5,000

1. Initial - Concurrent with construction of the project.
2. Ultimate - Five years after installation of the project.
3. Average Annual Equivalent

CLINCHFIELD RESERVOIR
Subregion D

General Description

The Clinchfield Reservoir project is located on Broad River in Rutherford and Polk Counties, North Carolina, approximately 5 miles north of Chesnee, South Carolina, and just north of the North Carolina-South Carolina State line. A small segment of the reservoir extends into Spartanburg County, South Carolina. The terrain of the general area is gently rolling to hilly with a portion of the Blue Ridge Mountain Range within sight of the project. The landscape is composed of stands of mixed hardwoods and pines broken by open fields. The existing land use in the area is agriculture. The Broad River winds its way gently through low hills and is normally slow moving and very turbid.

The reservoir would be 20 miles in length and some 2 miles in width at its widest point. The summer recreation pool would be about 20,220 acres at elevation 810 feet m.s.l. Reservoir drawdown would not be significant enough during the summer recreation season to affect outdoor recreation use. The approximately 350 miles of shoreline will be generally irregular with numerous arms and coves. These arms and coves as well as a gently sloping, several thousand-acre peninsular formed by the Green River and Broad River arms of the reservoir offer a high potential for outdoor recreation development.

Two factors adversely affect outdoor recreation: (1) the mainline of the Clinchfield Railroad paralleling the east side of the reservoir for 3 miles would limit access to this portion of the reservoir; and (2) a high voltage transmission line paralleling the south side of the reservoir for 2 miles would detract from the scenic qualities of much of this area.

Primary purposes of the Clinchfield Reservoir project are flood control, water supply, water quality control, and outdoor recreation. Access to the reservoir project is very good. U.S. Highway 221 parallels the reservoir 2 or 3 miles to the north and east, and the relocated U.S. Highway 74 will cross near the center of the reservoir. State Highway 9 parallels the reservoir 2 to 4 miles to the south and west. Interstate Highways 26, 85, and 40 will pass within a few miles of the reservoir.

The Clinchfield Reservoir and much of the adjacent land has the potential to provide a wide variety of outdoor recreation opportunities, including boating, swimming, camping, picnicking, hiking, fishing, driving for pleasure, and other active as well as passive pursuits. Present outdoor recreation use is generally centered around some incidental fishing along the Broad and Green Rivers and family outings at undeveloped and undesignated areas. Upstream from the dam no pollution problems have been identified on the Broad or Green Rivers.

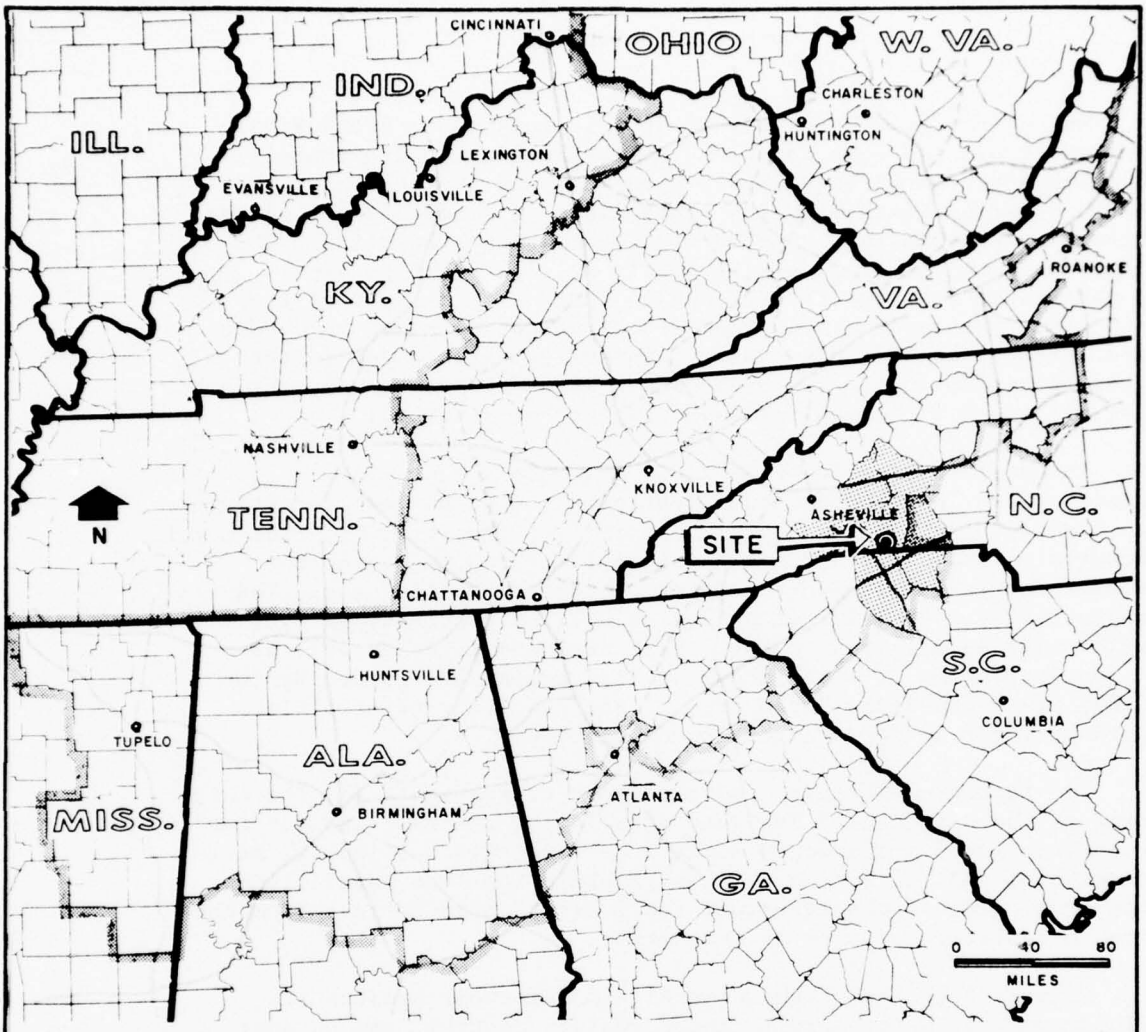


FIGURE 34

Appalachian Water Resource Survey

LOCATION MAP

CLINCHFIELD RESERVOIR
NORTH CAROLINA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

The area upstream for a distance of 4 miles from the damsite is rich in archeological sites. A thorough survey may identify between 150 and 200 sites ranging in time from archaic to historic.

The project area also contains the site of Fort McFadden. In addition, several historic structures of local and regional importance are located in the area. These structures include: (1) Cleghorn Plantation House near the confluence of Cleghorn Creek and the Broad River; (2) Cleghorn Mill; (3) The McKinney House on McKinney Creek; and (4) Coxe Plantation House on Green River. Should this project be constructed, considerable survey and salvage would be necessary.

The Recreation Market Area

Present participating population of the Clinchfield Reservoir recreation market area is 595,000 people. According to developmental benchmarks, the population of this section of North and South Carolina is expected to more than double by the year 2000. The influence of the population centers of Spartanburg and Greenville, South Carolina, and Charlotte, North Carolina, account for a large portion of this population increase. The per capita income of the area in 1960 was approximately $1,600, which was somewhat lower than the United States average in 1960 of $1,850. The per capita income of this area is, however, projected to steadily increase until it approaches the national average by 2020. In addition, a general decline in agricultural employment for this area in the years ahead is expected.

Estimated gross demand within the eight county recreation market area for the four basic activities is as follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS (1,000's)

Activity	1980	2000	2020
Boating	2,300	4,270	6,250
Swimming	5,900	10,660	15,400
Picnicking	3,250	5,380	7,500
Camping	780	1,600	2,450
Total Activity Days	12,230	21,910	31,600

Presently, there is a supply of over 16,000 acres of impounded water and more than 180,000 acres of land available for outdoor recreation use within 1 hour's driving time of the project. The major portion of this land area is within Pisgah National Forest. This land and water along with the associated facilities are capable of supporting 530,000 annual activity days of boating, 400,000 days of swimming, 180,000 days of picnicking, and 100,000 days of camping, comprising a total of more than 1,200,000 annual activity days.

Duke Power Company's Lake Norman, located approximately 20 miles outside the recreation market area has numerous outdoor recreation facilities and opportunities. Proposed and authorized water resource projects include the Duke Power Company's proposed Lake Keowee and Lake Jocassee projects. These projects will include outdoor recreation facilities and opportunities. They will be located approximately 30 miles west of the Clinchfield recreation market area. Located within the recreation market area are upstream reservoirs included in small watershed projects that have outdoor recreation potential. All of these resources could help in meeting a portion of the demand. The present needs for the four outdoor recreation activities are shown below:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS (1,000's)

	Boating	Swimming	Picnicking	Camping
Demand	919	2,502	1,626	233
Supply	527	397	178	96
Needs	392	2,105	1,448	137

Outdoor Recreation Plan

Outdoor recreation is and will continue to be important to water Subregion D. Estimates indicate that there are present needs in both water-dependent and water-enhanced activities in the subregion. The Clinchfield Reservoir project can contribute toward helping meet these needs by providing facilities for boating, swimming, camping, picnicking, sightseeing, and hiking.

An estimated 4,000 acres of land are required at the suggested locations shown on the Reservoir map to support the facilities in addition to land normally acquired for other project purposes. Access to the river below the damsite should be provided as one means of affording opportunities for incidental outdoor recreation use.

Estimated annual recreation days at the minimum level of outdoor recreation development would be 300,000. At the maximum level of outdoor recreation development, 671,400 recreation days annually are anticipated at the initial stage of development, 5,926,400 at ultimate development by the year 2000. Of this total 226,400 recreation days are estimated from fishing.

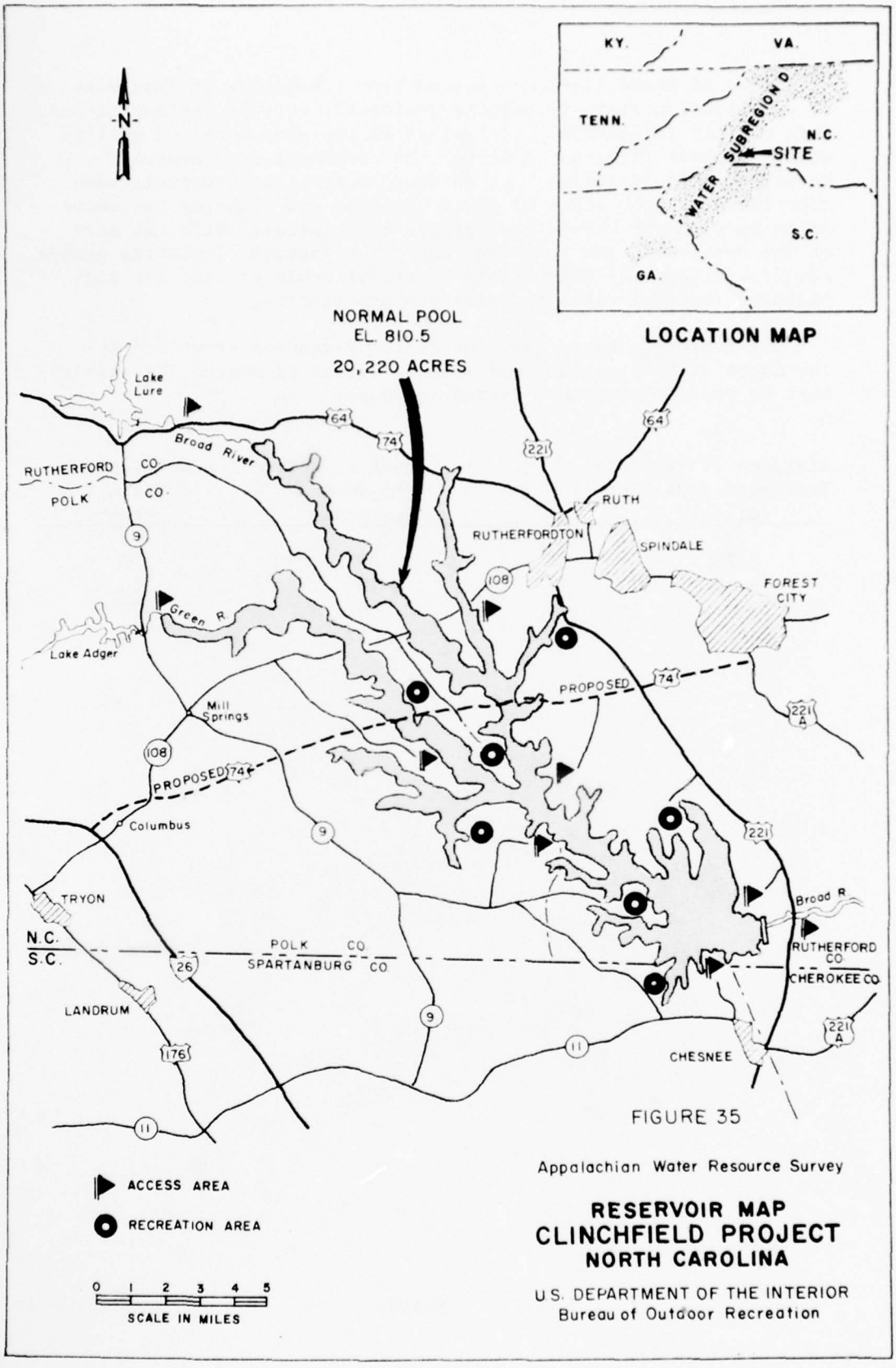


FIGURE 35

Appalachian Water Resource Survey

RESERVOIR MAP
CLINCHFIELD PROJECT
NORTH CAROLINA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Flows of Broad River downstream from the reservoir should be of sufficient quality to support incidental outdoor recreation use. This quality is generally recognized as the same level of quality which supports fishing. Although the reservoir is situated mainly in North Carolina, the outdoor recreation potentials are significant to the State of South Carolina and planning for recreation development should incorporate this factor. With the size of the reservoir, its location, and other factors, including proper administration, the Clinchfield Reservoir could provide for significant regional outdoor recreation opportunity.

The following table gives estimated distances travelled by the users at both minimum and maximum levels of recreation development by percent of annual recreation days:

Distance of Visitors' Residence from Site (miles)	Level of Recreation Development Minimum (percent)	Maximum (percent)
0-25	80	40
26-50	10	20
51-75	5	20
Over 75	5	20

CLINCHFIELD RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	300,000	445,000	5,255,000	5,700,000
Fishing and Hunting -	---	217,500	---	217,500
Annual Benefits -	$150,000	$777,350	$6,568,750	$3,393,000[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$2,023,000	$4,462,000	$6,485,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 185,000	445,000
Future Increment	$ 421,000	5,255,000
Ultimate[2]	$ 606,000	5,700,000
Fishing and Hunting (gross)	(included above)	226,400
	Total - $ 606,000	Total -5,926,400

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 9,000
Future Increment	$ 14,000
	Total -$ 23,000

1. Initial - Concurrent with construction of the project.
2. Ultimate -By about the year 2000.
3. Average Annual Equivalent

CURRY CREEK RESERVOIR
Subregion D

General Description

The damsite for the project is located on the North Oconee River, Jackson County, Georgia, about 12 miles north of Athens. The terrain ranges from rolling to hilly and having pleasing scenic qualities. Land uses are predominantly woodland of mixed hardwoods and pines interspered with agricultural land, dairies, livestock farms, and poultry operations. Rural residences are scattered throughout the countryside, mainly along the major existing hard-surfaced highways.

The Curry Creek Reservoir project would have a normal pool at elevation 700 feet m.s.l. of about 5,700 acres. The shoreline would be irregular and would provide numerous coves and arms, thus enhancing the area for a wide range of outdoor recreation activities. The reservoir area would inundate North Oconee River for approximately 7 miles and Big Curry Creek for about 5 miles. Under normal operating conditions, the reservoir would have minor drawdowns during the outdoor recreation season from June through August.

The North Oconee River downstream from the damsite has similar physiographic characteristics as those found in the project area--shallow, winding, and turbid water courses following well-defined channels. Upstream from the damsite, the Big Curry Creek tributary receives the only significant pollution which may adversely affect outdoor recreation activities from sources located in or near the city of Jefferson.

Access to the reservoir area via interstate, Federal, State, and local roads is good from all directions. Interstate Highway 85, lying to the north of the site, provides excellent access from metropolitan Atlanta, about 55 miles to the west. Evidence at road crossings in the project area and downstream shows that fishing and other incidental outdoor recreation uses occur. In addition, the proximity of the University of Georgia and its related research institutions in and around Athens is within an easy half hour's drive from about any part of the reservoir area. The water area and the adjacent land appear suitable for a wide range of outdoor recreation activities, including sightseeing, hiking, driving for pleasure, fishing, boating, picnicking, swimming, and camping. The primary purposes of the project are flood control, outdoor recreation, and water supply.

One concentration of stone mounds and linear walls if of aboriginal construction, could yield important archeological data.

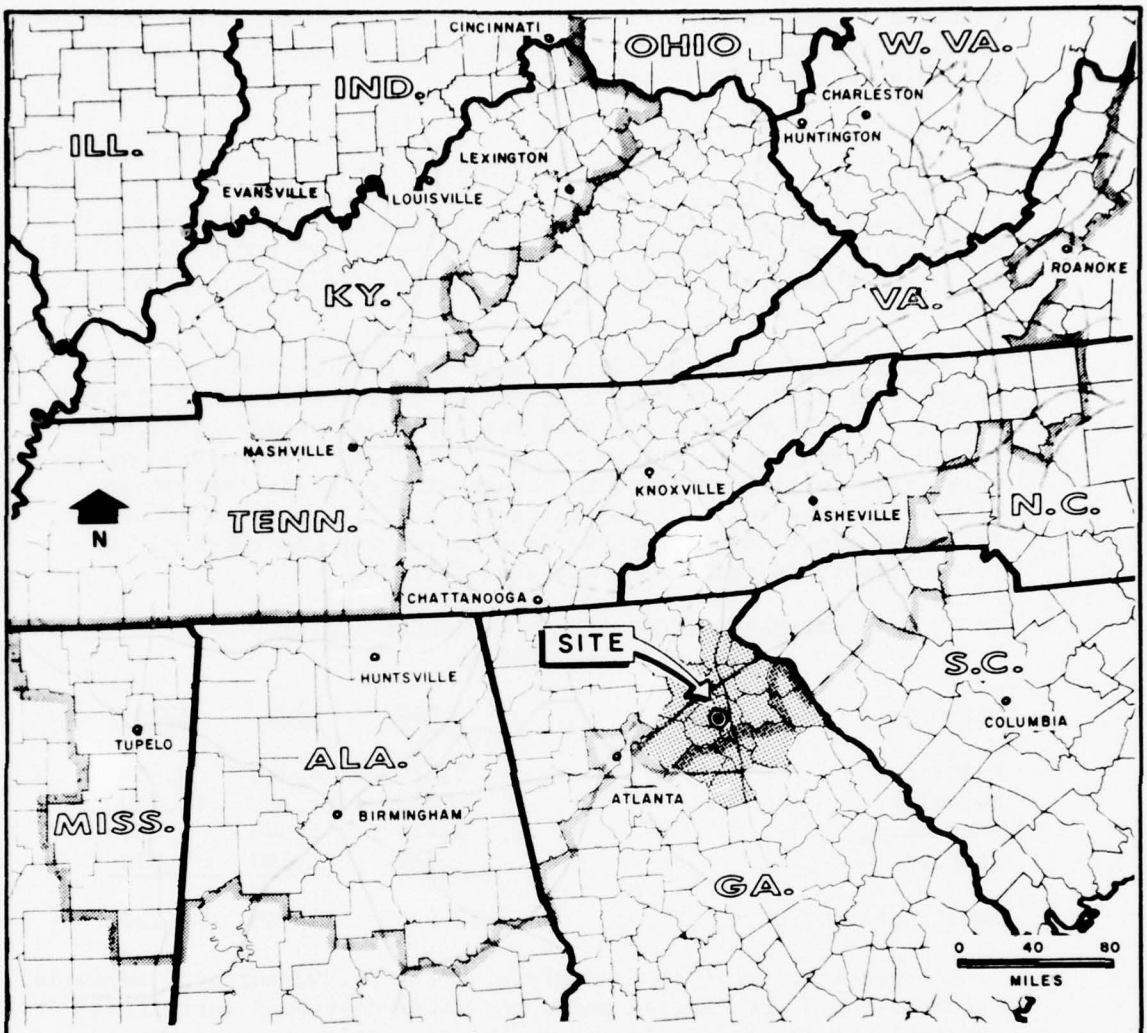


FIGURE 36

Appalachian Water Resource Survey

LOCATION MAP

CURRY CREEK RESERVOIR
GEORGIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

No significant resources of either historical or natural science value have been identified on which preservation would be necessary, although remnants of pioneer millsites and the extensive swamps including beaver ponds were found.

The Recreation Market Area

Present participating population at the outdoor recreation development at the project is estimated to be 570,000 people. About two-thirds of these people reside outside the Appalachian Region.

The recreation market area population is expected to double by the year 2000. Per capita income of this population in 1960 was $1,214, which was well below the national average of $1,850. Income is expected to triple by the year 2000. Composition of the work force is also expected to change with a larger percentage of workers employed in nonagricultural pursuits than at present. Estimated gross demand for the four activities generated within the 16-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS
(1,000's)

Activity	1980	2000	2020
Boating	2,410	4,480	6,550
Swimming	6,190	11,170	16,150
Picnicking	3,410	5,640	7,850
Camping	810	1,690	2,570
Total Activity Days	12,820	22,980	33,120

At present, there is a supply of about 76,000 acres of impounded water suitable for boating and other water-dependent activities available to the people living in the recreation market area. Lake Lanier, northeast of Atlanta, Georgia, accounts for the largest acreage. Likewise, there are approximately 106,000 acres of land suitable for various outdoor recreation activities. Facilities and opportunities for the four selected activities have been estimated to be sufficient to support the following in annual activity days: boating--2,475,000; swimming--416,000; picnicking--493,000; and camping--68,000; for a total of 3,452,000 annual activity days.

Proposed and authorized water resource projects like the Georgia Power Company's Lauren Shoals Reservoir and the several

small reservoirs included in the Little Sandy Creek and Trail Creek Upstream Watershed projects and Trotter's Shoals Reservoir project, will provide approximately 43,000 acres of additional water sufficient to support about 1.4 million additional activity days of boating. Land being considered for acquisition around the project, including proposed lands for a national recreation area at Trotter's Shoals Reservoir, will provide additional opportunities for outdoor recreation. Present needs in annual activity days for the four water-based activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS
(1,000's)

	Boating	Swimming	Picnicking	Camping
Demand	960	2,620	1,700	250
Supply	2,480	420	490	70
Needs	Excess	2,200	1,210	180

Outdoor Recreation Plan

Outdoor recreation is and will continue to be important to Water Subregion D. Estimates indicate that there is sufficient water acreage to meet needs in boating until about the year 2000. After that time, the needs will grow rapidly. On the other hand, there are current and future needs for opportunities in picnicking, swimming, and camping.

The outdoor recreation resources of the Curry Creek Reservoir project should be properly developed to meet these future needs. However, current and future needs to the year 2000 for picnicking, swimming, and camping could be met by expansion of public outdoor recreation areas in the subregion offering, or capable of offering, similar opportunities.

The project can contribute to meeting the needs after the year 2000 through the provision of facilities for boating, swimming, picnicking, camping, sightseeing, and hiking. An estimated 1,500 acres of land suitable for outdoor recreation is required at the suggested locations shown on the Reservoir Map to support the facilities. This land is in addition to land acquired normally for the 300-foot access strip around the reservoir site.

Flows of the North Oconee River downstream from the reservoir should be of sufficient quality to support incidental recreation use. This quality is generally recognized as the same level of

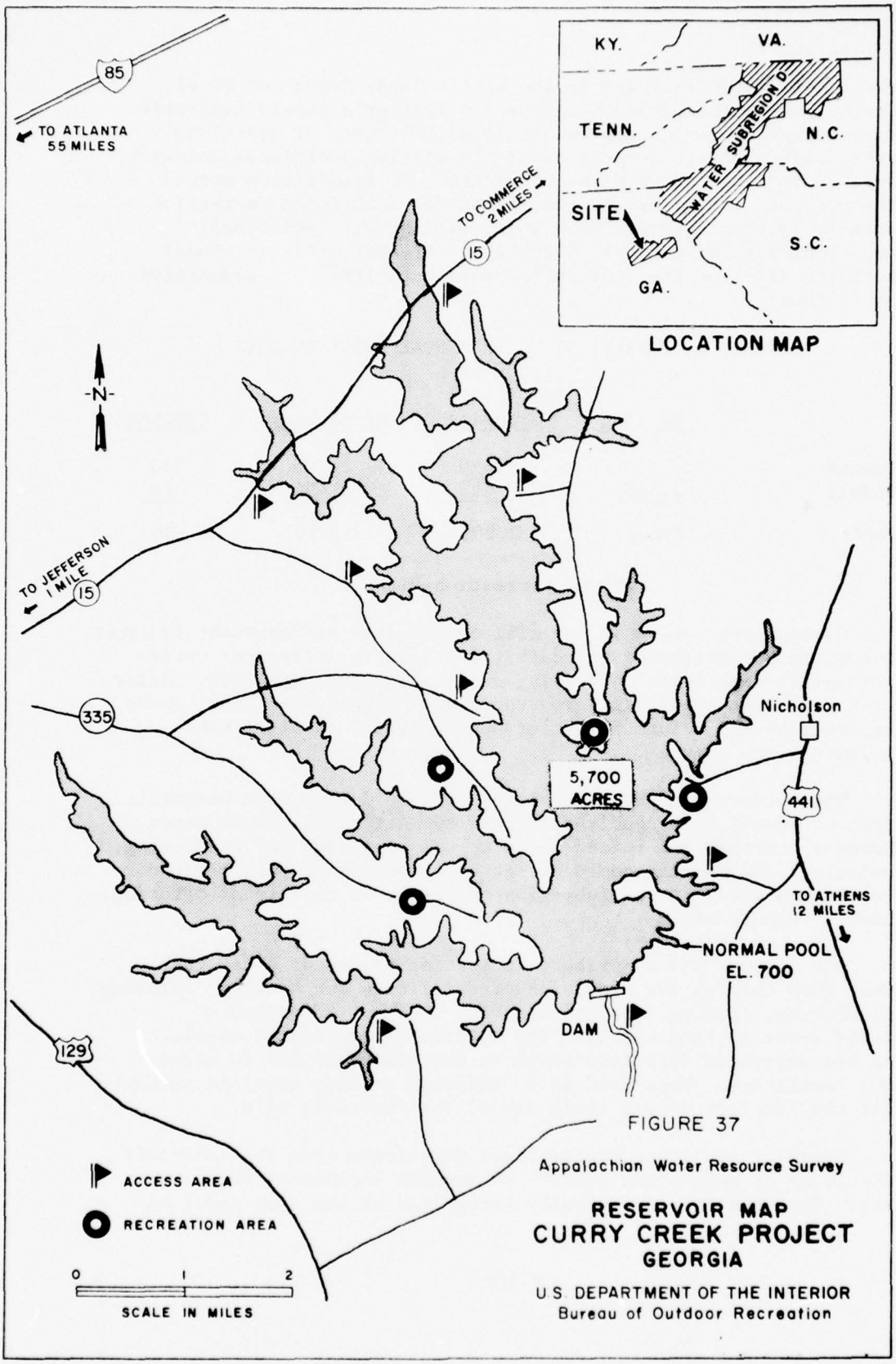


FIGURE 37

Appalachian Water Resource Survey

RESERVOIR MAP
CURRY CREEK PROJECT
GEORGIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

quality which supports fishing. Although the generally high level of treatment now being effected for wastes above the reservoir area is expected to continue, population and industrial growth will add to the waste load entering the project area. Additional treatment will be required to prevent contamination of the upper reaches, especially on the Big Curry Creek arm. The remaining portions of the reservoir and immediately downstream from the dam should be satisfactory for water-contact outdoor recreation activities.

Estimated annual recreation days at the minimum level of outdoor recreation development would be 95,000. At the maximum level of outdoor recreation development which includes 100,000 recreation days of fishing, initial use is expected to be 400,000 recreation days annually increasing to an ultimate use of 1,600,000 by about the year 2020.

The size of the reservoir and the proximity of Lake Lanier and to the federally administered recreation areas in the national forests indicate that the appropriate level of recreation administration would be non-Federal. In event that the non-Federal public bodies do not indicate their intention to administer project areas for outdoor recreation, provision should be made to provide minimum outdoor recreation facilities for public health and safety.

The following table gives estimated distances travelled by the users in percent of the annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site (miles)	Level of Recreation Development Minimum (percent)	Maximum (percent)
0 - 25	80	50
26 - 50	5	10
51 - 75	10	25
Over 75	5	15

CURRY CREEK RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	95,000	300,000	1,200,000	1,500,000
Fishing and Hunting -	---	98,000	---	98,000
Annual Benefits -	$47,500	523,000	1,500,000	$ 586,000[3]

GENERAL RECREATION COSTS

1. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$1,582,000	$3,465,000	$5,047,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 42,000	300,000
Future Increment	$ 45,000	1,200,000
Ultimate[2]	$ 87,000	1,500,000
Fishing and Hunting (gross)	(included above)	100,000
	Total - $ 87,000	Total - 1,600,000

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 0
Future Increment	$ 0
	Total - $ 0

1. Initial - Between the years 1995 and 2000.
2. Ultimate - By about the year 2020.
3. Average Annual Equivalent

DALTON RESERVOIR
Subregion E

General Description

The damsite for the project is approximately 5½ miles southeast of Dalton, Georgia, on the Conasauga River at mile 24.8 between Whitfield and Murray Counties. The terrain ranges from rolling in the north and eastern part of the reservoir area to hilly in the southeastern part. The landscape is generally composed of agricultural lands interspersed with wooded hillsides. The river follows a well-defined channel and is narrow, winding, and turbid in the reservoir area and downstream. No source of serious pollution has been identified in the river upstream from Dalton.

The reservoir would be about 10 miles in length and would have a recreation pool of approximately 8,650 surface acres at 680 feet m.s.l. There would be no significant drawdown during the outdoor recreation season from June through August. The shoreline would be irregular, providing numerous coves and arms which enhance the reservoir area and the adjacent lands for a wide range of outdoor recreation activities.

Primary purpose of the project is to provide water supply and water quality control in the Rome-Dalton, Georgia growth area. Other purposes would include flood protection, recreation, and fish and wildlife enhancement.

Access to the general area is good at present from all directions, and most of the local roads are hard surfaced. Interstate Highway 75, located 5 miles west of the site, would provide excellent access from both the Atlanta and Chattanooga population centers. The water area and adjacent land appear suitable for wide range of activities, including sightseeing, hiking, driving for pleasure, boating, picnicking, fishing, swimming, and camping. Evidence at road crossings and along the banks of the Conasuaga River shows the fishing and other incidental outdoor recreation uses occur.

Two important historical sites are located near the project area and are preserved by the Georgia Historical Commission. The Chief Vann House will be on the very edge of the reservoir near Spring Place. New Echota, established in 1826 as the "Capitol of the Creek Nation," lies south of the dam and is near Calhoun. The sites of several structures associated either with the Van House

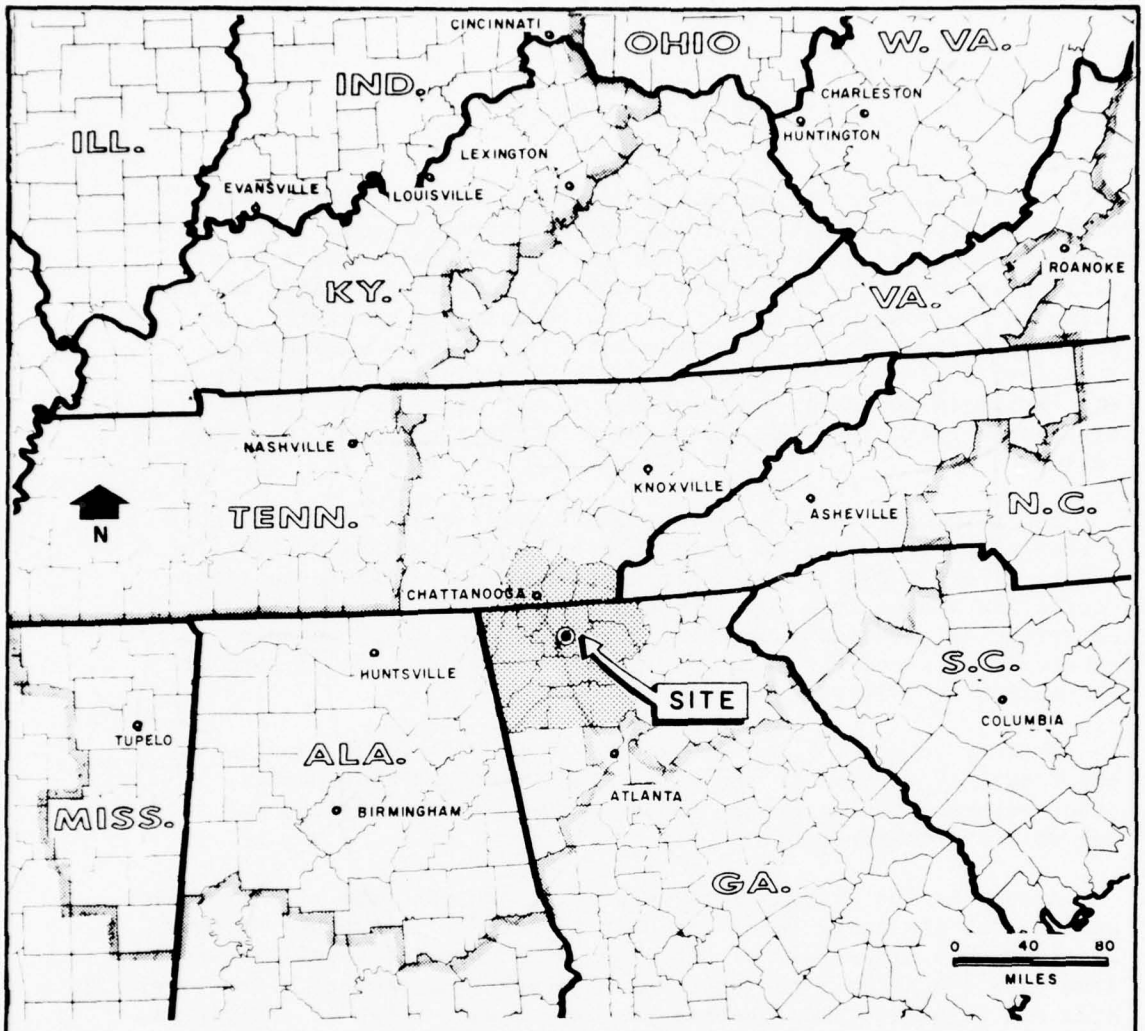


FIGURE 38

Appalachian Water Resource Survey

LOCATION MAP

DALTON RESERVOIR
GEORGIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

or with nearby 1801 Moravian Mission are located within the projected reservoir. Those sites include the Vann Mill, the Vann Trading Post (exact location not yet known), and the Moravian brick kiln located near the Vann House.

General archeological information on the proposed area is meager. A field survey produced only two sites; however, field conditions at the time were not favorable for site survey. When the project is authorized, additional survey and a program of salvage of both the archeological and historical information will be necessary.

The Recreation Market Area

Present participating population is estimated to be 565,000 people. The population in the northwest section of Georgia of the Appalachian Region is expected to almost double by the year 2000. Average per capita income in this area in 1960 was $1,292, which was well below the national average of $1,850. It is expected to more than triple by the year 2000. Composition of the work force is also expected to change, with a larger percentage of the workers employed in nonagricultural pursuits than at present. A sharp decline in agricultural employment is expected.

Estimated gross demand for the four activities generated within the 16-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS
(1,000's)

Activity	1980	2000	2020
Boating	2,370	4,410	6,460
Swimming	6,100	11,010	15,930
Picnicking	3,360	5,560	7,740
Camping	800	1,670	2,530
Total Activity Days	12,630	22,650	32,660

At present, there is a supply of about 56,000 acres of impounded water suitable for water-dependent activities available to the people living in the recreation market area. Lake Allatoona

near Atlanta and Lake Chickamauga near Chattanooga account for the largest acreage. Likewise, there are approximately 390,000 acres of land suitable for various outdoor recreation activities. Facilities and opportunities for the four selected activities have been estimated to be sufficient to support the following in annual activity days: boating 1,828,000; swimming 980,000; picnicking 1,024,000; and camping 486,000, for a total of 4,318,000 annual activity days.

Proposed and authorized water resources projects like the 3,220-acre Carter's Reservoir, under construction, and several small reservoirs included in the U.S. Department of Agriculture's upstream watershed projects, will provide additional water. Land being considered for acquisition around these projects will provide additional opportunities for outdoor recreation. Present needs in annual activity days for the four water-based activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS
(1,000's)

	Boating	Swimming	Picnicking	Camping
Demand	950	2,590	1,680	240
Supply	1,830	980	1,020	490
Needs	Excess	1,610	660	Excess

Outdoor Recreation Plan

Outdoor recreation is and will continue to be important to Water Subregion E. Estimates indicate that there is sufficient water acreage to meet the needs in boating and related water-dependent activities at the present time, although boating needs will grow rapidly in the future. In addition, there are current or future shortages of opportunities in picnicking, swimming, and camping. The outdoor recreation resources of the Dalton Reservoir project should be properly developed to meet the future needs. However, current and future needs for picnicking and camping prior to installation could be met by expansion of public outdoor recreation areas in the subregion offering, or capable of offering, similar opportunities.

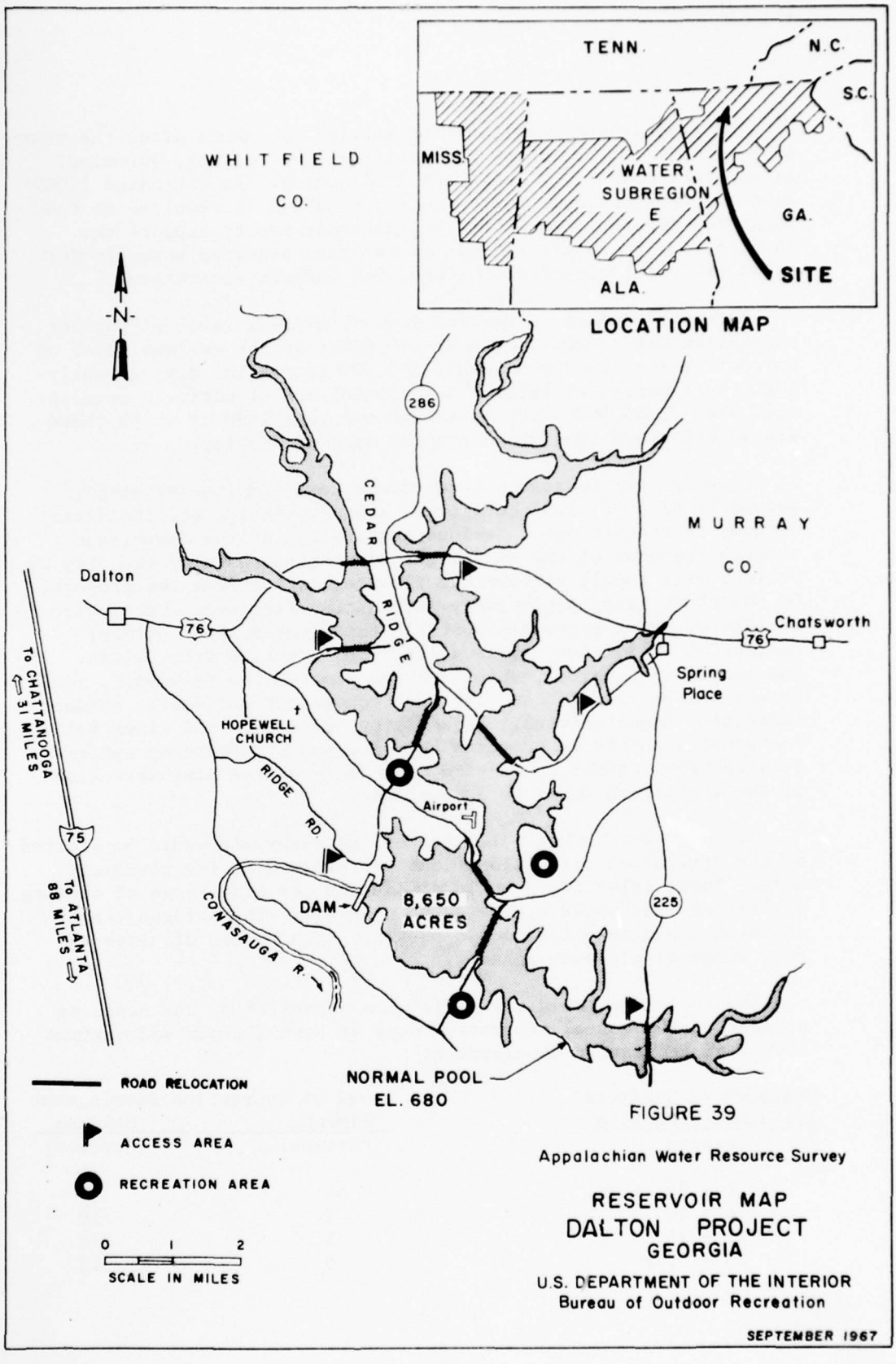


FIGURE 39

Appalachian Water Resource Survey

RESERVOIR MAP
DALTON PROJECT
GEORGIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

SEPTEMBER 1967

The project can contribute to meeting the needs after the year 1975 through the provision of facilities for boating, swimming, picnicking, camping, sightseeing, and hiking. An estimated 2,000 acres of land suitable for outdoor recreation is required at the suggested locations shown on the reservoir map to support the facilities. In addition, some of the land acquired normally for other project purposes may be used for outdoor recreation.

Estimated annual recreation days at minimum level of outdoor recreation development would be 150,000. At the maximum level of outdoor recreation development, 572,000 recreation days annually would be expected at initial development and at ultimate development over 2,384,000 sometime around the year 1990 of which there are an estimated 204,000 recreation days of fishing.

Flows on the Conasauga River downstream from the Reservoir should be of sufficient quality to support fishing and incidental outdoor recreation use. Serious degradation of the downstream stretch, because of the discharges of treated waste by the city of Dalton, will result without low flow regulation from the project. On the other hand, preliminary information indicates that a good quality of water generally suitable for water-contact outdoor recreation activities may be anticipated upstream from Dalton. The location of Dalton, about 5 miles west of the reservoir, would assure the people of that city with convenient and nearby outdoor recreation opportunities. In addition, access to the river below the damsite should be provided as one means of affording opportunities for outdoor recreation use. Non-Federal administration of the facilities would be appropriate.

The recreation potential of the reservoir would be limited by the five major road relocations anticipated in the reservoir area. These relocations would discourage the wide range of boating activities that would otherwise be possible. The bridges, their abutments, and road fill would obstruct open bodies of water to many forms of pleasure boating.

The following table gives distance travelled by the users in percent of the annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site (miles)	Level of Recreation Development	
	Minimum (Percent)	Maximum (Percent)
0 - 25	85	60
25 - 50	5	10
51 - 75	5	15
75 - Over	5	15

DALTON RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	150,000	368,000	1,812,000	2,180,000
Fishing and Hunting -	---	192,000	---	192,000
Annual Benefits -	$75,000	$658,000	$2,265,000	$1,410,000[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$2,504,000	$4,800,000	$7,304,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 131,000	368,000
Future Increment	$ 147,000	1,812,000
Ultimate[2]	$ 278,000	2,180,000
Fishing and Hunting (gross)	(included above)	204,000
Total -	$ 278,000	Total - 2,384,000

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 13,000
Future Increment	$ 1,000
Total -	$ 14,000

1. Initial - Concurrent with installation of the project.
2. Ultimate - By about the year 1990.
3. Average Annual Equivalent

ST. PETERSBURG RESERVOIR
Subregion F

General Description

The Clarion River of northwestern Pennsylvania is a major tributary of the Allegheny River. It is a scenic waterway flowing through the high hills and narrow valleys of the Appalachian Plateau. The Clarion's principal tributary is the East Branch, which rises in southern McKean County. As this stream flows southwesterly into Elk County, its waters are impounded by the East Branch Dam. Subsequently, the East Branch together with lesser tributaries form the Clarion approximately where the River is the common boundary between Forest, Elk, and Jefferson Counties. The Clarion River continues southwesterly into Clarion County where it meanders through the narrow valley to the broad Allegheny River near Parker, Pennsylvania.

On the upper reaches of the Clarion River, there is an extensive forest cover of mixed hardwoods and conifers which is occasionally interrupted by small farms and villages. The Allegheny National Forest, Cook State Forest, and numerous State game lands have assisted to preserve the existing semi-wilderness character.

On the lower Clarion, the forest cover serves as a bold visual barrier in keeping the rolling agricultural and pasture land north of the river from encroaching on the river itself. South of the river, the undulating relief is best described as a series of hills with alternate characteristics of forest and farm.

Extraction of coal, oil, and natural gas resources in Clarion County has resulted in seemingly permanent scars on the landscape as well as acid pollution in the main stream. Clarion is one of Pennsylvania's most productive coal counties. Extensive networks of high wall and spoil bank bear witness. Although strip-mine reclamation is taking place in Clarion County, within the project area, approximately 5,000 acres are affected.

Numerous aboriginal sites have been reported in the reservoir area as having possible archeological significance. Additional investigations would be necessary before dam construction. In addition, vestiges of an early pioneer iron industry were also encountered, including remains of iron furnaces. Two of these remains, Buchanan Furnace and Eagle Furnace, have been identified as historical resources worthy of consideration for salvage.

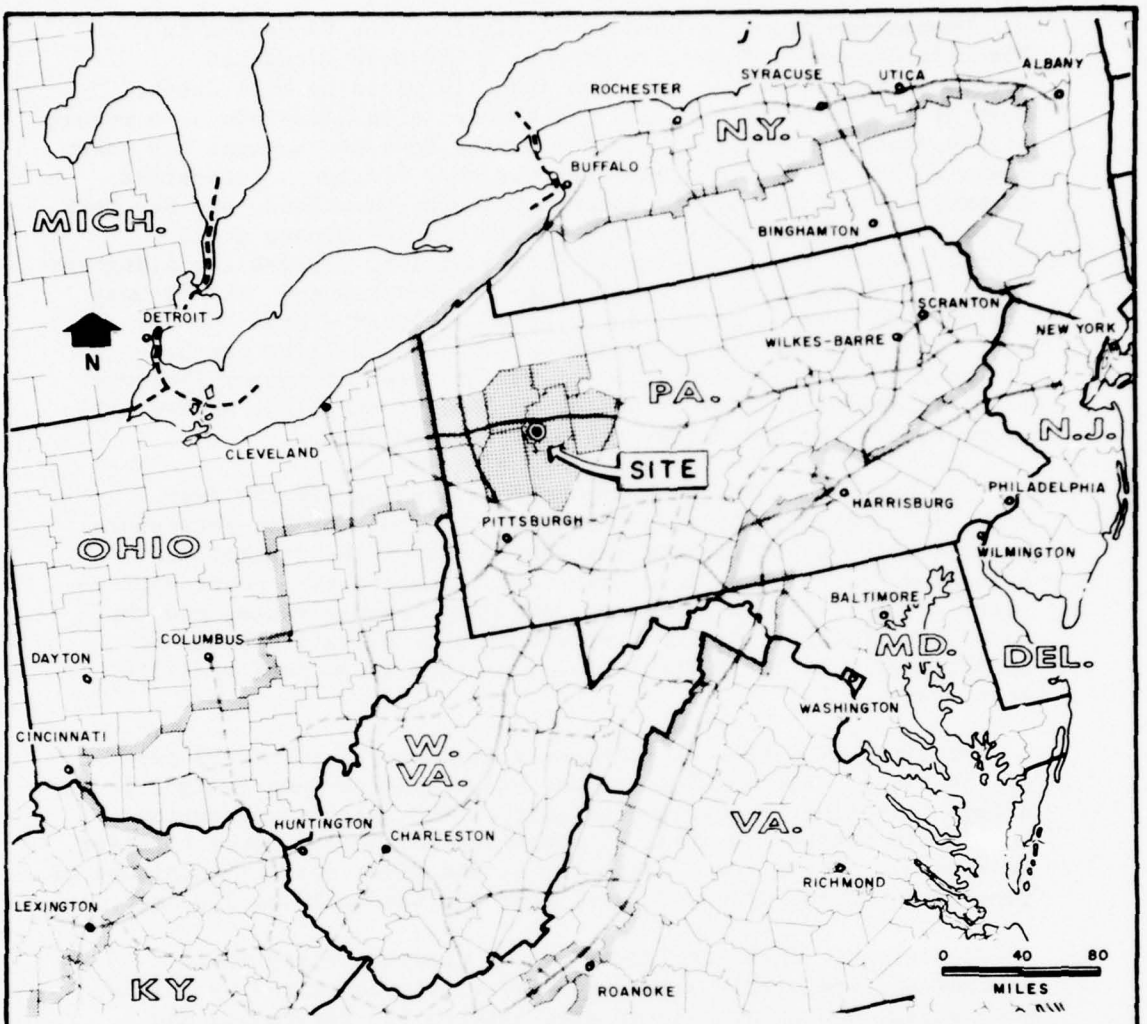


FIGURE 40

Appalachian Water Resource Survey

LOCATION MAP

ST. PETERSBURG RESERVOIR
PENNSYLVANIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Downstream from the Borough of Clarion, the Pennsylvania Electric Company's Piney Dam creates a 650-acre elongated reservoir which extends upstream about 10 miles to Mill Creek. Most of the shoreline of Piney Reservoir is inaccessible as a result of the adjacent terrain. Limited summer home development has taken place on either side of the reservoir near Clarion. Interstate Highway 80, a major artery between Chicago, Cleveland, and New York, is presently under construction in the Clarion County area. Locally termed the Pennsylvania Shortway, I-80 crosses the Allegheny River and enters Clarion County near St. Petersburg. The highway crosses the Clarion River near Clarion. Within Clarion County, seven interchanges are planned--four of which will be northwest of the river. Upon completion of the proposed Allegheny Shortway from Pittsburgh to I-80 in Jefferson County, excellent access will be provided from the Pittsburgh metropolitan area.

The damsite, a concrete structure approximately 250 feet high, is located in Clarion County to the south of St. Petersburg about 5 miles upstream from the confluence of the Clarion and Allegheny Rivers. The impoundment would extend to a point approximately 5 miles downstream from Cooksburg, Pennsylvania, and the Cook State Forest. Maximum recreation pool elevation would be approximately at 1,130 feet m.s.l.; maximum flood pool at 1,150 feet m.s.l.

Preliminary estimates indicate a drawdown of 5 feet 92 percent of the time. This drawdown is not considered to have a significant effect on outdoor recreation activity. The maximum recreation pool would create 110 miles of shoreline and 10,140 acres of water. As a result of the steep character of the river and the magnitude of impounded waters, depth of water near the dam would be 250 feet.

Topographic characteristics of the Clarion Valley would produce an irregularly shaped reservoir, characterized by inlets, peninsulas, and a large water area between St. Petersburg and Sligo. To the northeast, the reservoir would completely envelop the Piney Dam and Reservoir. Land adjacent to the pool is characterized by interchanging rolling plain. By the very nature of this landscape, areas suitable for recreation and other land-use developments become singular entities as a result of natural topographic barriers.

Recreation Market Area

Participating population estimated for St. Petersburg Reservoir outdoor recreation development is 1,297,300. This population is expected to increase about 60 percent by the year 2000. Most of

this increase will be found around the Pittsburg metropolitan area. Estimated gross demand for the four water-based activities generated within the eight-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS
(1,000's)

Activity	1980	2000	2020
Boating	2,670	4,970	7,270
Swimming	13,800	24,920	36,030
Picnicking	4,950	8,190	11,410
Camping	840	1,740	2,240
Total Activity Days	22,260	39,820	56,950

Presently there are about 14,000 acres of impounded water suitable for boating and other water-dependent activities available for public use. The Allegheny River between East Brady and Pittsburgh, Lake Shenango, and Crooked Creek Reservoir account for the largest acreage. Moreover, there are some 238,552 acres of land developed for various outdoor recreation facilities. Outdoor recreation facilities and opportunities within the recreation market area are estimated to support the following annual activity days: boating, 177,000; swimming, 1,254,500; picnicking, 873,200; and camping, 172,600 for a total of 2,477,300 annual activity days.

The project area, defined as the Clarion River corridor from Cooksburg, Pennsylvania, to the Allegheny River, presently provides recreation oppôrtunity. Canoeing is the principal activity on the river between Cooksburg and Mill Creek. Although the Clarion River is not generally regarded as a prized white-water canoeing stream, it possesses certain amenities inviting cruise canoeing and camping. It is a scenic water course, with most of its length passing through high, forested hills. It is estimated that the Clarion River corridor presently provides 100,000 recreation days annually.

The needs in annual activity days for the water-based activities in 1980 are summarized as follows:

SUMMARY OF NEEDS IN ANNUAL ACTIVITY DAYS - 1980
(1,000's)

	Boating	Swimming	Camping	Picnicking
Demand	2,673	13,890	835	4,948
Supply	177	1,255	173	873
Needs	2,496	12,549	662	4,075

Outdoor Recreation Plan

It is apparent that outdoor recreation does and will continue to have an influence on the water resources of Water Subregion F. Estimates indicate that there is a need for water-dependent and water-enhanced outdoor recreation opportunities in the subregion. St. Petersburg Reservoir can help satisfy these needs through the provision of facilities for boating, swimming, camping, picnicking, sightseeing, and hiking.

With installation of St. Petersburg Reservoir, minimum recreation development, including facilities for public health and safety, developed at access points existing before project construction or at access points provided for administration and management of the project, are expected to receive 130,000 annual recreation days.

With maximum recreation development, the plan would provide for the opportunity of utilizing mineral resources within the project area. Seemingly incompatible with recreation activity, oil extraction and surface mining of coal and gas can be conducted in a general outdoor recreation environment. However, a land-use plan and restoration program aimed at creating and preserving the natural character of the landscape, essential for an outdoor recreation environment, would require active support of industry and non-Federal agencies.

The abatement of acid mine drainage prior to, or in conjunction with, construction of the recreation development is a prerequisite to attain ultimate use. The summer recreation pool would materially alter the existing corridor between the Allegheny River and the slack waters of Piney Reservoir. Furthermore, the continuation of controlled mineral extraction within the project area would allow for economic realization of the resources present and, at the same time, prevent an abrupt halt to a portion of that industry presently important to the county's economic makeup.

Pennsylvania's Moraine State Park, under construction in Butler County, will provide approximately 3,200 acres of additional water. The 11,500 acres of land being acquired for the State park will also provide additional opportunities for outdoor recreation. Foxview, Inc., Foxburg, Pennsylvania, has proposed plans, prepared by Michael Baker, Jr., Inc., of Rochester, Pennsylvania, for the Foxview Development. This proposed development, located in Foxburg and adjacent to the oldest golf course in the United States, would include such facilities as the Golf Hall of Fame Museum, an 18-hole championship golf course and clubhouse, lodge and dining facilities as well as outdoor recreation facilities for swimming, tennis, etc. The Foxview Development and St. Petersburg Reservoir are considered compatible and complementary to each other.

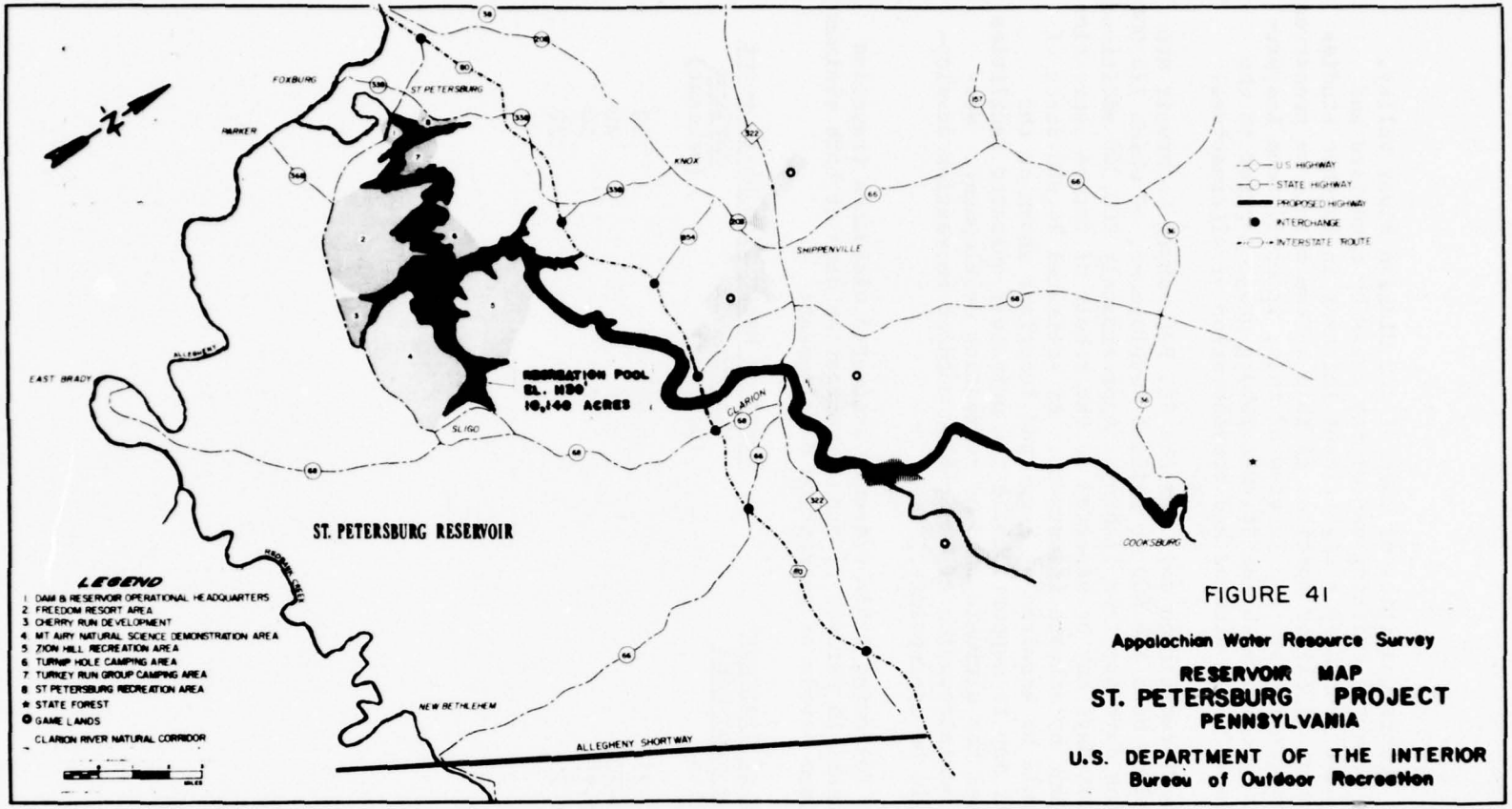


FIGURE 41

Appalachian Water Resource Survey

RESERVOIR MAP
ST. PETERSBURG PROJECT
PENNSYLVANIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

The scenic qualities of much of the Clarion River valley, together with the existing use of the river by canoeists and boaters, have generated a significant interest in further studies to determine if all or portions of this stream should be preserved in a free-flowing state. In view of this, it would seem inappropriate to proceed with the St. Petersburg project prior to the completion of such studies and consideration of alternatives.

Annual recreation days for the St. Petersburg Reservoir are estimated to be 3,474,000 at initial development, of which 114,000 recreation days are from fishing. Approximately 260,000 additional recreation days may be expected as the result of future recreation development by private investment. An estimated 24,600 acres of land should be acquired at suggested locations shown on the reservoir map to support public and privately operated facilities envisioned for ultimate outdoor recreation development. Non-Federal administration of the public outdoor recreation development would be appropriate.

The following table presents estimated distances travelled by the users in percent of annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site (miles)	Level of Recreation Development	
	Minimum (percent)	Maximum (percent)
0-25	80	10
26-50	10	20
51-75	5	40
Over 75	5	30

ST. PETERSBURG RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	130,000	3,360,000	---	3,360,000
Fishing and Hunting -	---	114,000	---	114,000
Annual Benefits -	$65,000	$4,400,000	---	$4,400,000[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$15,400,000	---	$15,400,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 397,000	3,360,000
Future Increment	---	---
Ultimate[2]	$ 397,000	3,360,000
Fishing and Hunting (gross)	(included above)	114,000
	Total - $ 397,000	Total - 3,474,000

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 73,000
Future Increment	---
	Total - $ 73,000

1. Initial - Concurrent with construction of project.
2. Ultimate - By about the year 1990.
3. Average Annual Equivalent

GREENBRIER PROJECT
Subregion G

General Description

The Greenbrier River has eroded a steep-sided valley with a narrow flood plain in the transitional zone between the Appalachian Mountains and the Appalachian Plateau. Weather of the region provides opportunities for year-round recreation, with heavy spring rains offering white-water canoeing and winter snows providing skiing. The high elevation of the region provides cool summer nights that are a welcome relief for the eastern seaboard recreationist. Most of the region is covered with deciduous forest, offering the autumn recreationist a kaleidoscope of color.

The Corps of Engineers has included the Greenbrier Project, consisting of Greenbrier Lake and Anthony Lake, as an element in the plan for development of water resources in Appalachia. Operation of the lakes would be interrelated for both flood control and low-flow regulation. The Anthony Lake site, located 3 miles above the mouth of Anthony Creek, includes a 200-foot high concrete gravity dam. The maximum reservoir pool of 4,800 acres would extend from the dam upstream 20 miles to Neola, West Virginia.

Augmentation of stream flows in the Greenbrier River during June, July, and August would come primarily from Anthony Lake, resulting in an average summer drawdown of between 55 and 67 feet. Although this plan of operation would eliminate recreation as a project purpose at Anthony Lake, it would also minimize summer releases and summer drawdown with the accompanying adverse effect on recreation in Greenbrier Lake. With recreation as a project purpose, the proposed dam will impound the Greenbrier River north of Marlinton, West Virginia. A rockfill dam, about 320 feet high and 111.4 miles above the mouth of the river, would create a 4,800-acre recreation pool extending 20 miles upstream. Planned summer drawdown for low-flow augmentation, on an average, would be 13 feet.

Greenbrier Lake would be "boxed" by Interstate Routes 81 and 64 to the east and south, respectively, and proposed Appalachian Corridor L to the west and Corridor H to the north. Although access to the vicinity of the project via the interstates is excellent, travel from the high-speed thruways via U.S. Routes 219 and 250 to Greenbrier Lake would be approximately 2 hours. The lake lies within a 2-hour drive to three existing Corps of Engineers impoundments; namely, Bluestone, Summersville, and Sutton Lakes. No archeological, historical, or natural science resources of value have been identified in the Greenbrier or Anthony Lake sites for possible salvage and/or preservation.

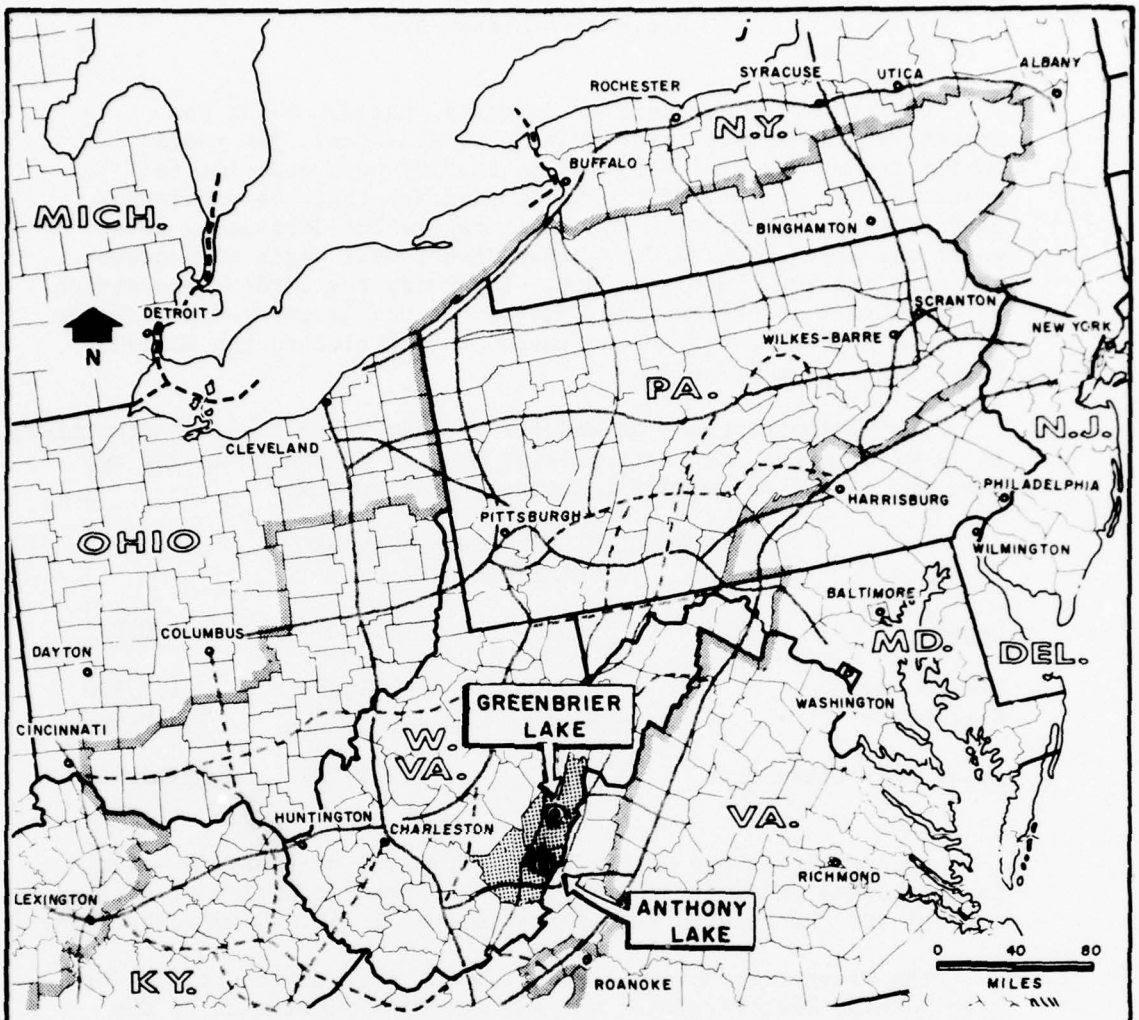


FIGURE 42

Appalachian Water Resource Survey

LOCATION MAP

GREENBRIER PROJECT
WEST VIRGINIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Greenbrier Recreation Planning Region
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

Recreation Market Area

Pocahontas and Greenbrier Counties, through which the Greenbrier flows, are predominantly rural areas. The median family income for West Virginia is $4,572; both counties fall short of this figure. Projections indicate that the population of Pocahontas County will continue its present decreasing rate, while the population of Greenbrier County will begin to increase and pass its 1967 level by 2000. The needs for outdoor recreation in Greenbrier and Pocahontas Counties of the Greenbrier Recreation Planning Region have been considered in relation to the Kanawha River Basin planning area.

The estimated gross demand for outdoor recreation opportunities, in terms of annual recreation days, that is generated in the two counties of the recreation planning region follows:

ESTIMATED GROSS DEMAND IN ANNUAL RECREATION DAYS

County	1980	2000	2020
Pocahontas	96,980	157,580	172,900
Greenbrier	436,080	1,071,780	2,348,060
Total Recreation Days	533,060	1,229,360	2,520,960

At present, there is just over 900 acres of standing water in Pocahontas and Greenbrier Counties. Annual capacity of this acreage and the related land is estimated at 140,600 recreation days.

The Greenbrier River, from its mouth near Hinton to its fork near Durbin, West Virginia, was evaluated as an element of the Kanawha River Basin Study. From this study, capacity of 120,500 recreation days for the river as a free-flowing stream was determined. Supply in annual recreation days of existing recreation development for both counties is projected to 1980, 2000, and 2020 in the table below:

ESTIMATED SUPPLY IN RECREATION DAYS

County	1980	2000	2020
Pocahontas	147,860	170,000	184,000
Greenbrier	113,240	130,200	141,500
Total Recreation Days	261,100	300,200	326,300

The future needs, compared with demand and supply in Greenbrier and Pocahontas Counties, are shown on the following table. Pocahontas County has a supply to meet anticipated needs through 2020, whereas Greenbrier County has not.

	1980		2000		2020	
County	Surplus	Deficit	Surplus	Deficit	Surplus	Deficit
Pocahontas	50,880	--	12,420	--	11,900	--
Greenbrier	--	322,840	--	941,580	--	2,206,560
Total -	271,960		929,160		2,194,660	

Outdoor Recreation Plan

There are only three main-stem tributaries to the Kanawha River not impounded. Of the three rivers, Coal, Pocatalico, and Greenbrier, the Greenbrier is considered top priority for preservation in its free-flowing state. The river has been identified for consideration as a scenic river and meets many of the criteria for this use. It should be studied further for its scenic river potentials in close cooperation with State and local planning agencies. At this time, it is difficult, though possible, to assess the unique value of an unchecked free-flowing stream.

There are no present streamside recreation developments on that reach of the Greenbrier River to be inundated by Greenbrier Lake. The estimated use on the stream reach is 2,100 recreation days. Anthony Lake on Anthony Creek would inundate the Blue Bend Recreation Area, presently supplying 37,000 annual recreation days. The reach of stream, excluding Blue Bend, is supplying an estimated 1,100 recreation days.

Without Reservoir Project

The optimum development of the stream reach to be inundated by Greenbrier Lake would provide 147,000 recreation days. Eight streamside areas would provide access for fishermen, campers, picnickers, swimmers, hikers, and canoeists. The development of the recreation areas would provide put-in and take-out points for day and overnight float trips. These locations provide maximum use of existing roads and recreation lands along the stream. The scenic drive is an existing light-duty road between Stony Bottom and Sitlington. See figure 43.

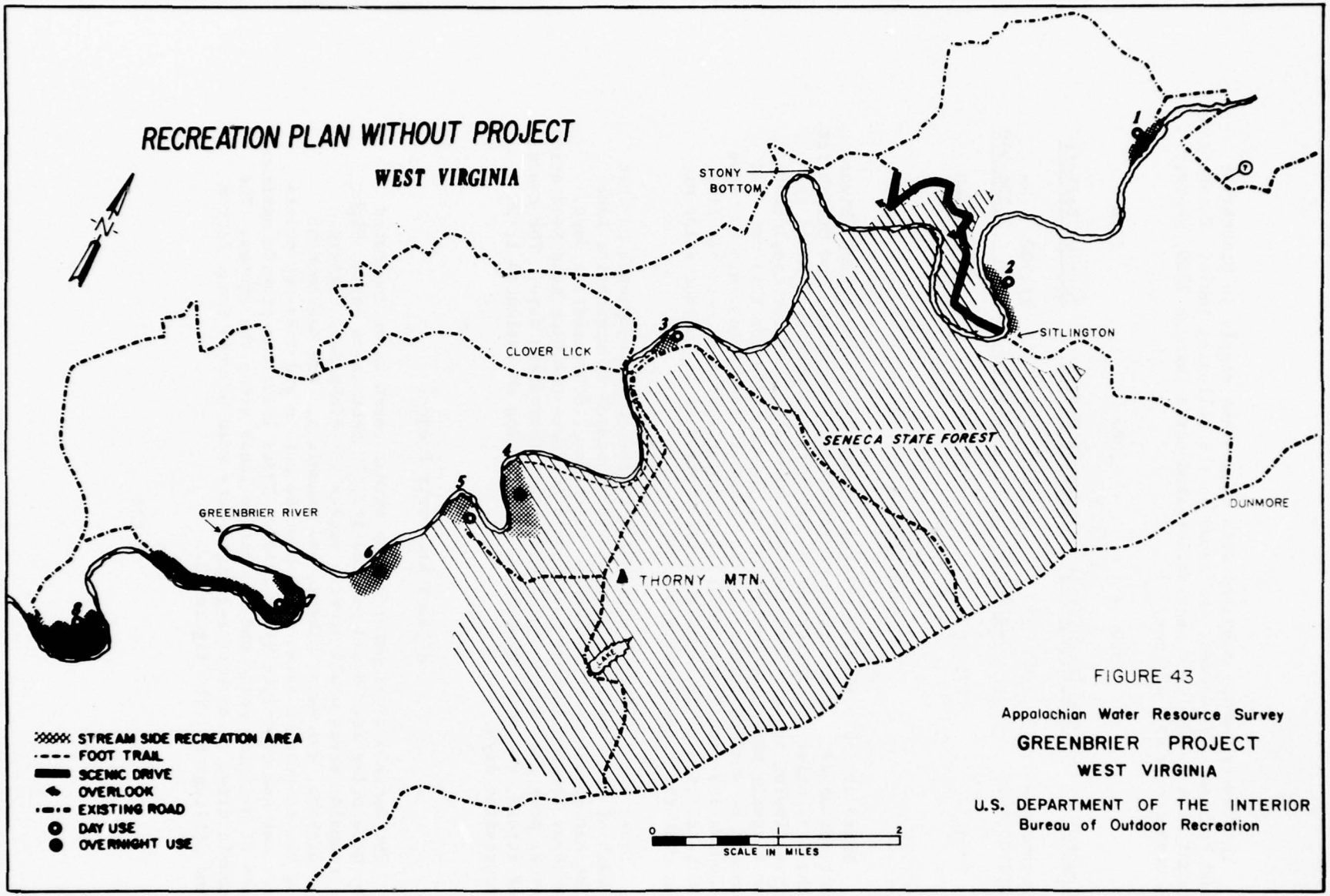


FIGURE 43

Appalachian Water Resource Survey

GREENBRIER PROJECT

WEST VIRGINIA

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

The initial development of Areas 1, 4, 5, and 8 would provide 72,000 annual recreation days. This initial development would insure some put-in and take-out points for day-use and overnight float trips for the entire stream reach. The scenic drive and overlooks should be developed. Ultimate development including Areas 2, 3, 6, and 7 would provide 147,000 recreation days annually. The following table lists the estimated acreage for streamside areas:

ESTIMATED ACREAGE REQUIREMENTS FOR
GREENBRIER RIVER STREAMSIDE AREAS

Streamside Area	Acres	Streamside Area	Acres
1	15	5	22
2	41	6	55
3	30	7	74
4	83	8	72

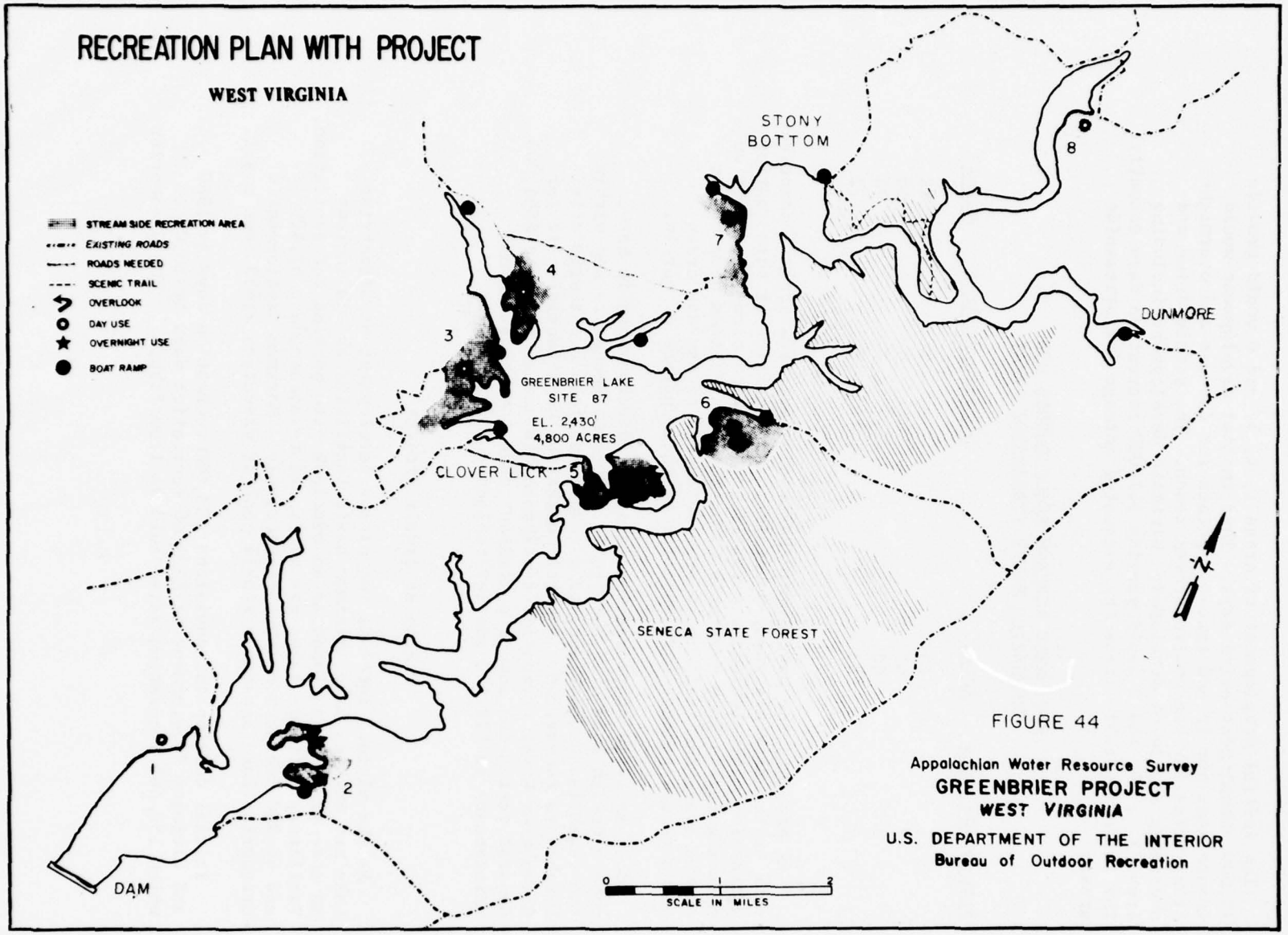
At present, the Cass Scenic Railroad operates a steam locomotive ride up the Back Allegheny Mountains. An expansion of this tourist attraction might include a steam locomotive ride along the river on existing tracks from Marlinton to Cass. With optimum development of the area, the train could provide access to day-use areas and a return passage for canoeists to their points of put-in.

Cost analysis of recreation lands and developments is based upon a design load of 2,000 people. Present access to and within the reach is adequate and, as a result, no road costs were attributable to recreation. General recreation construction cost for Greenbrier River streamside development is estimated to be $554,000. General recreation annual equivalent cost for operation and maintenance is $29,400 and for replacement $9,700.

With Reservoir Project

At the minimum level of recreation development at Greenbrier Lake and Anthony Lake, minimum basic facilities should include an acre of land developed as an overlook with parking and sanitation. Facilities at these lakes are estimated to accommodate 62,400 and 46,800 recreation days, respectively. Maximum development of Greenbrier Lake assures a stable pool at elevation 2,450 feet m.s.l.

Initial development envisions 635,000 recreation days by 1980 and ultimate development of 1,120,000 recreation days by 2000, of which 150,000 recreation days would be from fishing. The Greenbrier


RECREATION PLAN WITH PROJECT
WEST VIRGINIA
STREAMSIDE RECREATION AREA
EXISTING ROADS
ROADS NEEDED
SCENIC TRAIL
OVERLOOK
DAY USE
OVERNIGHT USE
BOAT RAMP
STONY BOTTOM
DUNMORE
GREENBRIER LAKE
SITE 87
EL. 2,430'
4,800 ACRES
CLOVER LICK
SENECA STATE FOREST
DAM
1
2
3
4
5
6
7
8
0
1
2
SCALE IN MILES
FIGURE 44
Appalachian Water Resource Survey
GREENBRIER PROJECT
WEST VIRGINIA
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Lake recreation development map (see figure 44) shows suggested tracts of land for acquisition, including lands for overlooks and trails. Below is a list of acreage for streamside areas suitable for recreation development at Greenbrier Lake:

ESTIMATED STREAMSIDE AREA AVAILABLE FOR LAKESIDE DEVELOPMENT AT GREENBRIER LAKE

Streamside Area	Acres	Streamside Area	Acres
1	162	5	120
2	100	6	140
3	317	7	116
4	105	8	40

Total Area - 1,100

The preceding table shows that 1,100 acres of land, less than 15 percent slope, are required for outdoor recreation development. An additional 1,100 acres would be required in the same proportion as needed for facilities to provide a "buffer zone."

Greenbrier Lake would create a scenic resource surrounded with a landscape that varies from cliff walls to gentle sloping hills. The scenic trail indicated on the plan map was included because of the panoramic view that would be available. The scenic quality of this vista would add much to the aesthetic experience of a recreator.

The following table presents estimated distances from which visitors to both lakes would travel in percent of annual recreation days at minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Sites (miles)	Level of Recreation Development	
	Minimum (percent)	Maximum[1] (percent)
0-25	10	10
26-50	40	10
51-75	40	59
Over 75	10	30

1. Maximum level - not applicable to Anthony Lake.

GREENBRIER PROJECT

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	109,200	485,000	485,000	970,000
Fishing and Hunting -	---	70,000	70,000	140,000
Annual Benefits -	$24,500[4]	$450,000	---	$743,000

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$5,050,000	$4,750,000	$9,800,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 113,000	485,000
Future Increment	$ 60,000	485,000
Ultimate[2]	$ 173,000	970,000
Fishing and Hunting (gross)	(included above)	150,000
	Total - $ 173,000	Total -1,120,000

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 45,000
Future Increment	$ 21,000
	Total -$ 66,000

1. Initial - Concurrent with construction of project.
2. Ultimate - By about the year 2000.
3. Average Annual Equivalent
4. Benefits adjusted for drawdown.

WHITEOAK RESERVOIR PROJECT
Subregion G

General Description

The damsite for the Whiteoak Reservoir project is located on Whiteoak Creek, Brown County, Ohio, about 1 mile northwest of Georgetown, Ohio. The landscape surrounding the reservoir is a rural setting consisting of farms and woodlots. Topography of the region is associated with upland rolling hills and alluvial stream bottomlands typical of the terrain of the Ohio River fall line. Lands on each side of Whiteoak Creek rise sharply from the narrow valley and level off to broad plains. Forest cover in the area is composed of hardwoods.

The existing road pattern of Federal, State, and county highways provide access to the project site. Planned improvements to these roads as well as the proposed Appalachian Corridor D will improve access to the area. United States Highway 68, a north-south artery, lies less than 1 mile northwest of Georgetown and parallels the site. State Highway 125, a major connecting route between Cincinnati and Portsmouth, Ohio, is about 1 mile south of the reservoir site. This road provides direct access to the site from Cincinnati, located about 30 miles to the northwest.

The reservoir would be approximately 930 acres at 826 feet m.s.l. However, approximately 820 surface acres of water will be available for general recreation. The remaining acreage will be incorporated into a proposed migratory goose refuge to be located at the north end of the reservoir. The minimum pool would be 320 acres at 786 feet m.s.l. The recreation pool would be about 7.4 miles in length and vary in width from 1,500 feet to 300 feet. The reservoir generally follows the outline of the original stream with gentle curves forming peninsulas that should enhance the recreation development. Use of the proposed impoundment for water supply and water quality control will result in a fluctuating pool. However, drawdown is not expected to exceed 3 feet once in 10 years. This is not considered to have a significant adverse effect on outdoor recreation use. Water quality of Whiteoak Reservoir is not expected to restrict recreation activities.

Land adjacent to the proposed reservoir appear suitable for a wide range of outdoor recreation activities including sightseeing, hiking, driving for pleasure, picnicking, swimming, and camping.

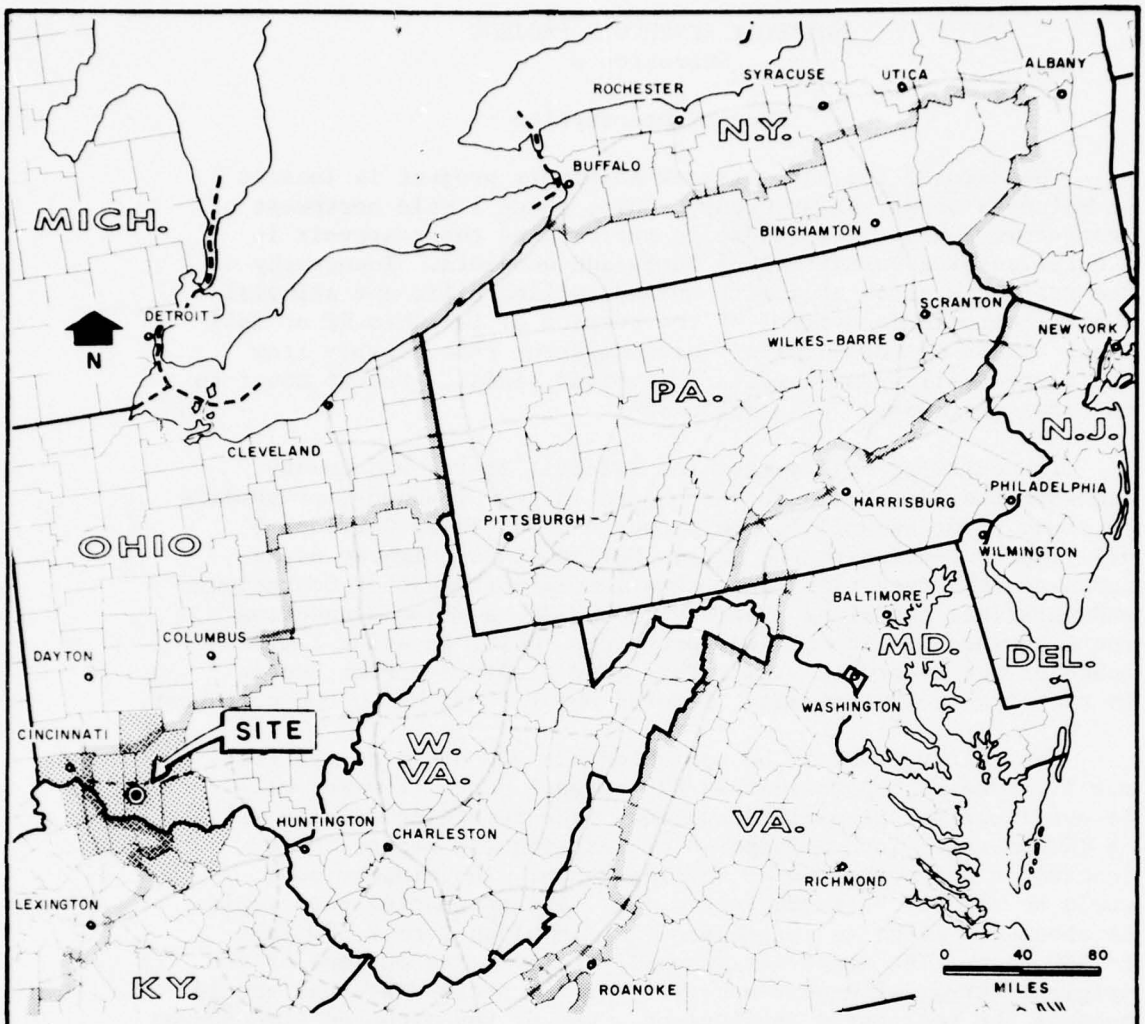


FIGURE 45

Appalachian Water Resource Survey

LOCATION MAP

WH'TEOAK RESERVOIR
OHIO

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

It is possible that archaelogical, historical, and natural science resources of value exist in the area on which salvage and preservation may be necessary.

Recreation Market Area

Present participating population of the recreation market area is approximately 862,000 people. Most of these people reside outside Appalachia. The population of the Appalachian counties, within the recreation market area is expected to increase 100 percent by the year 2020. The Cincinnati metropolitan area should show a similar increase. Per capita income in the Appalachian counties is also expected to reach $7,000 by 2020, an increase of over 600 percent. Composition of the work force will change with a larger percent employed in the manufacturing and service trades accompanied by a sharp drop in agricultural employment.

Estimated gross demand for these four activities generated within the 14-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS (1,000's)

Activity	1980	2000	2020
Boating	4,763	8,973	12,955
Swimming	10,864	19,609	28,356
Picnicking	6,276	10,355	14,465
Camping	1,860	3,875	5,885
Total Activity Days	23,763	42,812	61,661

At present, a supply of approximately 3,900 acres of impounded water, excluding the Ohio River, suitable for boating and other water-dependent activities are available to the people residing in the recreation market area. In addition, over 30,000 acres of land are suitable for various outdoor recreation activities. Over one-third of this acreage is contained in the Brush Creek State Forest. The supply is estimated to be sufficient to support the following activities expressed in annual activity days: boating - 125,000; swimming - 276,000; picnicking - 2,037,000; and camping - 200,000, for a total of 2,638,000 annual activity days.

Proposed and authorized water resource projects such as East Fork Reservoir, Paint Creek Reservoir, Falmouth Reservoir, and the O'Bannon Creek and Upper White Oak Creek small watershed projects

will provide additional water for recreation. Land acquisition associated with these projects would also provide additional recreation opportunities. The present needs for additional opportunities in annual activity days for the four water-based activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS - (1,000's)

	Boating	Swimming	Picnicking	Camping
Supply	125	276	2,037	200
Demand	1,905	4,603	3,138	560
Needs	1,780	4,327	1,101	360

Outdoor Recreation Plan

It is apparent that outdoor recreation does and will continue to have an influence on water resources of Water Subregion G. Estimates indicate that there is a need for water-dependent and water-enhanced outdoor recreation opportunities in the subregion. The Whiteoak Reservoir can help satisfy these needs through the provision of facilities for boating, swimming, camping, picnicking, sightseeing, and hiking. The outdoor recreation plan would place emphasis on day-use recreation facilities since the project is in close proximity to Cincinnati, Ohio.

Establishment of a major migratory goose refuge, requiring about 7,600 acres of land, at the north end of the reservoir would offer the recreation visitor a unique experience. A comprehensive interpretive program is planned with guided tours, show ponds, an observation tower, and nature trails. The establishment of such a refuge would tend to lengthen the recreation season at this project and extend use of such facilities as the campgrounds into the fall hunting season. Opportunity for schools to use the interpretive facilities at the refuge as a field laboratory appear unlimited.

Approximately 2,000 acres should be acquired to support and protect the necessary recreational developments. Some of the land acquired for other project purposes may be used for outdoor recreation. Potential recreation sites are designated on the project map.

The Whiteoak Reservoir cannot satisfy all the outdoor recreation needs in the recreation market area. Proper balance must be maintained between visitation and the water and land resources in order to provide for a quality experience as well as the preservation of the site. Considering the relatively small water surface available, zoning of the reservoir and placing restrictions on the horsepower of motors would seem advisable.

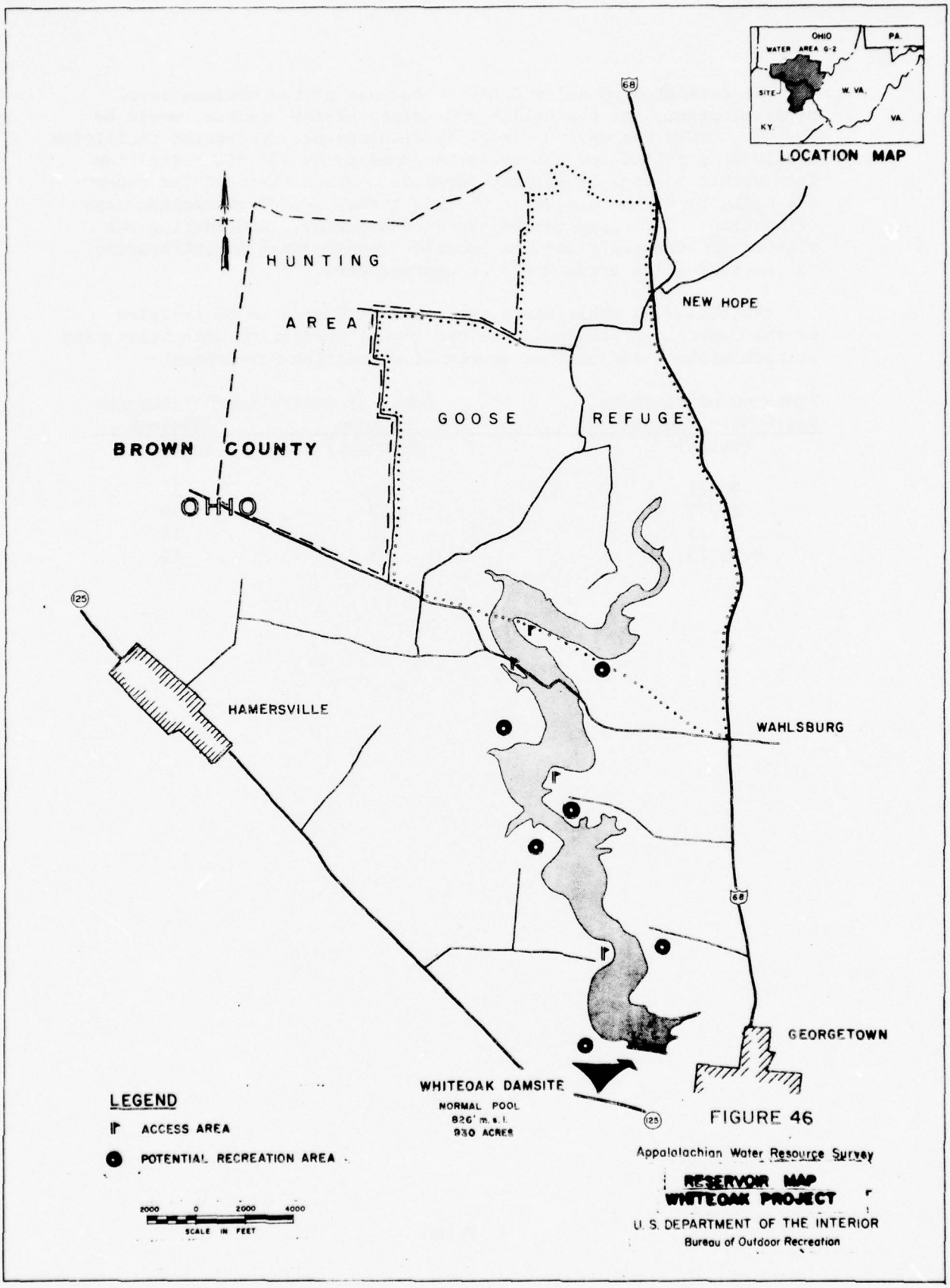


FIGURE 46

Appalachian Water Resource Survey

RESERVOIR MAP
WHITEOAK PROJECT

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

The estimated annual recreation day use at the minimum level of development, for the health and safety of the visitor, would be 90,000. Under the maximum level of development, recreation facilities should be provided for the ultimate capacity of 707,500 recreation days within 3 years of project completion since the need far exceeds the capacity of the project. Of this total, 20,000 recreation days of hunting and fishing may be expected annually. Considering the size of the reservoir and its location, non-Federal administration of the recreation areas would be appropriate.

The following table gives estimated distances to be traveled by the users as a percentage of the annual recreation days visitation at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site	Level of Recreation Development	
	Minimum	Maximum
(miles)	(percent)	(percent)
00-25	55	25
26-50	30	50
51-75	10	15
Over 75	5	10

WHITEOAK RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	90,000	644,000	---	644,000
Fishing and Hunting -	---	20,000	---	20,000
Nature Study at Refuge	---	43,500	---	43,500
Annual Benefits -	$45,000	1,067,500	---	$1,067,500[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$18,905,000	---	$18,905,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 144,300	644,000
Future Increment	---	---
Ultimate[2]	$ 144,300	644,000
Fishing and Hunting (gross)	(included above)	20,000
Nature Study at Refuge		43,500
	Total - $ 144,300	Total - 707,500

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 97,300
Future Increment	---
	Total - $ 97,300

1. Initial - Within 3 years of project completion
2. Ultimate - Not Applicable.
3. Average Annual Equivalent

LOGAN RESERVOIR

Subregion G

General Description

The Logan Reservoir project is located on Clear Creek, a tributary of the Hocking River, in Hocking and Fairfield Counties, Ohio. Lancaster is about 8 miles north and Columbus about 30 miles northwest of the site. The upper portion of the reservoir would lie in open, gently rolling farmland, and the lower part would be located in a narrow, gorge-like valley bordered by tree-covered hills.

The damsite for the project is 3.1 miles above the confluence of Clear Creek and Hocking River. The normal pool at elevation 854.0 feet m.s.l. would be about 1,825 acres. The shoreline would be irregular providing numerous coves and arms, thus enhancing the area in diversified outdoor recreation opportunities. The reservoir area would inundate Clear Creek for approximately 9.7 miles. Under normal operating conditions, the reservoir would have minor drawdowns during the outdoor recreation season from June through August. The primary purpose of the project is to provide water supply, flood control, recreation and fish and wildlife enhancement.

Access would be afforded the project by existing county and towns by roads which connect with U.S. 22 and 33 and Ohio 159. Clear Creek Valley has a habitat of plants that are relatively rare in Ohio. This unique biological community stretches from the Hocking River westward to the agricultural lands in Fairfield County. In addition, preliminary archeological surveys show five rock shelters having significant potential. Covered bridge structures, historic featues of a bygone era, are also located here.

Recreation Market Area

Present participating population in the 11-county area at the outdoor recreation development of the project was estimated to be about 1.1 million people. This was a 20 percent increase during the 10-year period from 1950 to 1960. The urban population, from which a major part of the recreation use is considered to originate constitutes 65 percent of the total, and most of these people would come from the Columbus metropolitan area. It is estimated that this population will reach 2 million in 1975 and over 3.3 million by the year 2000.

Demand for water-oriented recreation generated within this 11-county recreation market area is estimated as shown in the following table:

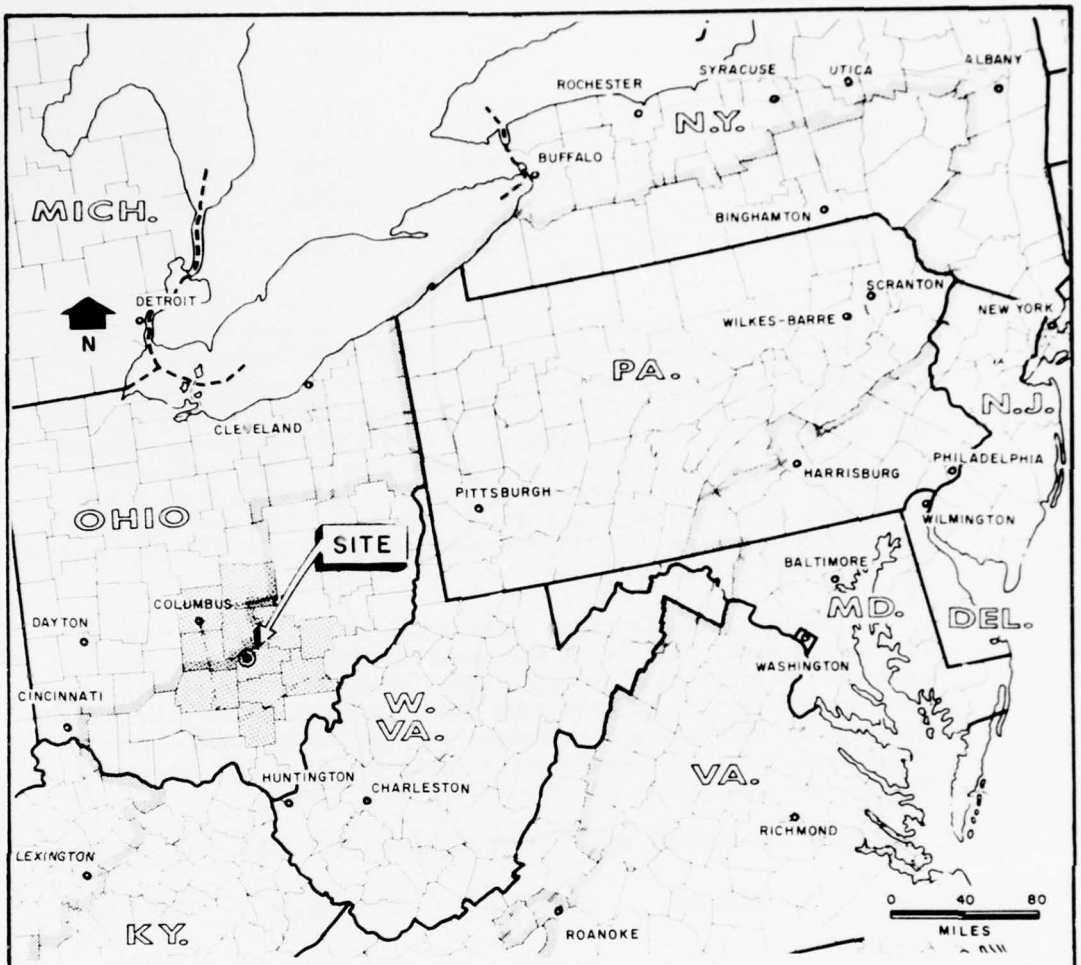


FIGURE 47

Appalachian Water Resource Survey

LOCATION MAP

LOGAN RESERVOIR

OHIO

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS (1,000's)

Activity	1980	2000	2020
Boating	7,049	12,856	18,634
Swimming	18,167	32,793	47,420
Picnicking	8,878	14,693	20,464
Camping	2,908	6,062	9,198
Total Activity Days	37,002	66,404	95,716

At present, approximately 2,500 acres of impounded water suitable for boating and other water-dependent activities are available in the 11-county area to the people residing in the recreation market area. In addition, over 208,000 acres of land are suitable for various outdoor recreation activities. Most of this acreage is in the Wayne National Forest. The supply is estimated to be sufficient to support the following activities expressed in annual activity days: boating - 121,300; swimming - 246,500; picnicking - 1,218,000; and camping - 231,000, for a total of 1,816,800 annual activity days.

Proposed and authorized water resource projects such as Deer Creek Reservoir, Salt Creek Reservoir and Margaret Creek Small Watershed projects will provide additional water for recreation. Land acquisition associated with these projects would also provide additional recreation opportunities. The present needs for additional opportunities in annual activity days for the four water-based activities are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS - (1,000's)

	Boating	Swimming	Picnicking	Camping
Supply	121	247	1,215	231
Demand	2,889	7,698	4,439	876
Needs	2,768	7,451	3,221	645

Outdoor Recreation Plan

It is apparent that outdoor recreation does and will continue to have an influence on water resources of Subregion G. Estimates indicate that there is a need for water-dependent and water-enhanced outdoor recreation opportunities in the subregion. Logan Reservoir can help satisfy these needs through provision of facilities for boating, swimming, picnicking, camping, nature walks, and sightseeing. The outdoor recreation plan would place emphasis on day-use recreation facilities since the project is in close proximity to Columbus, Ohio.

Estimated annual recreation days at minimum level of outdoor recreation development would be 30,000. At maximum level of outdoor recreation development, 510,000 recreation days annually would be expected at initial development and at ultimate development 1,100,000, within 5 years of project completion. In addition, 30,800 recreation days of hunting and fishing may be expected annually. The project would include an ecological preserve along Clear Creek below the dam. This scenic creek is suitable for development as a natural environment area. Developments could include interpretive tracts, outdoor laboratory and limited camping and picnicking. Recreation development should take into account the proximity of the project to the Hocking Hills State Park areas and the apparent need for water-oriented development to supplement present facilities at the park. Non-Federal administration of the recreation areas would be appropriate.

The following table gives estimated distances to be traveled by the users as a percentage of the annual recreation days use at both minimum and maximum levels of recreation development:

Distance of Visitors' Residence from Site	Level of Recreation Development	
	Minimum	Maximum
(miles)	(percent)	(percent)
0-25	75	30
26-50	15	40
21-75	5	15
Over 75	5	15

Alternate Sites for Impoundment

Previous recreation studies conducted by the Bureau of Outdoor Recreation considered five sites for the location of Logan Reservoir. A damsite located at mile 5.7 above the mouth of Clear Creek would provide a reservoir of comparable size to the one under consideration and would support equal recreation days of use. In addition, site 5.7 mile would preserve a large portion of the ecological community located in Clear Creek Valley. A National Park Service report states, "There exists systems of microclimates and microenvironments in the Clear Creek area, which are an important natural resource because of their ecological data content."

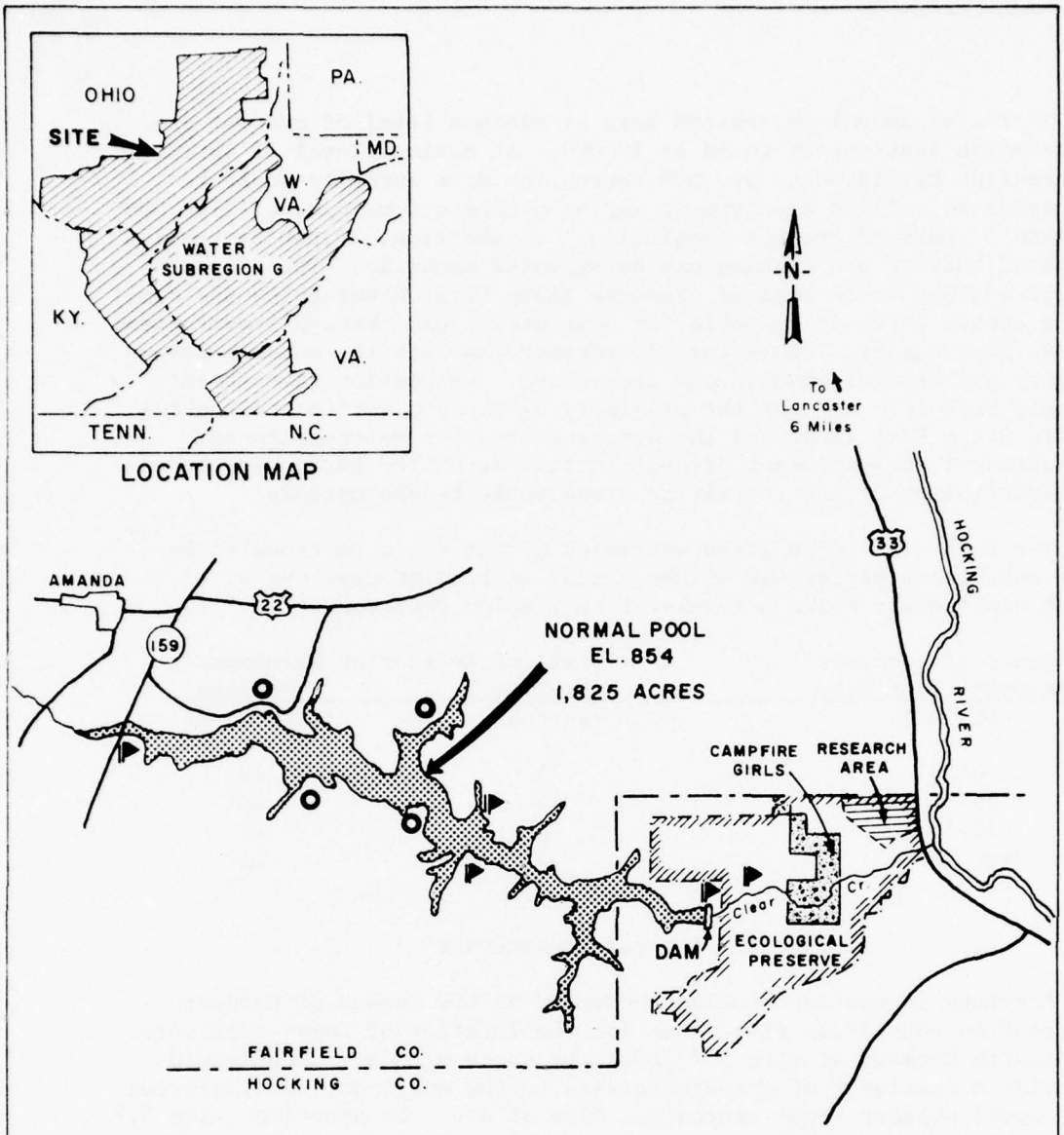


FIGURE 48

Appalachian Water Resource Survey

RESERVOIR MAP
LOGAN PROJECT
OHIO

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

LOGAN RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	30,000	510,000	590,000	1,100,000
Fishing and Hunting -		30,800		30,800
Annual Benefits -	$15,000	$677,000	737,500	$1,096,000

GENERAL RECREATION COSTS*

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$15,033,000	9,523,000	$24,556,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$110,200	510,000
Future Increment	63,900	590,000
Ultimate[2]	174,000	1,100,000
Fishing and Hunting (gross)	(included above)	30,800
	Total - $174,100	Total - 1,130,800

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$84,400
Future Increment	34,100
	Total - 118,500

1. Initial - Concurrent with construction of project.
2. Ultimate - By about the year 1990.
3. Average Annual Equivalent
* All values exclusive of Ecological Preserve

PARKER BRANCH RESERVOIR
Subregion I

General Description

The damsite for the project is located on the Rockcastle River, at mile 49.3, in Rockcastle and Laurel Counties, Kentucky. The community of Livingston, Kentucky, is approximately 9 miles west of the reservoir. The area is very scenic with steep wooded slopes rising several hundred feet from the narrow river valley. However, on the South Fork of the Rockcastle River the valley widens and the hills become less pronounced. A portion of the reservoir would be located within the boundary of the Daniel Boone National Forest.

Upon the completion of Interstate Highway 75, access to the general reservoir area from the population centers to the north and south will be good. Other roads such as Kentucky Highway 80 and U.S. Highways 25 and 421 also provide access to the general project area. However, local access roads to the Rockcastle River are not adequate and some sections of the river are inaccessible.

The Parker Branch Reservoir project would have surface area of 8,710 acres at elevation 1,000 feet m.s.l. However, the average reservoir level during the recreation season is expected to 996.7 feet m.s.l. This drawdown would not significantly affect the recreation potential of the reservoir. Although extensive mining ceased some time ago, stream flow in the Raccoon Creek area is acid most of the time.

Generally lands adjacent to the proposed reservoir will require considerable site preparation to accommodate a wide range of outdoor recreation activities. Secondary roads to areas of high recreation potential and access sites to the water would have to be provided. No outstanding, historical, or natural science features were found in the project area. However, 44 archeological sites were noted and 10 of these are believed worthy of further investigation.

The Recreation Market Area

Present participating population of the recreation market area is estimated to be approximately 327,000 persons. The combined population of Water Area I-1 and Subregion H is expected to increase approximately 70 percent by the year 2020. Per capita income of this population averaged less than $1,000 in 1960 and was expected to increase to over $6,500 by 2020. Composition of the work force is expected to change with a larger percentage employed in the manufacturing and service industries while agricultural employment will drop sharply.

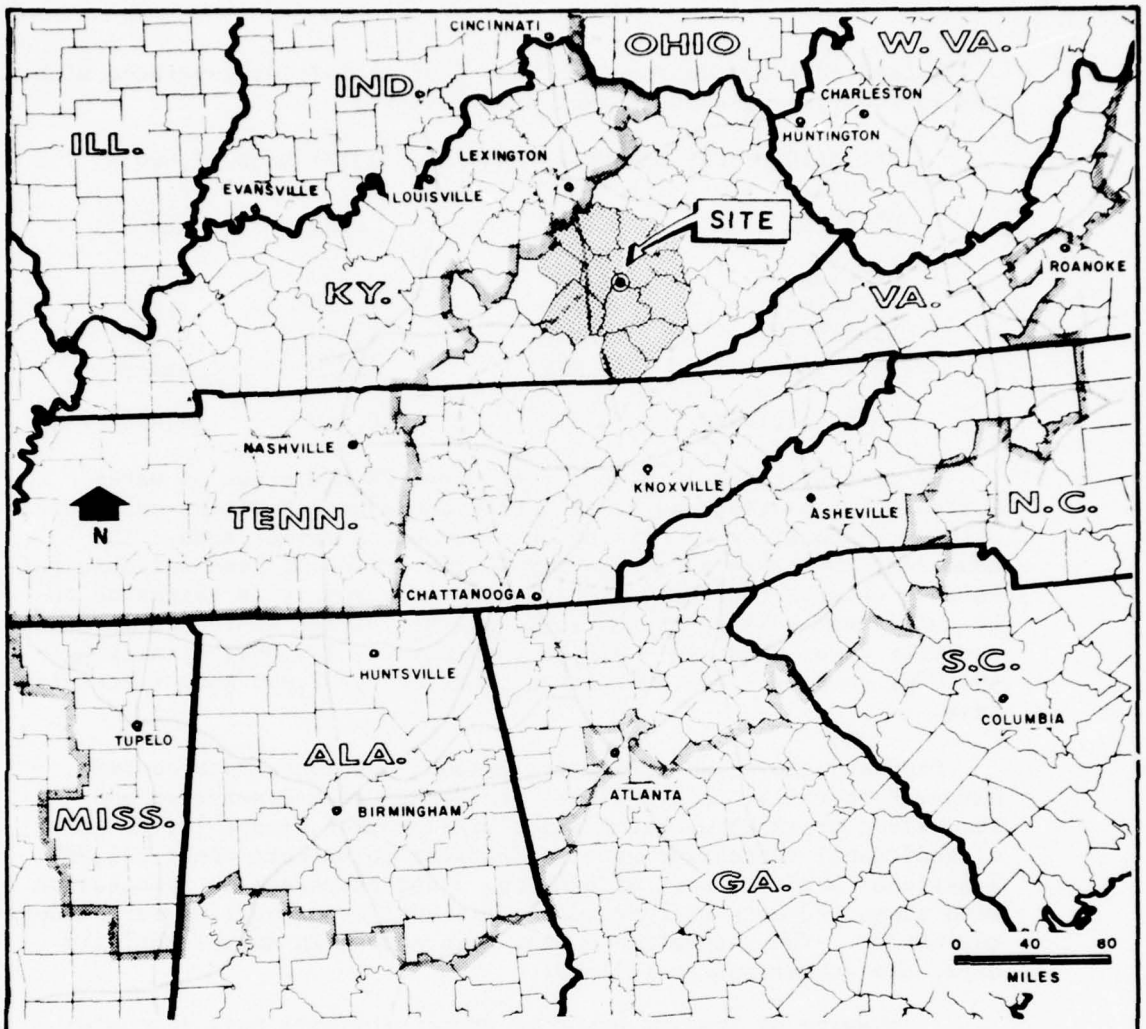


FIGURE 49

Appalachian Water Resource Survey

LOCATION MAP

PARKER BRANCH RESERVOIR
KENTUCKY

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Outdoor Recreation

Recreation Market Area
Appalachian Region Boundary
Appalachian Development Highways
Interstate Highways
Federal Highways

Estimated gross demand for these four activities generated within the 13-county recreation market area follows:

ESTIMATED GROSS DEMAND IN ANNUAL ACTIVITY DAYS (1,000's)

Activity	1980	2000	2020
Boating	1,990	3,750	5,420
Swimming	4,270	7,710	11,150
Picnicking	1,810	2,990	4,170
Camping	860	1,790	2,710
Total Activity Days	8,930	16,240	23,450

At present there is a supply of about 28,000 acres of water suitable for boating and other water-dependent activities available within the counties comprising the recreation market area. In addition, there are approximately 146,000 acres of land suitable for various outdoor recreation activities. The supply is estimated to be sufficient to support the following activities expressed in annual activity days: boating - 910,000; swimming - 275,000; picnicking - 403,000; camping - 114,000; for a total of 1,702,000 annual activity days.

Proposed and authorized water resource projects such as Red River, Bonneville, Laurel River, and Woods Creek Reservoirs and the Silver Creek Watershed Project will provide almost 10,000 acres of additional recreation water sufficient to support about 325,000 additional activity days of boating. Land purchased in association with these projects will provide additional opportunities for outdoor recreation. The recreation market area needs, in annual activity days, are summarized as follows:

SUMMARY OF PRESENT NEEDS IN ANNUAL ACTIVITY DAYS (1,000's)

	Boating	Swimming	Camping	Picnicking
Demand	797	1,810	258	905
Supply	910	275	114	403
Needs	Excess	1,525	144	502

Outdoor Recreation Plan

From the foregoing paragraphs, outdoor recreation does and will continue to have an influence on the water resources of Subregion I. By 1980, the need for a sufficient acreage of water suitable for boating will grow rapidly. The outdoor recreation potential of the Parker Branch Reservoir project should be preserved to meet present and future needs. However, every effort should be made to preserve and protect the recreation resources of the Rockcastle River below the dam. This portion of the river is recommended in the Kentucky Comprehensive Statewide Outdoor Recreation Plan for preservation in a natural state. Reservoir operation plans should be compatible with this objective. Sources of pollution in the Raccoon Creek area causing acidity in the stream should be eliminated or otherwise controlled to prevent an adverse affect on recreation.

By the time this reservoir is completed, the need for recreation water should exist. At the minimum level of recreation development, it is estimated that use would be 95,000 recreation days annually. At the maximum level of recreation development use is to be 412,900 recreation days annually during the initial development. Use of the ultimate development would be 1,298,000 by the year 2000, of which 32,900 recreation days are from fishing.

Under the maximum level of development, facilities offering a variety of recreational opportunities consistent with the needs should be provided. An estimated 2,000 acres of land, in addition to that required for other project purposes, would be needed to assure the desirable level of outdoor recreation use. Federal Administration of the recreation facilities would be appropriate.

The following table gives the estimated distances traveled by the users at both minimum ann maximum levels of recreation development by percent of annual recreation days:

Distance of Residence of Visitors from Site (Miles)	Level of Recreation Development Minimum (Percent)	Maximum (Percent)
0-25	65	40
26-50	15	25
51-75	10	20
Over 75	10	15

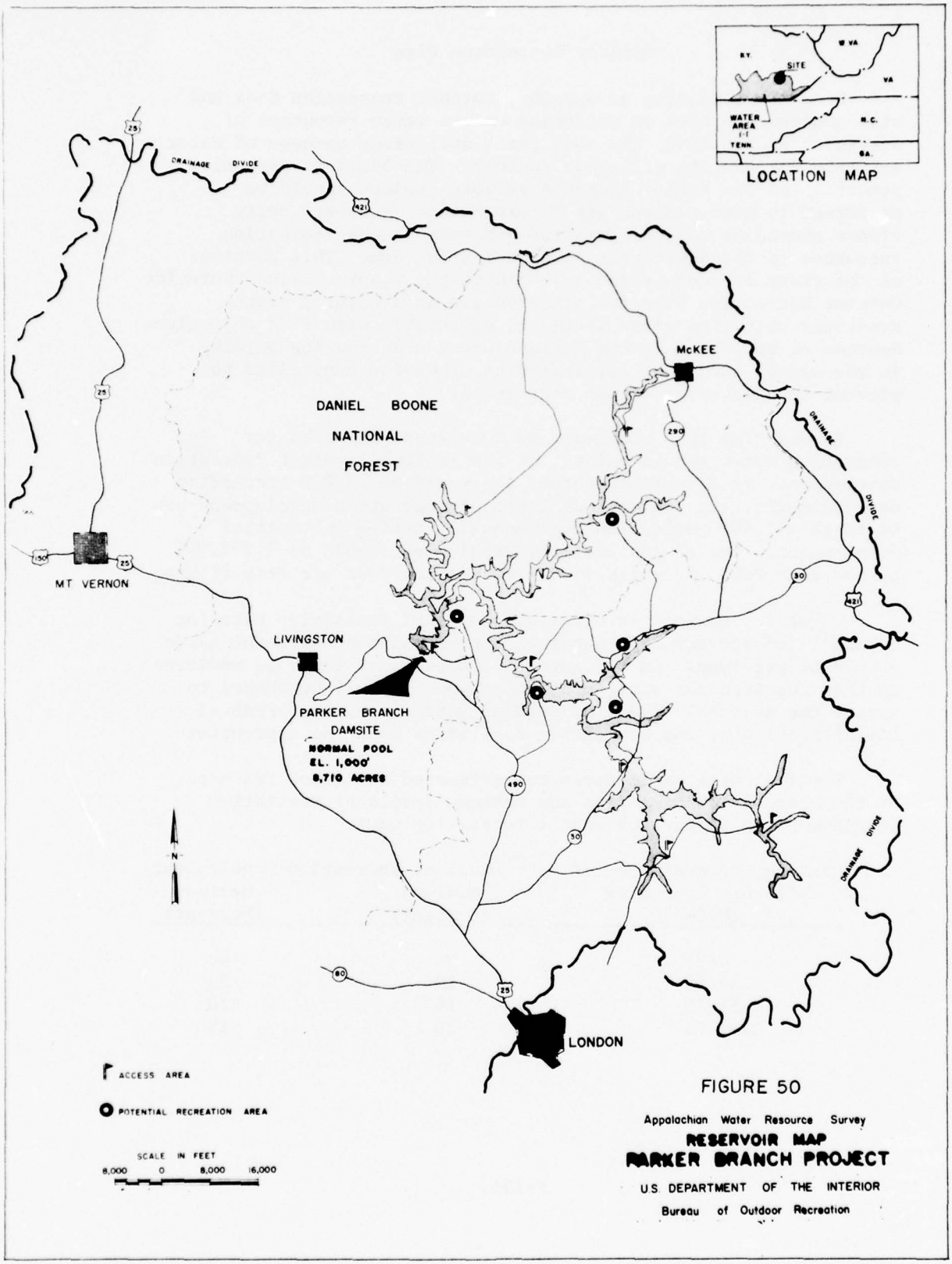


FIGURE 50

Appalachian Water Resource Survey

RESERVOIR MAP

PARKER BRANCH PROJECT

U.S. DEPARTMENT OF THE INTERIOR

Bureau of Outdoor Recreation

PARKER BRANCH RESERVOIR

BENEFITS FROM GENERAL RECREATION USE

Item	Minimum Development	Maximum Development		
		Initial[1]	Future Increment	Ultimate[2]
Recreation Days -	95,000	380,000	886,000	1,266,000
Fishing and Hunting -	---	29,000	---	29,000
Annual Benefits -	$47,500	$510,000	$1,107,500	$1,058,300[3]

GENERAL RECREATION COSTS

I. First Costs or Capital Costs at Maximum Development

Item	Initial[1]	Future Increment	Ultimate[2] or Total
Recreation Facilities (including real estate, contingencies, and distributed indirect costs as appropriate)	$ 3,559,000	$5,760,000	$9,319,000

II. Maintenance and Operation Costs and Estimated Recreation Days

Stage of Maximum Development	Cost (Average Annual Equivalent)	Recreation Days
Initial[1]	$ 76,000	380,000
Future Increment	$ 89,300	886,000
Ultimate[2]	$ 165,300	1,266,000
Fishing and Hunting (gross)	(included above)	32,900
	Total - $ 165,300	Total - 1,298,900

III. Major Replacement Costs

Stage of Maximum Development	Cost (Average Annual Equivalent)
Initial[1]	$ 17,800
Future Increment	$ 19,500
	Total - $ 37,300

1. Initial -
2. Ultimate -
3. Average Annual Equivalent

Preliminary Evaluation Summaries. At the request of the Corps of Engineers Districts, the Bureau of Outdoor Recreation prepared outdoor recreation preliminary evaluation summaries of certain reservoir sites considered for inclusion in the plan for development of water resources in Appalachia. The purpose of the summaries is to provide preliminary estimates of general recreation use. Estimates in these summaries have been prepared to assist the Districts in project formulation and to help project planners in determining feasibility of recreation as a project purpose. These estimates do not constitute a commitment by the Bureau. In all cases, further study of the outdoor recreation potentials of each site will be necessary.

Three sites included as elements in the plan for development of water resources are Deer Lake in Subregion A, Stannard in Subregion F, and Lower Knox Creek in Subregion G. Other sites having preliminary evaluations, but not included as elements in the Corps plan for development, are: sites on Mitchell River, Fisher River, and Reddies River in the Upper Yadkin River Basin of Subregion D; the Zoar, Springville, and Otto sites in the Cattaraugus River Basin of Subregion F; and Union City and Mud Creek sites in the Allegheny River Basin of Subregion F. Preliminary evaluations of the outdoor recreation potentials for the Deer Lake Restoration project, Stannard Reservoir project and the Lower Knox Creek Reservoir project are summarized below:

Deer Lake Restoration
Subregion A

Deer Lake is located in Schuylkill County, Pennsylvania, on Pine Creek, a tributary of the Schuylkill River. The reservoir is an 18-acre impoundment, averaging 1 foot in depth as a result of silt deposits. Our preliminary studies indicate a present unsatisfied demand for water-oriented outdoor recreation opportunities. At maximum level of development, 33,000 recreation days annually may be expected. Primary recreation benefits are estimated to be $41,250 annually. The following table presents estimated distances traveled by the users in percent of the annual recreation at maximum level of recreation development:

Distance of Visitors' Residences from Site (miles)	Maximum Level of Recreation Development (percent)
0-25	70
26-50	20
51-75	5
Over 75	5

Stannard Reservoir
Subregion F

The damsite for this project is located on the Genessee River, Allegany County, New York, just north of the Pennsylvania State line. Estimates of use are based on the assumption that a reservoir of 2,330 acres at elevation 1,620 feet m.s.l. would be constructed. Our preliminary studies indicate that there is a present unsatisfied demand for water-oriented outdoor recreation. At minimum development, 40,000 recreation days annually may be expected; at maximum level of development, 155,000 recreation days initially and 233,000 ultimately. Primary recreation benefits are estimated to be $20,000 annually at minimum development and $291,000 at maximum development. The following table presents estimated distances traveled by the users in percent of the annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residences from Site (Miles)	Level of Recreation Development	
	Minimum (Percent)	Maximum (Percent)
0-25	80	20
26-50	5	30
51-75	10	40
Over 75	5	10

Lower Knox Creek Reservoir
Subregion G

The damsite for this project is located on Knox Creek, Pike County, Kentucky, about 1 mile south of the confluence with Tug Fork. The reservoir would extend into Buchanan County, Virginia. Estimates of use are based on the assumption that a 220-acre reservoir at elevation 826 feet m.s.l. would be constructed. Our preliminary studies indicate that there is a present unsatisfied demand for water suitable for pleasure boating in the recreation market area. Almost 3/4 million persons live within this market area. At minimum development, 4,500 recreation days annually may be expected; at maximum development, 100,000 recreation days. Primary recreation benefits are estimated to be $2,720 annually at minimum development and $125,000 at maximum development. The following table presents estimated distances traveled by the users in percent of the annual recreation days at both minimum and maximum levels of recreation development:

Distance of Visitors' Residences from Site (Miles)	Level of Recreation Development	
	Minimum (Percent)	Maximum (Percent)
0-25	50	60
26-50	25	20
51-75	20	10
Over 75	5	10

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ADDENDUM

DEFINITIONS

This report utilizes the following terminology and nomenclature generally acceptable in present-day outdoor recreation planning:

Activity Day: The participation of one person in one activity in 1 day. If a person participates in three different activities in 1 day, it is counted as 3 activity days.

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

Outdoor Recreation: Leisure time activities which utilize an outdoor setting.

Outdoor Recreation Activity: A specific leisure time action or pursuit in an outdoor environment.

Standard Metropolitan Statistical Area (SMSA): An area of integrated economic and social activity, usually a county having a recognized population nucleus containing at least one city of 50,000 inhabitants.

Outdoor Recreation Area: A land or water area administered as a unit for outdoor recreation.

Site: A tract of land within a recreation area designated for a particular activity.

Outdoor Recreation Facilities: Those man-made improvements provided to enhance recreation use.

Outdoor Recreation Supply: The resources and facilities capable of providing outdoor recreation opportunities.

Outdoor Recreation Demand: A measurement of the amount and kinds of outdoor recreation opportunities or facilities which the public desires.

Average Summer Sunday Demand: The amount of participation expected on a normal summer Sunday.

Recreation Market Area: The zone from which approximately 90 percent of the visitors to a program or project area is drawn for 1-day outings, weekend (overnight) trips, or both.

Recreation Needs: Lands, waters, and facilities required to provide adequate outdoor recreation opportunities.

Planned and/or Programmed: Scheduled actions, whether or not financed, which are directed toward realization of an outdoor recreation development plan or project within the next several years.

Unsatisfied Demand: The difference between outdoor recreation demand and the capacity of existing and programmed resources, expressed in activity days and/or recreation days.

Water-Dependent Activity: An activity which requires water as an essential element for participation; e.g. swimming, boating, and water skiing.

Water-Enhanced Activity: An activity not requiring water for participation but whose value is assumed to be increased by adjacent water areas; e.g., camping and picnicking.

Participating Population: That population which is considered to affect the outdoor recreation demand of a study area.

Outdoor Recreation Resources: Land, water, and associated natural or man-made resources which provide or are capable of providing opportunities for outdoor recreation.

All Activities: For purposes of showing demand in all outdoor recreation activities, the following activities have been identified: swimming, sightseeing, driving for pleasure, walking for pleasure, hiking, mountain climbing, hunting, picnicking, camping, nature walks, winter sports, boating, sailing, canoeing, fishing, bicycling, horseback riding, and outdoor sports.

First or Capital Costs: Construction of facilities to provide for outdoor recreation activities are considered capital costs. These costs include the estimate for each recreation facility item, contigencies and distributed indirect costs. The total first cost is the same as total installation cost for recreation basic facilities.

Maintenance and Operation Costs: Salaries, material, equipment and administrative costs associated with management and maintenance of an outdoor recreation area.

Major Replacement Costs: Net costs of the operation and maintenance activities which are associated with the rehibilitation and replacement of major items. In the case of outdoor recreation areas, examples would be replecement of buildings and other facilities, and major road and parking area resurfacing.

METHODOLOGY CRITERIA AND PLANNING PROCEDURES

Demand. In estimating demand for various outdoor recreation activities in this report, per capita income was considered the prime variable in determining a person's participation in outdoor recreation activities. Educational levels tended to parallel per capita incomes.

From the 1965 National Recreation Survey, conducted by the Bureau of Census for the Bureau of Outdoor Recreation, the average participation of an individual in various outdoor recreation activities was obtained. These figures, given by census region, were further broken down on a per capita income basis for each subregion of Appalachia. This was accomplished by multiplying the participation rate for each activity by the per capita income of the subregion in 1965, 1980, 2000, and 2020 over the 1965 per capita income of the census region in 1965. This figure was then multiplied by the population within the subregion during the same year.

Supply. After the total supply of facilities for a subregion had been determined, the use that each facility could be expected to receive (in terms of number of people) on an average summer Sunday was determined. To match supply against demand, the following criteria were used:

Camping	:	Five persons per campsite, with no turnover.
Picnicking	:	Five persons per table, with a turnover of two.
Swimming	:	Two hundred people per acre of beach, with a daily turnover of three.
Boating	:	Six acres of water per boat, three people per boat. (Turnover of two was recognized, but not accounted for, as it was presumed that 50 percent of the water surface would be used by fisherman.)

To determine the annual use that could be made of supply, the following method was use:

The average summer Sunday use of facilities for boating, picnicking, and swimming was multiplied by 2.5 to determine summer week use (1.33 was used in the case of camping). These figures reflect the percent of summer week use that occurs on Sunday. The summer week use was then multiplied by the number of weeks in the summer--

estimated in this report to be 13. The summer use was then multiplied by the percent of annual participation for each activity for the year over the summer participation.

Estimates of supply have been assumed to be static after inclusion of existing and programmed development based, for purposes of comparison, on the year 1965.

Needs. Annual need or, more properly, annual unsatisfied demand was determined by subtracting annual use that can be expected of the supply from annual demand.

The needs in facilities were determined by subtracting the average summer Sunday use of facilities from the average summer Sunday demand for these facilities. This average summer Sunday need was then converted to facilities by dividing it by the capacity of each facility and by the turnover expected of each facility.

Recreation Market Area and Participating Population. The participating population was determined by using the following assumptions: (1) the recreation market area for each study area--in this case, the Appalachian Region and/or each identified project being evaluated for outdoor recreation--includes an identified geographical area and appropriate portions of standard metropolitan statistical areas within 2½ hours' driving time of the study area; (2) the SMSA are focal points in generating outdoor recreation demand; and (3) about 60 percent of outdoor recreation use occurs within 40 miles or 1 hour's driving time; about 30 percent originates between 40 miles and 125 miles from the study area; and the remaining 10 percent of the users of the study area originates from areas beyond 125 miles.

Portions of the SMSA population affecting the recreation market area demand were obtained by drawing 40-mile and 125-mile radii circles around each identified SMSA. These proportional areas falling within the project or region demand area were then multiplied by 60 percent and 30 percent, respectively, of the SMSA population. The resulting figures were considered to represent the portion of the population of an SMSA which would affect recreation demand within the recreation market area of the project or region. Overlapping of demand would be avoided by subtracting participation populations for more than one project.

The participating population for project studies, is therefore, computed by adding the population within one hours' driving time

of the project to that portion of the Standard Metropolitan Statistical Areas population that are between one and two-and one-half hours' driving time from the project who can logically be expected to make use of the project. The sum of these two populations was then increased by 10 percent to account for project users originating from points beyond the two-and-one-half hours' driving time zone.

The Effects of Reservoir Drawdown on Outdoor Recreation. In many projects the drawdown in reservoirs, which can include an infinite array of combinations and schedules, may have no significant effect on outdoor recreation use at the project area. However, where drawdown can be considered significant, the referenced, "Guide Evaluating the Effects of Reservoir Drawdown on Outdoor Recreation," may be useful as guidance material in recreation resource evaluation.

The purpose of the guide is to help the resource planner in making technical decisions which may have a strong bearing on outdoor recreation potentials at the early stages of project formulation. It also helps the recreation resource planner in evaluating water resource developments for outdoor recreation potential Such a guide should be used with caution and only for the purpose for which it is originally intended. There are always exceptions to the rule for special cases that require a more detailed analysis. For instance, drawdowns are sometime employed for fish management and weed and vector control.

For our studies in water resource planning, significant drawdown may be defined as any fluctuation of the recreation pool which will require: (1) a modification of the separable costs for the recreation development, (2) an adjustment in the recreation day value as derived from Supplement 1, Senate Document 97, and/or (3) an adjustment of the total use or distribution of activities. Where drawdown does not meet any of the criteria, it may generally be assumed that the drawdown is not considered significant.

Analyze the physical characteristics of the project with respect to the effect of drawdown on each characteristic. The more commonly recognized physical characteristics to be considered in project evaluation are the following: topography, vegetation, soils, climatic factors, water depth, water quality, water surface in area, location, access, shorelines and configuration, health, and safety.

Planning criteria may be obtained from available recreation reference materials. The degree of detail required in evaluation will determine the type of standards and criteria useful in applying them to the project. Where the optimum or ultimate potential of the project will be altered by significant drawdown, the following types of adjustment are recommended:

1. Modification of Separable Costs - Where there is a significant change due to drawdown, guidance should be given to the action agency in cost adjustment to assure that use and quality be maintained. For exmaple, extension of boat launching ramps or sand beaches are typical of the facilities which would show such modifications.

2. Change in the Value of the Recreation Day - Where the quality of the recreation experience is significantly affected by the drawdown, the memorandum of August 8, 1966, from the Associate Director to all Regional Directors, "Determination of Recreation-Day Monetary Values at Water Resources Development Projects," may be useful as a method of adjusting recreation-day values.

3. Adjustment of Total Use or Distribution of Use- When certain activities are affected, a reduction or change in the activity distribution, which would account for the expected change in use, should be made. When all activities are affected in approximately equal amounts, a proportionate reduction or change in expected use, based upon the percent of change in pool size, should be made.

The guides furnish more specific guidance in application of the above adjustments. In most cases, more than one type will apply to the project being evaluated.

Generally, loss in the values derived from outdoor recreation at reservoirs due to drawdown which is attributable to water quality control and/or low flow augmentation is assumed to be recoverable (partially or wholly) by the increases in values derived for outdoor recreation downstream. Computations of these downstream benefits would be separate from benefits to the reservoir and would be based on project use of the stream with and without the augmentation.

GUIDE IN DETERMINING THE EFFECTS OF RESERVOIR DRAWDOWN ON OUTDOOR RECREATION USE

Factors of Significance	Types of Adjustment Needed		
	Modification of Separable Cost	Change in the Recreation-Day Value	Adjustment of Total Use or Distribution
Surface area during recreation season.	A change of between 0 and 10% in acreage. Project area is adequate for the expected use, but facility modification will be necessary.	A change of between 10% and 33% in acreage. Project area will support expected use but even after facility modification a reduction in the quality of the recreational experience is necessary.	A change greater than 33% in acreage. Project area will not support expected use at any acceptable level of quality. Modification of use estimates are required.
Pool elevation changes during recreation season.	A 0-5 foot change in elevation in sandy soils or a 0-2 foot change in clay or silt soils will support expected use with slight facility modification.	A 5-15 foot change in elevation in sandy soils or a 2-7 foot change in clay or silt soils will support expected use with facility modification and sacrafice of quality.	Changes greater than 15 feet in elevation in sandy soils or greater than 7 feet in clay or silt soils will not support the expected use at any acceptable level of quality.
Quality of the environment.	Changes in environmental quality due to drawdown that can be remedied by landscaping.	Changes in environmental quality cannot be maintained by artificial means. A decrease in the recreational experience is necessary.	Uses associated with aesthetic and natural values will be discouraged because of low environmental quality.
Outdoor recreation opportunities.	No outdoor recreation activity is directly excluded because of drawdown or a modification of facilities will assure planned participation in all activities.	Some activities generally expected at water impoundments are limited but all water-related uses are available.	One or more of the activities directly related to water are limited.
Type of facilities.	The quality of outdoor recreational facilities is not changed or can be aleviated by modification of the basic type or design.	Some facilities generally available are limited or are of lowered quality but all water-related facilities are adequate.	Some major water related facilities are by necessity of low quality or excluded because of drawdown effects.

GUIDE IN
DETERMINING RECREATION-DAY MONETARY VALUES
AT WATER RESOURCES DEVELOPMENT PROJECTS

FACTORS CONTRIBUTING TO LOW RANGE VALUES FROM $0.50-$1.00	FACTORS CONTRIBUTING TO MEDIAN RANGE VALUES FROM $0.75-$1.25	FACTORS CONTRIBUTING TO HIGH RANGE VALUES FROM $1.00-$1.50
Reservoir drawdown such that there is over 33% variation in surface area during the recreation season.	Reservoir drawdown such that there is between 10% and 33% variation in surface area during the recreation season.	Reservoir drawdown such that there is less than 10% variation in surface area during the recreation season.
Project location such that the radius of the recreation market area will be greater than 100 miles.	Project location such that the radius of the recreation market area will be between 50 and 100 miles.	Project location such that the radius of the recreation market area will be less than 50 miles.
Many alternative recreation areas capable of providing similar recreation opportunities to the same population as recreation service area.	Intermediate number of recreation areas capable of providing similar recreation opportunities to the same population or recreation service area.	Few or no alternative recreation areas capable of providing similar recreation opportunities to the same population or recreation service area.
Aesthetic qualities below the norm for region in which the project is located. Only limited improvement possible even with good management.	Area of normal aesthetic qualities. Capable of improvement with good management. Perhaps possessing one or two outstanding features.	Area possessing above normal aesthetic qualities. Varied topography, geography, vegetation. Unique scenic or scientific attractions.
Pollution or other factors seriously limiting direct use of the water. Capable of supporting less than 6 of the activities identified in ORRRC Study Report 19. High quality experience not possible.	Water generally adequate for direct use. Limiting conditions when present of brief duration and infrequent occurrence. Expected to support from 6 to 10 of the activities identified in ORRRC Study Report 19. High quality experience possible for some activities.	No factors limiting direct use of the water. Expected to support more than 10 of the recreation activities identified in ORRRC Study Report 19. High quality experience possible for most activities.
Facilities barely adequate for normal recreation use. No good or exceptional quality facilities present. Overuse common on weekends during primary recreation season.	Good quality facilities available at one or more sites. Facilities at other sites barely adequate for normal recreation use. No exceptional facilities. Some overuse on peak days.	Good quality facilities available at all general recreation sites. Exceptional facilities such as marinas and lodges may be present. Generally no overuse.

Recreation Day Conversion Factor 1.5. The number of activity days comprising recreation days were determined by equating the relative weights of Outdoor Recreation Resources Review Commission annual participation rates for those four activities (picnicking, boating, swimming, and camping) characteristic to a recreation area. The number of activity days per recreation day for this select group of activities is assumed to be proportional to the number of activity days per recreation day for all activities listed by ORRRC.

The relationships was determined by converting the annual participation rates to recreation days for the selected activities to be provided at the recreation area. In summary it is assumed that the relative proportion of total annual activities considered by ORRRC Study Report 19 to total recreation days bears a similar relationship for those activities comprising the total recreation experience at a recreation development.

Reservoir Use. Determination of annual recreation days for Corps of Engineer projects was accomplished through a study of past use at fully developed reservoirs.

The results obtained from the study gave proportion of activity days for the selected activities to the acres of water at the reservoir. They also gave the number of visitors that could be expected per acre of water according to the reservoir classification.

Criteria for Reservoirs. Existing reservoirs selected were assumed to be receiving maximum use. The more significant physical factors in order to acheive analogous types of outdoor recreation use are size, intensity of use, and topography. Criteria follows:

(a) Small impoundments - under 100 acres
(b) Intermediate impoundments - between 100 and 1,000 acres
(c) Large impoundments - over 1,000 acres
(d) Rural-type impoundments - natural environment and general outdoor recreation use - weekend and vacation
(e) Urban type impoundments - high density use - generally of day use
(f) Steep adjacent land - most of surrounding land with slopes over 15 percent
(g) Hilly adjacent land - between 3 and 15 percent slope
(h) Flat adjacent land - most land less than 3 percent slope

Facilities for boating, camping, picnicking, and swimming at each reservoir were determined and annual capacity estimated. Annual activity days for these activities were converted to annual recreation days for each reservoir.

Participation Rates. Selected participation rates are based on use data at similar-type existing reservoirs. Analysis of BOR Form 8-73 has provided information to obtain a reasonable basis for rates within general ranges. They have also enabled interpolation for estimated participation rates where information is unavailable.

(a) Participation rate for Minimum Development:
1. Urban-type reservoirs: 25 Recreation days per surface acre per year.
2. Rural-type reservoirs: 17 Recreation days, etc.

(b) Participation rate for Maximum Development per Acre:

Activity	Small Reservoirs			Intermediate Reservoirs			Large Reservoirs		
	Urban	Rural		Urban	Rural		Urban	Rural	
	Hilly	Hilly	Steep	Hilly	Hilly	Steep	Hilly	Hilly	Steep
Boating	6	6	6	3	3	3	1	1	1
Swimming	32	16	6	24	9	2½	6	2½	½
Picnicking	26	12	3	13	6	2	10	3	1½
Camping	3¼	1 3/4	1½	2½	1¼	1	1½	1	3/4

(c) Annual activity days by Major Census Regions per year:

Activity	Northeast	South	North Central
Boating	43	65	48
Swimming	38	45	37
Picnicking	44	69	51
Camping	29	36	28

SUPPLEMENT A

To

RECREATION AND AESTHETICS

APPENDIX F

To

DEVELOPMENT OF WATER RESOURCES IN APPALACHIA

Prepared by:

Tennessee Valley Authority

September 1968

TENNESSEE VALLEY AUTHORITY

OUTDOOR RECREATION EVALUATION REPORT

FOR

THE UPPER FRENCH BROAD RIVER BASIN PROJECT

Subregion J

Preface

The TVA recreation program is concerned with the total outdoor recreation environment in the Tennessee Valley. Through its own organization and through cooperative arrangments with local, State, and other Federal Agencies, TVA seeks to assure that recreation resources are recognized and included in the physical, economic, and social development of the Valley. In actually developing recreation resources, a variety of approaches are used ranging from direct development to various types of cooperation with other agencies.

In planning multipurpose water resource projects, the recreation potential is identified, along with the construction elements needed to obtain the maximum recreation benefits therefrom. Affected or interested public agencies are consulted to inform them of the project and to seek their recommendations on needed facilities. When appropriate and mutually desirable, TVA transfers land to public agencies for them to develop according to a suitable plan. Other recreation lands are sold or leased to public agencies, private groups or individuals. Waterfront lands retained by TVA are developed and maintained as public access areas to assure adequate access to its reservoirs and to complement the recreation facilities provided by others.

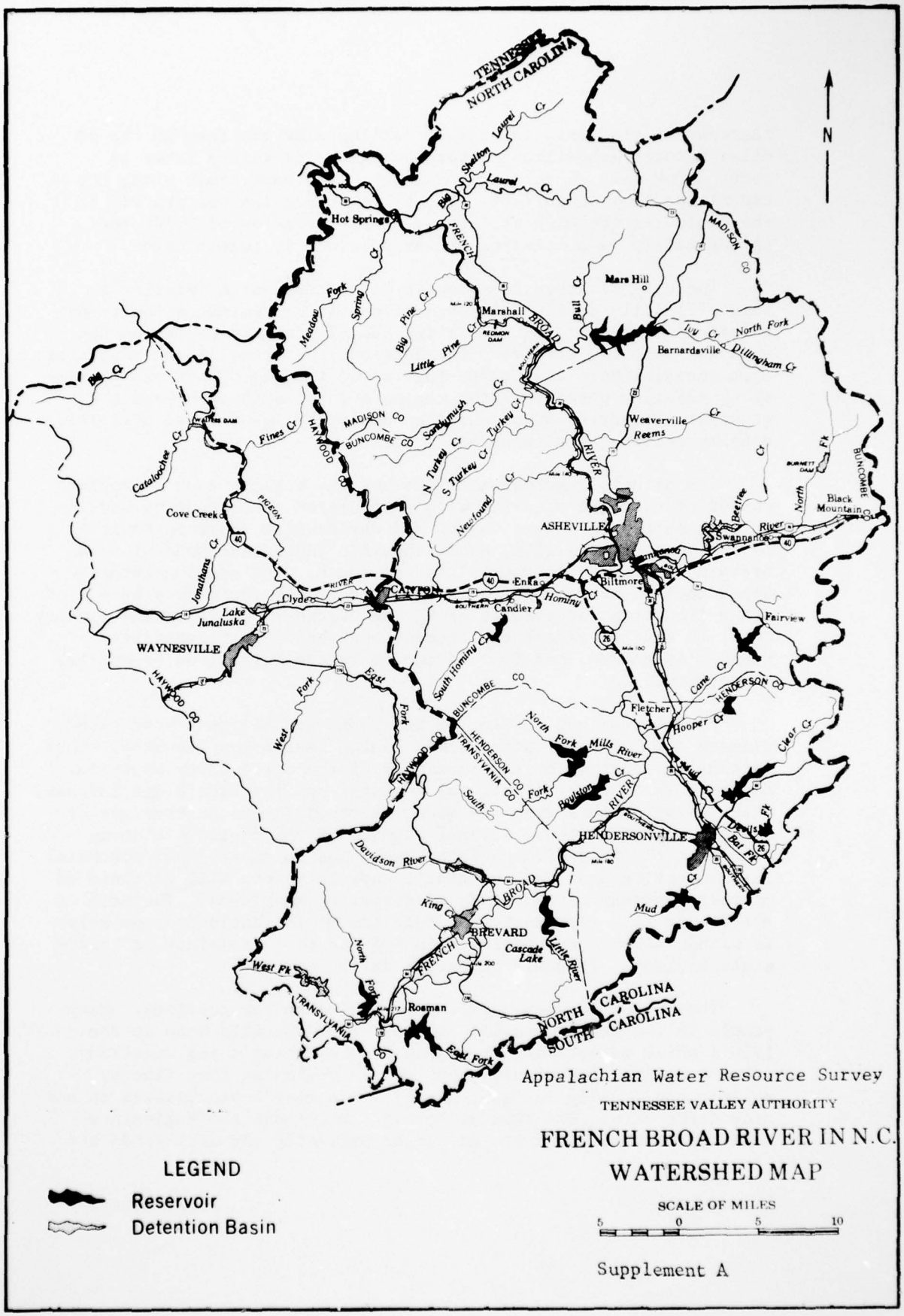
The plan for multiple-purpose development of the French Broad River Basin (in western North Carolina) calls for a system of 14 dams 74 miles of channel improvements, and 1.4 miles of levee at Asheville, (North Carolina.) The system would provide significant flood control benefits, as well as benefits from water supply, water quality control, recreation, shoreline development fishing, and area redevelopment.

The French Broad area is entirely without impoundments of the size proposed. The addition of over 6,000 acres of water surface should generate considerable local use, particularly from the urban areas of Asheville, Brevard, Hendersonville, Canton, and Waynesville. Some use of the lakes by tourists is also anticipated, although the summer climate and scenery are the major tourist attractions of the area.

The Franch Broad River Basin in North Carolina lies in the southern Appalachian Mountain region of the State. At the Tennessee-North Carolina State line the river drains an area of 1,664 square miles, comprised of parts of Transylvania, Haywood, Henderson, and Buncombe Counties, and all of Madison County. It extends about 65 miles in a north-south direction and about 25 miles in an east-west direction. From the junction of the North and West Forks, above Rossman, the river flows north across the basin a distance of 116 miles before it crosses into Tennessee, 5 miles northwest of Hot Springs, North Carolina.

The basin is bounded by two great mountain ranges, the Great Smoky Mountains on the north and west and the Blue Ridge Mountains in the south and east. Originating in the very rugged mountains in the southern end of the basin, the French Broad River is formed by the junction of the East, Middle, West, and North Forks in the vicinity of Rossman and then flows north through a broad valley of fertile farmlands. The principal tributaries are Little River, Swannanoa River, Cane Creek, Mud Creek, Ivy Creek and Laurel Creek on the east side and Davidson River, Mills River, Hominy Creek, Sandymush Creek, and Spring Creek on the west. About midway of its course in North Carolina the river flows through Asheville, the largest city in the basin.

The topography of the basin is extremely rugged around the rims and in the headwaters. Upstream from Asheville, the slope of the main river is relatively flat, falling only about 160 feet in 60 miles. Downstream from Ahseville, there is a marked



Appalachian Water Resource Survey

TENNESSEE VALLEY AUTHORITY

FRENCH BROAD RIVER IN N.C.
WATERSHED MAP

LEGEND

Reservoir

Detention Basin

SCALE OF MILES

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increase in gradient, the stream falling some 640 feet in the 40 miles between Asheville and Hot Springs. The valley floor is about 2,000 feet above mean sea level, with some peaks along the rim rising over 5,000 feet. Mount Pisgah, on the western rim of the basin, is the highest, with a crest elevation of 5,721 feet. Approximately 74 percent of the area is now in forest cover.

The city of Asheville--center of western North Carolina's only officially designated metropolitan area--dominates the trade relations of the region and is the hub of its transportation network and cultural affairs. In addition, the Asheville metropolitan area contains more than three-fourths of the region's urban population, about 60 percent of the region's total employment and the greatest concentration of services and other specialized activities usually associated with an urban center.

The principal urban satellites of the region--each a growing center of economic activity with specialized manufacturing and related enterprises--are Canton and Waynesville (Haywood County) to the west of Asheville, Hendersonville (Henderson County), and Brevard (Transylvania County) to the south. The growing interdependence of these centers is revealed by the rapid development of urban-industrial activities along the highways and railroads linking them, so that an almost continuous urban belt along Interstate Highway 40 and 26, and U.S. 64 can be foreseen for 1980 or shortly thereafter.

The mountainous setting of the basin and pleasant year-round climate are the major attractions to the recreation industry. This setting is enhanced by the proximity of the Great Smoky Mountains National Park, several national forests, and the Blue Ridge Parkway, which draw visitors from the great metropolitan concentrations of eastern United States. Several studies of the region's economy show that the Upper French Broad Basin has an exceptional potential for recreation and that the area's natural assets will continue to attract hundreds of thousands of traveling Americans. The area is accessible to a mass market--two-thirds of the Nation's population is within a 2-day automobile trip and for most travelers on interstate highways, it would be only a day's journey.

The Asheville area has long been a mecca for tourists. Many people in the area can still remember the Asheville boom in the 1920's which established it as one of the Nation's top vacation areas. Wealthy individuals came to the region at that time by pullman car to stay in inns, hotels, or summer homes located in and around the city. The bulk of tourists who visit the region now come by automobile and are no longer primarily the well-to-do but

are, rather, the middle-income group. Nonetheless, the new recreation market promises to surpass anything which has gone before. For example, in 1963 total travel expenditures in the area ran 266 percent over 1948 levels and were well ahead of statewide gains of 205 percent. The number of firms catering to this trade increased from 841 to 1,279, a 52- percent increase. The total number employed in the recreation-serving industry was 5,890.

Completion of Interstate Highways 40 and 26, extension of the Blue Ridge Parkway to the south, and construction of the Appalachian highway system in the area should further enhance the region's strategic position in regard to travel by automobile. However, it might also result in changing the focus of tourist objectives and permit easy bypassing of the area if facilities and attractions do not interest the tourists. Ingenuity and initiative are needed to devise and improve attractions that would help expand the tourist trade in the area as well as reduce its seasonality.

For many years the Asheville-Hendersonville-Brevard area has been one of the prime vacation regions in the Southeast, largely because of the delightful summer climate and the beautiful mountain scenery. Mt. Mitchell, elevation 6,684 feet, the highest point east of the Mississippi River, is located only about 25 miles northeast of Asheville. There are other nationally known attractions located nearby, such as the Biltmore Estate and the Cradle of Forestry in America. Also this is the eastern approach to the Great Smoky Mountains National Park.

The proposed reservoirs will help to meet the local demand for water-oriented recreation while at the same time enhancing the area as a tourist destination by adding water-oriented recreation opportunities. While the French Broad Basin possesses many desirable recreation features, the area is generally without impoundments of sufficient size to accommodate various types of water-oriented recreation activities. It is expected that 11 of the proposed reservoirs located in strategic areas will generate considerable use by residents of the watershed. The relationship of these impoundments to the highway system places them within minutes of one or more urbanized areas.

In an effort to enhance the recreation potential of the reservoirs, drawdown during the recreation season, April 1 to Labor Day, will be limited to no more than about five feet, even under the most severe dry conditions. In an effort to meet the

needs of anticipated recreation use of the projects, provisions will be made for boat-launching ramps, parking facilities, picnic areas, sanitary facilities, and potable water at appropriate locations around the shorelines.

This plan of development was coordinated at all stages with the North Carolina Wildlife Resources Commission. During 1966 the Commission designated about 200 miles of streams in the basin as public mountain trout waters and planned to stock these with rainbow, brook, and brown trout. Other streams, totaling many additional miles, support trout but are not stocked because of the small amount of fishing along them. The proposed reservoirs would eliminate about 11 miles, or an estimated 55 acres, of trout streams. At the same time, the reservoirs will improve the quality of the water downstream from the dams. Water discharged from the reservoirs generally will be colder than natural flows because the heavier discharge flow will not warm up as readily as the smaller natural flow. Further investigations now scheduled will assist in the design of the outlet works to ensure satisfactory conditions for a trout fishery.

The proposed lakes, with a total surface area of about 6,700 acres and a total shoreline length of about 183 miles at normal pool levels, will undoubtedly encourage heavy recreation use for still-water fishing. It is estimated that the lakes will attract about six fishing visits per acre per year the first year, and that the visitation will increase at the rate of 3 percent per year for the next 50 years and thereafter at about 1.5 percent per year. On this basis, the ultimate fishing usage is estimated to be 270,000 visits annually. Wildlife of the adjacent hardwood forests--squirrel, grouse, and deer--is an important adjunct to the French Broad resource base, but it will be affected little or none by this project.

The annual visitor-day use for general recreation after a 6-year development period for the 11 reservoir units incorporating this function is estimated to be about 300,000.

The project cost includes $600,000 as the estimated amount of capital investment necessary to provide initial recreation facilities for the entire project. Additional development by others will be necessary to capture the full recreation potential of the project.

SUPPLEMENT B

TO

RECREATION AND AESTHETICS

APPENDIX F

TO

DEVELOPMENT OF WATER RESOURCES IN APPALACHIA

Prepared by:

U.S. Department of Agriculture

Part I - U.S. Forest Service

Part II - U.S. Soil Conservation Service

September 1969

SUPPLEMENT B

TO

APPENDIX F

TABLE OF CONTENTS

Par.	Subject	Page
	PART I - U.S. FOREST SERVICE	
1	SUMMARY OF RECREATION PROGRAM	1
	Introduction	1
	Problems	1
	Recreation Program	1
	Benefits	2
	Detailed Reports of National Forests by Sub-region	2
2	SUB-REGION B	7
	George Washington National Forest	7
	Introduction	7
	Recreation Situation	7
	Recreation Objectives	7
	Monongahela National Forest	8
	Introduction	8
	Recreation Situation	8
	Recreation Objectives	9
	Hector Land Use Area	10
	Introduction	10
	Recreation Situation	11
	Recreation Objectives	12
3	SUB-REGION C	15
	Jefferson and George Washington National Forests	15
	Introduction	15
	Recreation Situation	15
	Recreation Objectives	15

TABLE OF CONTENTS
(cont'd)

Par.	Subject	Page
4	SUB-REGION D	19
	Sumter and Pisgah National Forests	19
	Introduction	19
	Recreation Situation	19
	Recreation Objectives	19
5	SUB-REGION E	25
	Chattahoochee, Talladega, Tombigbee, Holly Springs, and Bankhead National Forests	25
	Introduction	25
	Recreation Situation	25
	Recreation Objectives	25
6	SUB-REGION F	31
	Allegheny National Forest	31
	Introduction	31
	Recreation Situation	31
	Recreation Objectives	32
7	SUB-REGION G	37
	Daniel Boone and Jefferson National Forests	37
	Introduction	37
	Recreation Situation	37
	Recreation Objectives	37
	Monongahela National Forest	38
	Introduction	38
	Recreation Situation	38
	Recreation Objectives	39
	Wayne National Forest	40
	Introduction	40
	Recreation Situation	41
	Recreation Objectives	42

TABLE OF CONTENTS
(cont'd)

Par.	Subject	Page
8	SUB-REGION H	47
	Daniel Boone National Forest	47
	Introduction	47
	Recreation Situation	47
	Recreation Objectives	47
9	SUB-REGION I	51
	Daniel Boone National Forest	51
	Introduction	51
	Recreation Situation	51
	Recreation Objective	52
	Laurel River Reservoir	52
	Other Reservoirs	52
10	SUB-REGION J	57
	Bankhead, Chattahoochee, Cherokee, Jefferson, Nantahala and Pisgah National Forests	57
	Introduction	57
	Recreation Situation	57
	Recreation Objectives	57
	PART II - U.S. SOIL CONSERVATION SERVICE	63

LIST OF FIGURES

Figure No.	Title	Page
B-1	Hickory Hill Reservoir	3
B-2	Mouth of Seneca Recreation Complex	5
B-3	National Forest Recreation Development, Sub-region B	13
B-4	National Forest Recreation Development, Sub-region C	17

LIST OF FIGURES
(cont'd)

Figure No.	Title	Page
B-5	National Forest Recreation Development, Sub-region D	23
B-6	National Forest Recreation Development, Sub-region E	29
B-7	National Forest Recreation Development, Sub-region F	35
B-8	National Forest Recreation Development, Sub-region G	45
B-9	National Forest Recreation Development, Sub-region H	49
B-10	National Forest Recreation Development, Sub-region I	55
B-11	National Forest Recreation Development, Sub-region J	61

SUPPLEMENT B - OUTDOOR RECREATION PROPOSALS

Part I - U.S. Forest Service

1. SUMMARY OF RECREATION PROGRAM

Introduction

West of the populus cities of the Eastern Seaboard lie the lands of Appalachia. Within this ancient mountain area are located 15 National Forests. Over one-half of the people of the United States live within one day's drive of one or more of these National Forests. The total public - National Forest - ownership is 5.8 million acres. Offering recreation and renewal among mountains and forests, these National Forests are feeling the impact of the population explosion and are becoming increasingly crowded owing to increases in population, income, and leisure time. Water oriented recreation is in great demand with a short supply available. National Forests offer open space in which to hunt, fish, camp, picnic, swim, boat, hike, drive for pleasure and sightseeing. These outdoor recreation activities are expressing constant and new demands on National Forests.

Problems

Facilities for outdoor recreation activities are generally inadequate to meet the current and future needs of people. At present levels of financing, development of outdoor recreation facilities will continue to lag behind demand. Pollution of streams and reservoirs, unless abated, will increase pressures on existing facilities and water resources. The large number of private ownerships within the National Forest boundaries is often a limiting factor in developing additional sites. Broken land patterns make it difficult or impossible to fully develop some sites. Many sites needed for development as public recreation areas are in private ownership.

Recreation Program

The National Forest Accelerated Recreation Development Program is planned for complete installation by 1980. The planned accelerated development of 15,730 acres, providing 1,880 individual sites for various recreational activities, includes 4,050 acres of recreation impoundments and 53 major recreational complexes.

At current financing levels, approximately $30,000,000 is anticipated for recreational development within Appalachia under normal National Forest program for the next 10-year period. Under an accelerated program, and additional $360,314,900 is needed to meet the demands. National

Forest recreation facility development includes camping and picnicking areas, swimming beaches, boating sites, observation sites, organization camps, and winter sports areas. Examples of special projects planned for development are the Spruce Knob-Seneca Rocks and Mount Rogers National Recreation Areas; recreational development of the Allegheny, Tionesta, Rowlesburg, Cave Run, and Potomac Basin Reservoirs: and the Talladega Scenic Drive and Pisgah Forest Recreation Complexes. Special projects planned for development embrace National Recreation Areas, scenic drives, recreational development of reservoirs, and major recreational complexes. Total program needs are in excess of $390,000,000.

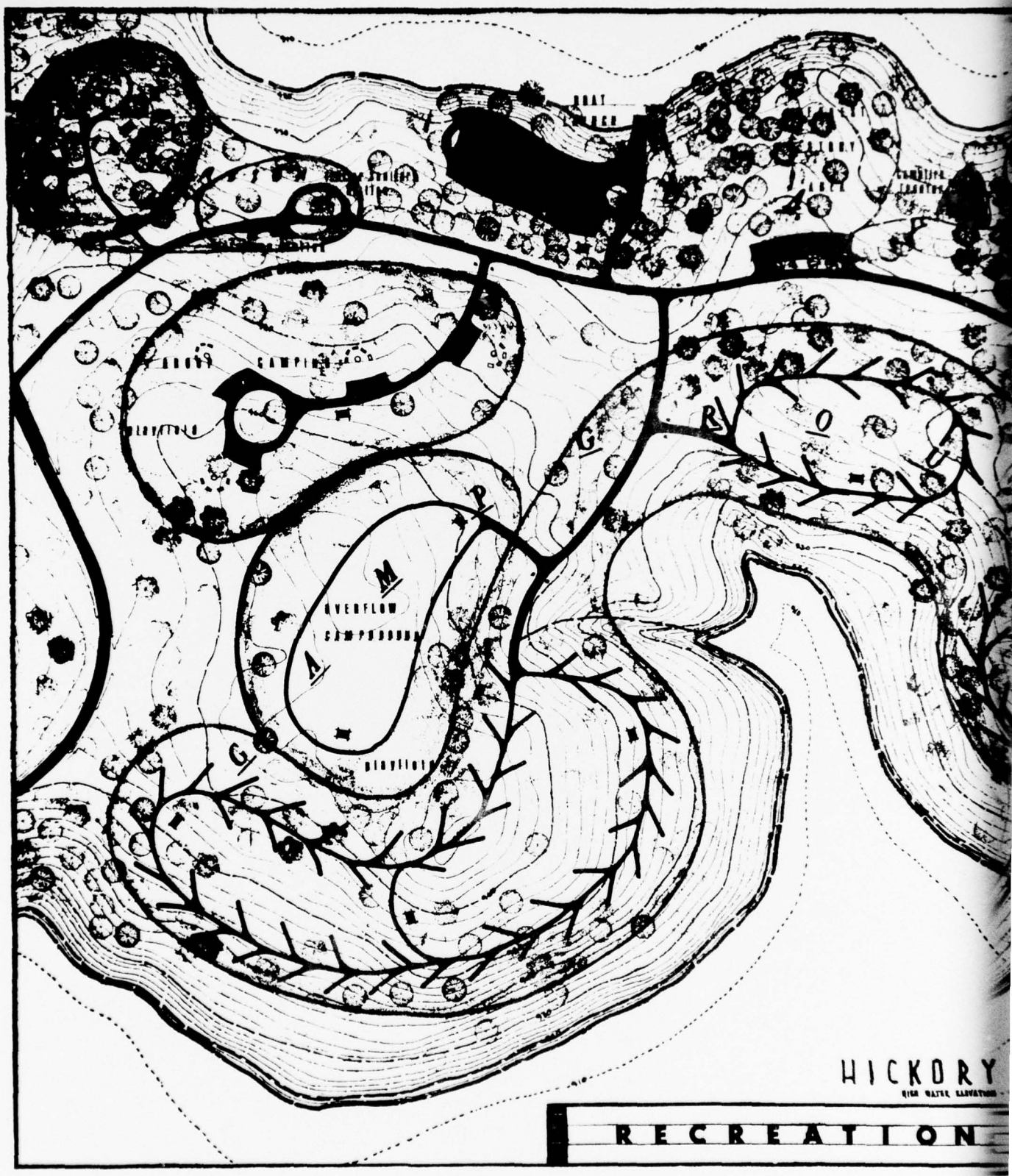
Benefits

The almost 12 million visitor days of recreation reported in 1967 is expected to increase by over 30 million visitor days by 1980 if the proposed accelerated program is fully financed and installed. Conservatively, this increased visitation by 1980 should improve the economy of Appalachia by $120,000,000 annually, based on an average expenditure of $14.00 per visitor. The next 10 years are critical for the development of National Forest recreation resources. Full implementation of the proposed accelerated program is necessary to meet the outdoor recreation needs of people and to help improve the overall economic situation of this depressed area.

Detailed Reports of National Forests by Sub-region

National Forests occur in all the Appalachian Water Sub-regions except "A". Detailed reports of National Forests by sub-region follow. A map for each sub-region is included after each paragraph and displays the location of each National Forest in the sub-region. Recreation areas proposed for accelerated development are shown for each Forest. The narrative report for each Forest, under the section headed Recreation Objectives, lists recreation sites, recreation impoundments, and special recreation projects by priority for accelerated development. The priorities indicated apply to the recreation development programs of each Forest individually.

Recreation developments on National Forests are basically of two types; those which are water oriented as illustrated by the theoretical Hickory Hill Reservoir (see page 3) and the more general non-water oriented type of complex which is illustrated by the Mouth of Seneca Recreation Complex (see page 5).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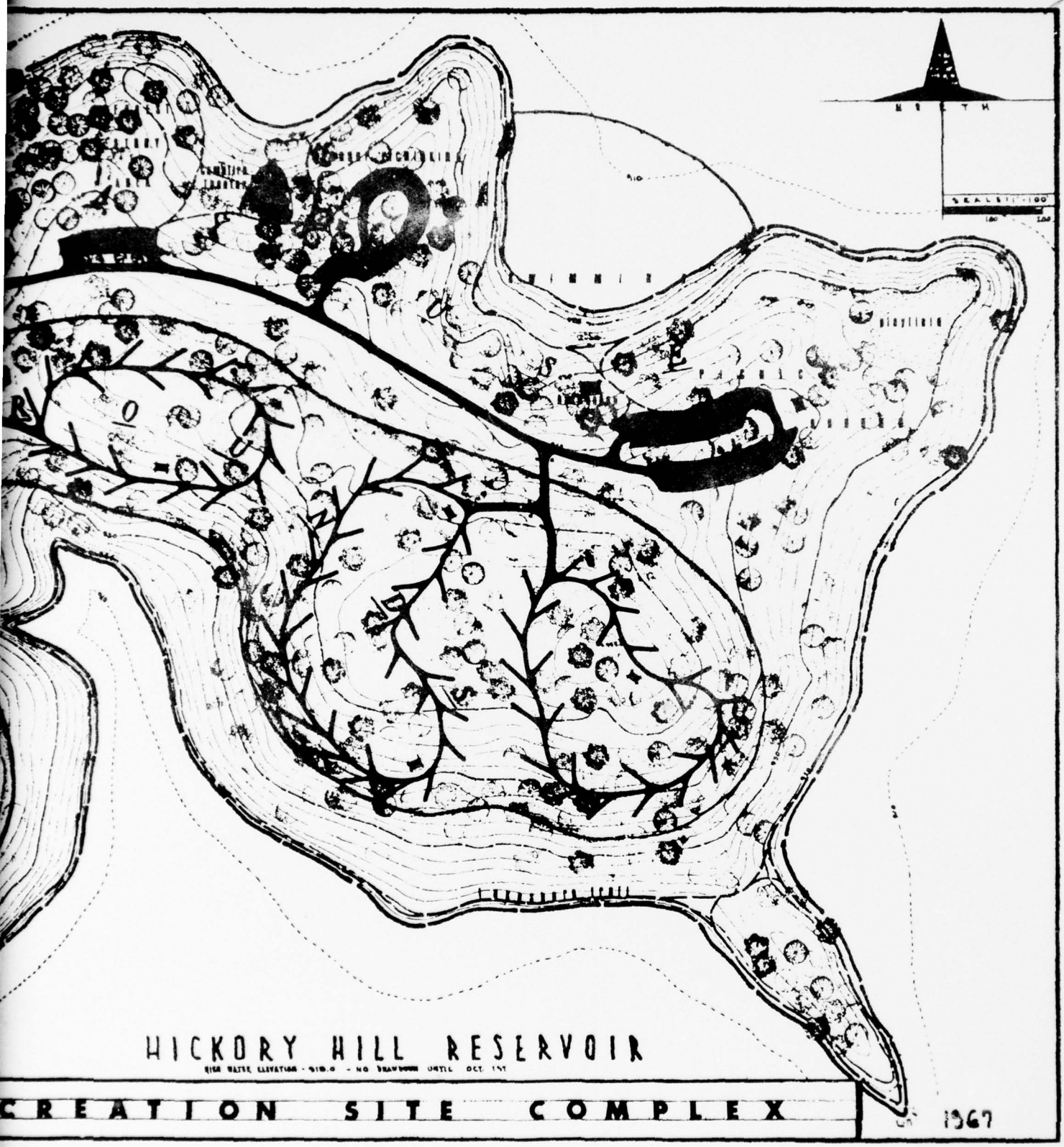

FIGURE B-1

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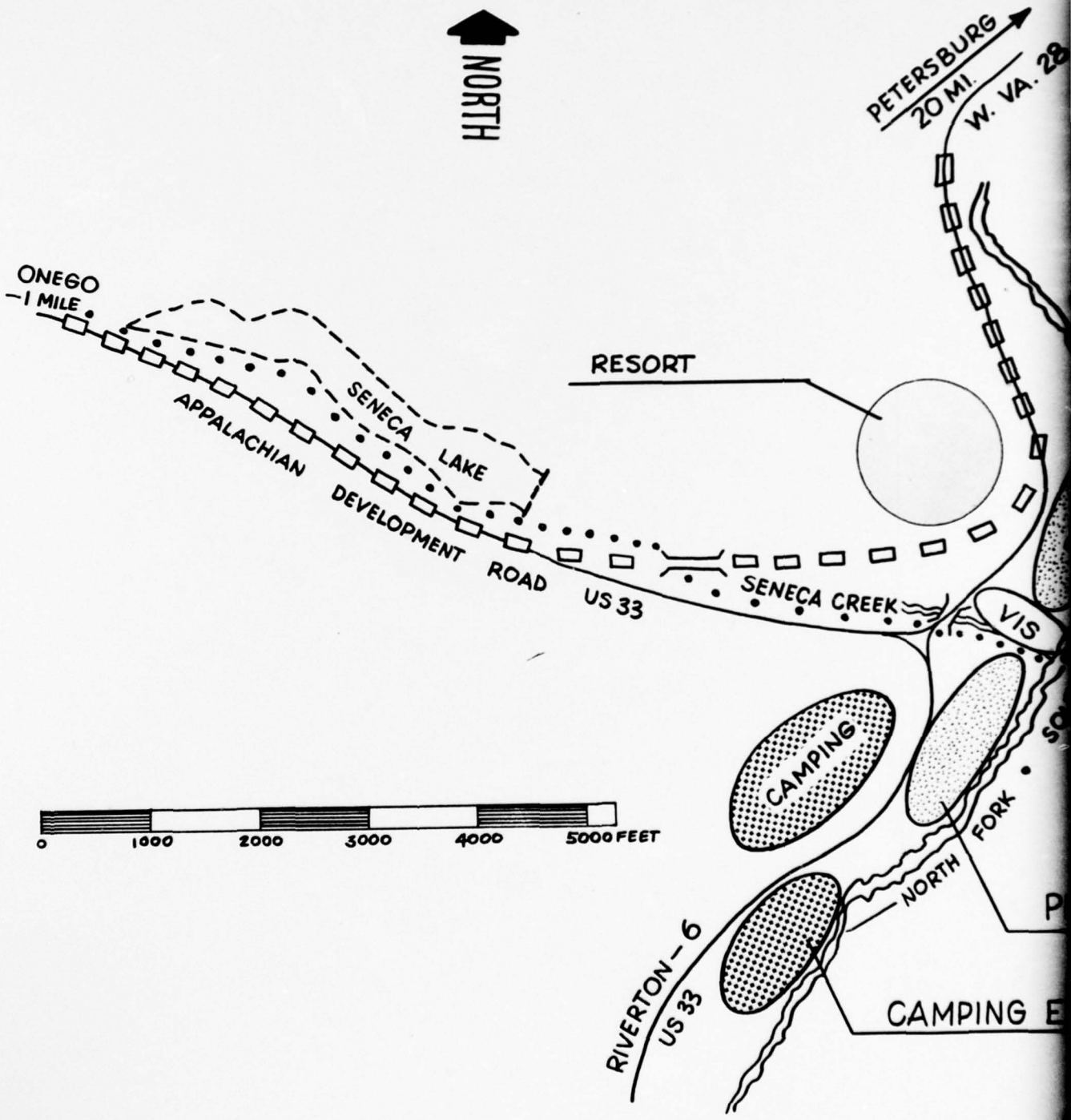
MOUTH OF SENECA RECREATION COMPL



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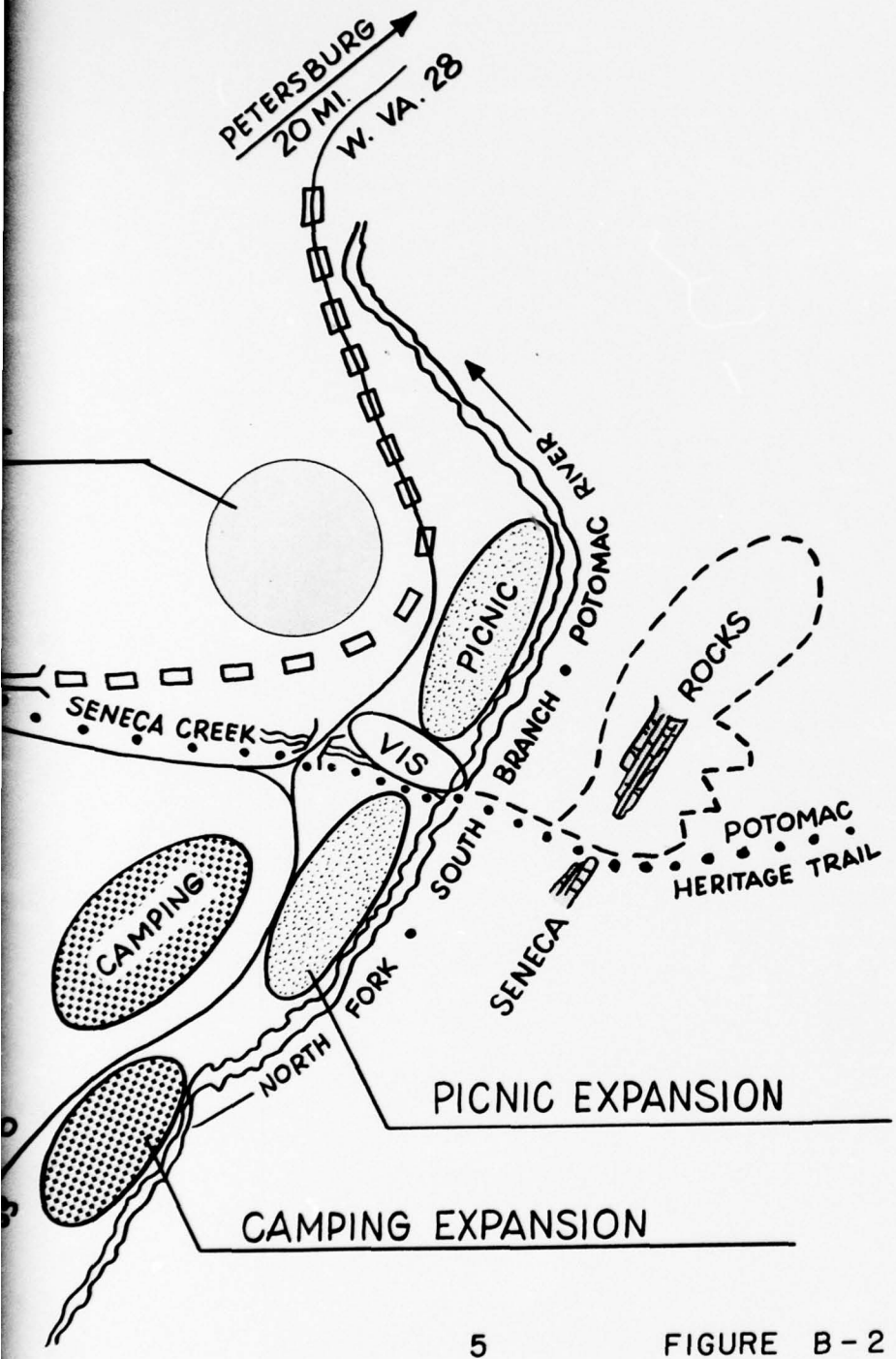

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FIGURE B-2

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2. SUB-REGION B

George Washington National Forest

Introduction

The 183,000 acres of the George Washington National Forest in Sub-region B are located in Hampshire, Hardy, and Pendleton Counties in eastern West Virginia. The National Forest lands lie on the north and west slope of the Shenandoah Mountains. The mountains are rugged and steep, suitable for dispersed types of recreation opportunities. The West Virginia lands drain into the South Fork of the South Branch of the Potomac River and Lost River, a headwater of the Cacapon River. Both of these rivers were included in the Potomac Valley Study as potential scenic rivers. Some land acquisition is necessary to provide access as well as providing lands suitable for development of public service and use sites. Most of the purchases programmed for the George Washington National Forest are for the Virginia portion of Sub-region C.

Recreation Situation

Dispersed type recreation use has been most popular in the past. Hunting, driving for pleasure, sight-seeing, hiking, and horseback riding have been major recreation activities. In 1966, almost 134,000 visitor-days were reported, with approximately 15 percent occurring at eight developed sites. These developments have a capacity of 1,025 persons-at-one-time. The location of this National Forest, in relationship to major metropolitan areas, combined with emphasis and attractions of the Potomac Valley, clearly establishes recreation as one of the major uses for this area. Recreation use will increase more rapidly as suitable and desirable developments are constructed.

Recreation Objectives

Within the next ten years, public recreation facilities for almost 12,000 additional persons-at-one-time will be needed. Thirty-nine sites must be developed to meet ten-year needs. At the current level of financing, possibly 10 percent of the program can be accomplished. The total estimated cost is $6,329,000, which includes $5,697,000 for accelerating installation of the facilities.

In addition, an accelerated development program is desirable to meet current and future demands, especially for the Capon Furnace general area. This special project includes purchase of a suitable development site with water-oriented opportunities. The complex will include camping, picnicking, swimming, hiking, and horseback riding. Nature trails and other interpretive facilities will be provided. These

developments will provide facilities for 5,000 persons-at-one-time. Estimated costs are $1,750,000, which includes 5 miles of access and interior roads, plus acquisition of up to 500 acres of land. Annual visitor day use by 1980 is estimated to be 350,000. Capon Furnace special project is located approximately 5 miles from Appalachia Corridor H.

The Development Program for National Forests should be amended to include this development. The regular Forest Service budgetary request for planning, design and construction will need to be increased by $440,000 annually to permit accelerated development of Capon Furnace.

Monongahela National Forest

Introduction

The central focal point of the part of the Monongahela National Forest in Sub-region B is the Spruce Knob-Seneca Rocks National Recreation Area. Located in northeast West Virginia, the area is in the Potomac River Basin and is of outstanding scenic beauty, highly prized by the recreationist. It is near large metropolitan centers. Some 10 million people live within the immediate zone of influence. There are 27 million people within 150 miles, and over 65 million people, or about one-third of the population of the United States, make their homes within 250 miles.

The area contains many beautiful and interesting natural attractions--mountains with spectacular rock formations; clear, fast-flowing streams; and forested vistas. Grazing and meadow lands add a pastoral scene. The broad expanses of mountains and valleys give a feeling of vastness. Five mountains peaks over 4,000 feet, including Spruce Knob (4,862 feet), highest point in West Virginia, are located here.

Recreation Situation

Varied recreation opportunities exist throughout the Forest. The Monongahela National Forest is particularly well suited to dispersed-type recreation use and also has outstanding white water canoeing opportunities. Recreation facilities have been developed at nine sites scattered throughout the Forest. Approximately 60 percent of the gross area of the National Forest is private land. A large portion of the land in Federal ownership is limited to the ridges and steep slopes, while most of the good developable recreation sites are found in the valleys on private land.

Recreation use in the National Forest in this sub-region had increased to over 192,000 visitor days in 1966. Heavy recreation use

results at times and existing facilities are often overcrowded. Some areas have reached development capacity.

Water is a prime factor in most outdoor recreation activities. No natural lakes exist in this area of the sub-region. Spruce Knob Lake, a small man-made lake, is heavily used throughout the recreation season. The projected increase in recreation use makes it desirable that additional lakes be developed to accomodate demand for increased fishing and water-oriented recreation.

Studies indicate that recreation use in the Spruce Knob-Seneca Rocks National Recreation Area will increase to 2.5 million visitor-days by 1980, and 5 million by the year 2000. It is anticipated that driving for pleasure and scenic enjoyment will be the most popular forms of use, followed by fishing, camping and picnic use, hunting, hiking, boating, and swimming. A notable trend is the growing demand for primitive-type recreation. Additional land acquisition is needed to preserve the National Recreation Area's unique, natural values and to meet anticipated use. A large development potential is available immediately adjacent to the area.

Substantial and early acceleration of recreation development is needed in the area to accomodate the 2.5 million visitor days expected by 1980. The accelerated program will be able to accommodate 2,265 people-at-one-time. If the need is met by accelerated development, total tourist expenditures are expected to reach 20 to 25 million dollars annually by the 10th year. Benefits to the local residents and to the recreation-seeking public will continue to accrue well beyond the 10-year period.

Recreation Objectives

Recreation objectives on this part of the Monongahela National Forest are: (1) to provide outdoor recreation use of its lands, waters, forests, and wildlife for the enjoyment of people: (2) to conserve scenic, scientific, historic, and other values which will contribute to public use and enjoyment; and (3) to assure continuance of the management and utilization of other natural resources--timber, forage, minerals, wildlife, and water--where this does not conflict with the primary purpose of providing outdoor recreation.

The 10-year recreation development program indicates that an acceleration of the normal program for the Forest is needed. Total estimated cost is $19,444,000, which includes three special and two accelerated recreation complexes for accelerated development:

1. Spruce Knob-Seneca Rocks National Recreation Area. Established by Congress in 1965, this 100,000 acre area is land above the ordinary--swift running streams, historical associations, outstanding

scenery, wildlife, forests, and opportunity to seek the outdoors. It is an area where the fisherman, hunter, the picnicker, the camper, the birdwatcher, and all others who revel in the beauties of nature may enjoy the past-times of the great outdoors in this magnificent mountain country of West Virginia. Development of this National Recreation Area will provide public outdoor recreation benefits to 2.5 million visitors annually by 1980.

Estimated cost, $10,328,000.

2. Spruce Knob Lakes Recreation Complex. This major development area will consist of Spruce Knob Lake (existing) and 5 new lakes from about 25 to 110 acres. Development will include 318 camping and 135 picnic units, boating and swimming sites, trails, etc.

Estimated cost, $3,147,000.

3. Recreation impoundments. Cost sharing and construction planning of three Soil Conservation Service recreation and flood retention reservoirs for development as part of the Potomac Basin Plan and the Corps of Engineers Royal Glen Reservoir.

Estimated cost, $624,000.

4. Potomac Basin Reservoirs. Recreation development in conjunction with the three Soil Conservation Service Reservoirs planned as a part of the Potomac Basin Plan.

Estimated cost, $2,122,000.

5. Other Recreation Facility Development. Twelve other recreation areas, a total of about 140 acres, will be developed to complement the larger composites.

Estimated cost, $699,000.

Recreation development priorities 1-4 are in the Spruce Knob-Seneca Rocks Composite now under study by the Appalachian Regional Commission as a part of the Highlands Recreation Study. Other recreation facility development, priority 5, is within or adjacent to the Spruce Knob-Seneca Rocks Composite and Watoga-Douthat-Gathright Composite of the Highlands Recreation Study.

Hector Land-Use Area

Introduction

The Hector Land-Use Area is located in South-Central New York State. The area is located in the center of the Finger Lakes Region;

a major recreation region of the State. It is about 30 miles south of the New York State Thruway, and 20 miles north of the Southern Tier Expressway. Within the 3 neighboring counties, there is a population of 113,000. Within a 2-hour drive there are 9 cities ranging from 17,000 to 319,000 population. The estimated population within 200 miles is 13 million people.

The area is located on a plateau between the two largest Finger Lakes (Cayuga and Seneca Lakes). Topography is generally rolling. The land pattern is one of interspersed pastures, woodlands, and fields. There are very few year-long running streams since the area is located at the summit of 2 watersheds and has a limited size. No natural bodies of water occur in the area. There are some 17 man-made shallow water impoundments from one-half to sixteen acres in size. The combination of open land and woodlands provide an excellent base for both recreation and wildlife, which are very closely associated in management of the area. There are many excellent views of the rural landscape and, in several locations, there are deep-cut drainages which are geologically unique to the general region and add significant interest.

Recreation Situation

The role of the Hector Area can only be understood when the use and management on other land is known. New York State has an excellent Park System. State Parks are located both east and west of the Hector Area on Cayuga and Seneca Lakes, at Watkins Glenn to the south, and Ithaca to the southeast. Private developments are springing up in the region also. There are areas of State reforestation land, but these are mostly undeveloped. State Parks and private developments are developed for high-density intensive use on limited acreage. With these facts in mind, an area is needed which is managed as a natural environment area with a minimum of restrictions, but with basic facilities for the visitor to enjoy the resource and allow him to seek out what he enjoys most in the out-of-doors. A large number of people, particularly families and organized groups such as Scouts, 4-H Clubs and Trail Clubs, strongly seek such an area. This is what the Hector Land-Use Area is providing and must continue to provide in the future. In 1967, a tremendous boom of snowmobile use began which provided an excellent winter use of the area. The area cannot satisfy present demands because of both limited development and limited size. Present facilities for camping are used to full extent and many people are turned away.

The planned recreation developments are based on the present ownership of 13,258 acres. If these developments are made in the next 10 years, the area will be developed to the highest intensity consistent with preserving the natural environment and solitude afforded. However, this amount of development cannot possibly satisfy the demands since

within the Finger Lakes Region of New York, the present and predicted demands are overwhelming in comparison with the facilities available on private, State and Federal lands. A Report on Outdoor Recreation Demands, Supply, and Needs in Appalachia, by the Bureau of Outdoor Recreation in 1967, shows the demand in the Water Sub-region of the Appalachia program in which the Hector Area is located is over 15 million visitor days. By 1980, the demand is shown at nearly 26 million visitor days. It is questionable whether planned private, State, and Federal recreation development can cope with this demand.

Recreation Objectives

The development of the Hector Area should be aimed toward additional camp and picnic grounds, a fully-developed trail system, including snowmobile trails, and additional water impoundments primarily for fishing and general attraction. General emphasis should be on providing an attractive and relatively undeveloped area with the best possible wildlife resources for the visitor to enjoy. The additional 13,000 acres presently in private ownership should be acquired to consolidate the area into a unit of a size necessary to provide appropriate recreation. The 10-year accelerated recreation development program includes the development of 6 recreational sites totaling 36 acres and construction of 40 acres of recreation impoundments. The accelerated program would be able to accommodate 990 people-at-one-time. The priorities for development are:

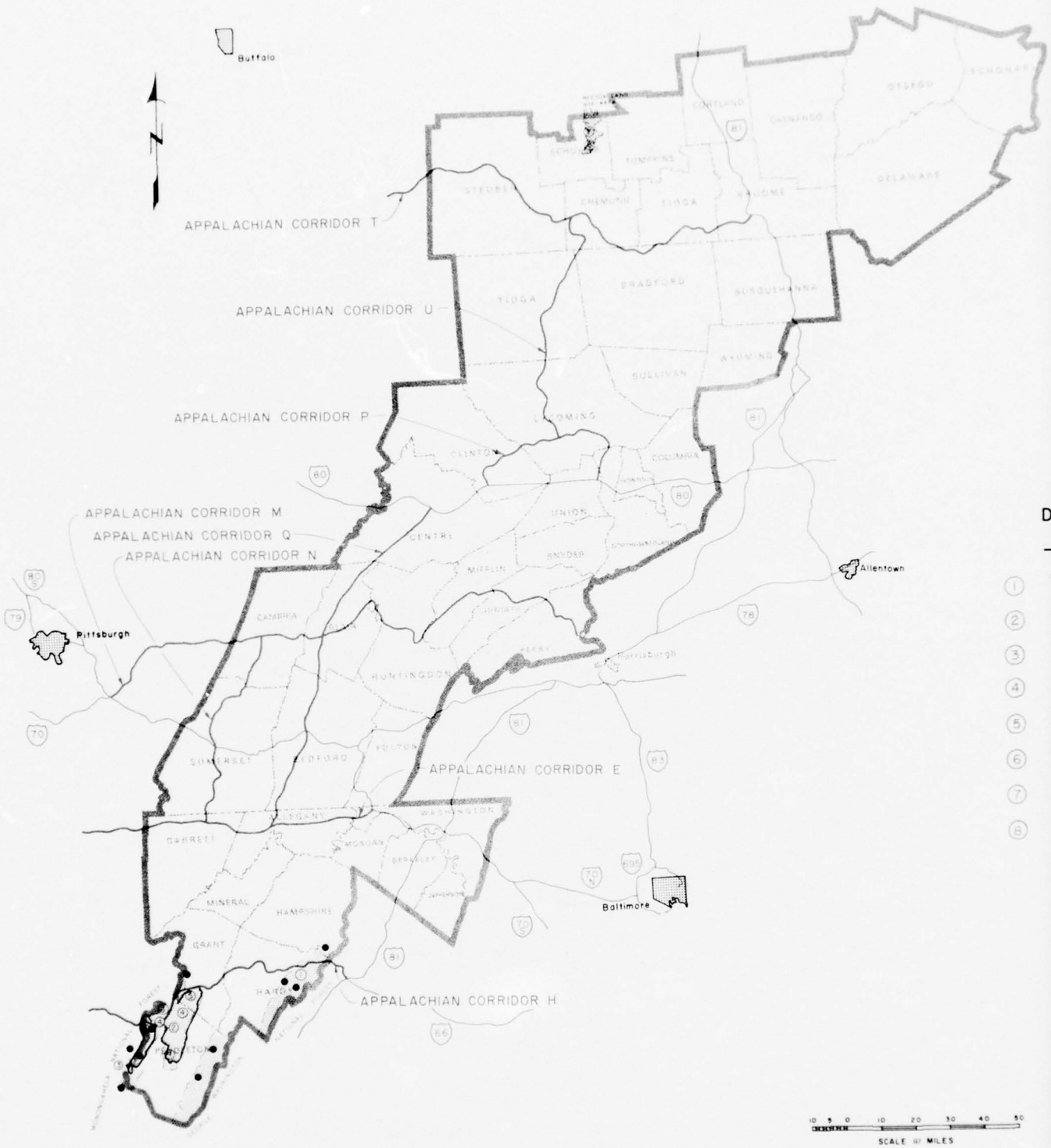
RECREATION FACILITIES

Priority	Name
1	Potomac Recreation Area
2	South Slope Recreation Area
3	Gorge Trail Shelter
4	Chestnut Recreation Area
5	North Hill Recreation Area
6	Backbone Trail Shelter

RECREATION IMPOUNDMENTS

Priority	Name
1	Compartment 71
2	Compartment 45
3	Compartment 33
4	Compartment 53

Estimated cost, $289,000.



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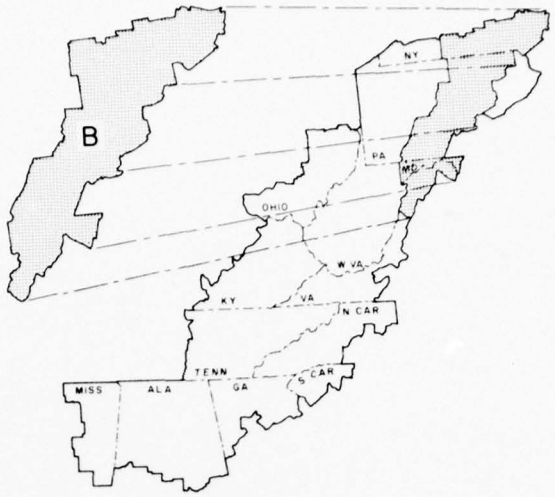
1	CAP
2	SPR
3	5 S
4	3 P
5	APP
6	12 R
7	6 R
8	4 R



VICINITY MAP

Allentown

ACCELERATED DEVELOPMENT AREA KEY

1. CAPON FURNACE - PRIORITY 1
2. SPRUCE KNOB - SENECA ROCKS NRA - PRIORITY 1
3. 5 SPRUCE KNOB LAKES - PRIORITY 2
4. 3 POTOMAC BASIN RESERVOIRS - PRIORITY 3
5. APPALACHIAN RESERVOIR - ROYAL GLEN
6. 12 RECREATION SITES
7. 6 RECREATIONAL SITES - PRIORITY 1 Thru 6
8. 4 RECREATIONAL IMPOUNDMENTS - PRIORITY 1 thru 4

LEGEND

- EXISTING DEVELOPMENT
- (1) ACCELERATED DEVELOPMENT
- —— NATIONAL RECREATION AREA BOUNDARY

0 10 20 30 40 50
SCALE IN MILES

REPORT FOR
DEVELOPMENT OF WATER RESOURCES
IN
APPALACHIA

WATER SUB-REGION B

NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 1968

13 FIGURE B-3

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3. SUB-REGION C

Jefferson and George Washington National Forests

Introduction

There are about 538,000 acres of National Forest lands available for public use within this sub-region. Rugged mountains, beautiful broad valleys, and clear mountain streams are the major attractions.

Recreation Situation

Recreation use in the past has been strongly oriented towards dispersed use, particularly sight-seeing, hunting and fishing. There are 16 developed sites which can accomodate 1,285 persons-at-one-time. In 1966, over 1,000,000 visitor days use were reported. This area, readily accessible to the metropolitan east coast by Interstate Highways 64, 66 and 81, establishes recreation as a major resource. Recreation use is expected to increase as rapidly as suitable and desirable developments are constructed.

Recreation Objectives

To meet increasing outdoor recreation demands, construction of facilities for over 25,000 persons-at-one-time on National Forest lands will be required within the next ten-year period. The estimated cost of $9 million is included in the Development Program for the National Forests. In addition to the normal program, there are three major recreation complexes which should be developed under an accelerated program in order to keep pace with present and anticipated future recreation needs. With optimum development, these three complexes could provide facilities to accomodate 11,000 persons-at-one-time at an estimated cost of $9.5 million. These figures do not include the costs of access roads or land acquisition. Annual visitor day use on these two composites is expected to be 875,000 by 1980.

The Development Program for the National Forests should be amended to include these developments. The regular Forest Service budgetary request for planning, design and construction will need to be increased by $2,380,000 annually to permit these accelerated developments to be constructed.

These projects are:

1. Hidden Valley - George Washington National Forest: This major complex with beautiful Jackson River flowing through it, should

be developed for low to middle income bracket families. As envisioned, the area would be developed for basically all types of outdoor recreation activities, including a possibility for a winter sports area. Total estimated cost of this project is $6.5 million. The daily design load for this complex is 1,600 PAOT with an annual visitor day use by 1980 of 250,000. Priority 2 has been established for construction. This complex is accessible from Interstate 81 (about 14 miles) and I-64 (about 30 miles). It also includes or is adjacent to the Watoga-Douthat-Gathright Interstate Composite now under study by the Appalachian Regional Commission as a part of the Highlands Recreation Study.

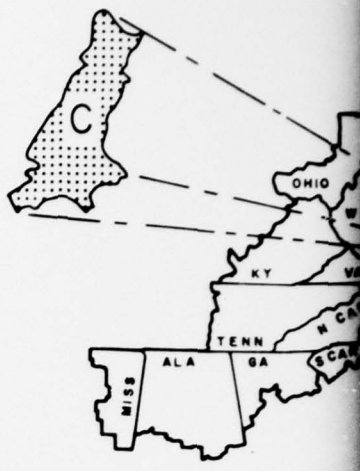
2. New Castle Complex - Jefferson National Forest: A major development in the vicinity of New Castle, Virginia, including a 25- to 50-acre lake; camping, picnicking, boating, swimming, and other outdoor recreation opportunities are needed in this area. As envisioned, this complex would be constructed to accomodate about 2,000 persons-at-one-time with an estimated cost of $1.5 million. The purchase of a 500-acre gentle rolling tract, easily accessible by paved roads, is necessary. A major water-oriented development in this area would complement dispersed recreation use of the National Forest lands, by providing a wider range of recreation opportunities.

3. Buchanan Complex - Jefferson National Forest: This area a mile or two from Interstate 81 and featuring the James River, would be developed to accomodate approximately 2,000 persons-at-one-time. Capitalizing on the scenic attributes of the James River, this area would provide camping, picnicking, swimming, canoeing, fishing and hiking. The proposed project would require the purchase of a 500- to 600-acre riverfront tract. The cost of the project, exclusive of land cost, is estimated at $1.5 million.

4. Hipes Reservoir Complex - Jefferson National Forest: In the event the proposed Corps of Engineer's Hipes Reservoir becomes a reality under the Appalachia Program, recreation developments for this project would be substituted for the above two recreation complexes (New Castle and Buchanan Complexes). Developments planned for this proposed reservoir on the Craig Creek drainage of the James River include marinas, resorts, camping, picnicking, fishing, hiking, riding, and a variety of other opportunities which would provide vacation-type attractions. The daily design load is 4,000 PAOT with an annual visitor day use by 1980 of 625,000. Accessibility is from Interstates I-81, I-64, and I-77. I-81 is about 14 miles distant.

Construction priority #1 has been assigned for Complexes #2, #3, and #4.

HIGHLAND
BATH
ALLEGHANY
CRAIG
BOTETOURT
JEFFERSON
NATIONAL FOR
WASHINGTON
GEORGE
Hinton
Lexington
Roanoke
Lynchburg
APPALACHIAN
CORRIDOR Q
10 5 0



VICINITY M

ACCELERATED DEVELOPMENT KEY

① HIPES RESERVOIR - PRIORITY 1

② HIDDEN VALLEY - PRIORITY 2

● EXISTING DEVELOPM

ACCELERATED DEVELOPMENT

10 5 0 10 20 30 40 50

SCALE IN MILES

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DEVELOPMENT OF WATE
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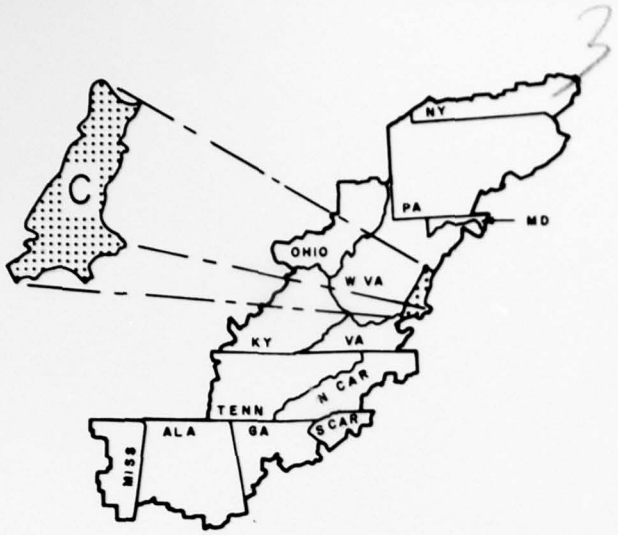

VICINITY MAP

● EXISTING DEVELOPMENT

ACCELERATED DEVELOPMENT

REPORT FOR
DEVELOPMENT OF WATER RESOURCES
IN
APPALACHIA

WATER SUB - REGION C

NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 1968

FIGURE B - 4

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4. SUB-REGION D

Sumter and Pisgah National Forests

Introduction

Featuring the scenic crystal clear Chattooga River and Linville Gorge Wilderness area along with the beauty of the southern Appalachian Mountains, almost 235,000 acres of publicly-owned rugged mountain land is available for outdoor recreation.

Recreation Situation

The ten-year Development Program for the National Forests provides for construction of facilities for about 2,100 PAOT. Projected needs for 1975 indicate the normal Development Program should be expanded to provide facilities for 3 times as many people as originally planned. There are 21 small developed camp and picnic sites within Sub-region D. In 1966, 355,300 visitor days use was recorded.

There are no known proposed PL-566 Upstream Watershed Projects within the National Forest areas.

Recreation Objectives

Within the next ten years, public recreation facilities for an additional 6,100 persons-at-one-time will be required. Financing under the normal ten-year development program would possibly permit meeting about one-third of the needs. Program acceleration is needed, in addition to the normal program, to complete the recreation development program within the planned period. Total estimated cost is $2,776,300, which includes acceleration for development of recreation facilities at an estimated cost of $1,950,900.

Under an accelerated program, four special projects listed in order of priority would meet about 50 percent of the needs for this area by 1975. Total estimated cost for special projects is $2,500,000.

These projects are:

1. Burrell's Ford - Sumter National Forest in South Carolina: Featuring the beautiful Chattooga River as envisioned, this recreation complex would provide diversified water-oriented opportunities with particular emphasis on canoeing. Ellicott Rock Scenic Area is an adjacent attraction.

In accordance with the Wild and Scenic Rivers Bill, PL 90-542, a 50-mile stretch of the Chattooga River above Tugaloo Lake is currently under study. Preliminary indications are the 1975 projections of use and needs are conservative. If a Wild and Scenic classification is established for the Chattooga River, revisions of plans for projects 1, 3, and 4 will be necessary.

This development will be accessible from I-85 about 35 miles to the south, and from the Blue Ridge Parkway Extension on the northwest about 18 miles by State Highways 28 or 107. Estimated cost - $750,000. Priority 1 has been established for construction of this complex.

2. Back Creek Lake - Pisgah National Forest in North Carolina: This proposed project is located just south of Linville Gorge Wilderness Area, near Morganton, N.C., about 13 and 15 miles, respectively, from Interstate 40 and the Blue Ridge Parkway. Including the construction of a 20- to 50-acre lake with facilities to accomodate up to 2,000 persons-at-one-time (PAOT), this project is estimated to cost $1,250,000. Construction priority 2 has been established for this complex.

3. Cherry Hill Dam - Sumter National Forests in South Carolina: This project would provide a 20- to 50-acre lake adjacent to an existing campground, providing additional recreation opportunities. Estimated cost - $250,000. Construction Priority 1 has been established for this complex. The location of this proposed development is about 38 miles from I-85 and about 18 miles from the proposed extension of the Blue Ridge Parkway by State Highways 28 or 107.

4. Yellow Branch Dam - Sumter National Forest in South Carolina: This impoundment project is needed to provide additional attractions for an established heavily-used picnic site.

Estimated cost, $250,000.

Construction Priority 1 has been established for this complex. It will be accessible from I-85 about 38 miles, and from the proposed Blue Ridge Parkway Extension about 18 miles by State Highways 28 or 107.

The planned design capacity for projects 1, 3 and 4 totals 2,500 persons-at-one-time.

The Development Program for the National Forests should be amended to include these developments. The regular Forest Service budgetary request for planning, design and construction will need to be increased by $500,000 annually to permit these accelerated developments to be installed.

Burrell's Ford, Cherry Hill Dam, and Yellow Branch Dam proposed accelerated recreation projects include or are adjacent to the Hartwell-Keowee-Toxaway Interstate Complex. Back Creek Lake proposed accelerated project includes or is adjacent to the Boone-Linville-Roan Mountain Complex. These Complexes are now under study by the Appalachian Regional Commission as a part of the Highlands Recreation Study.

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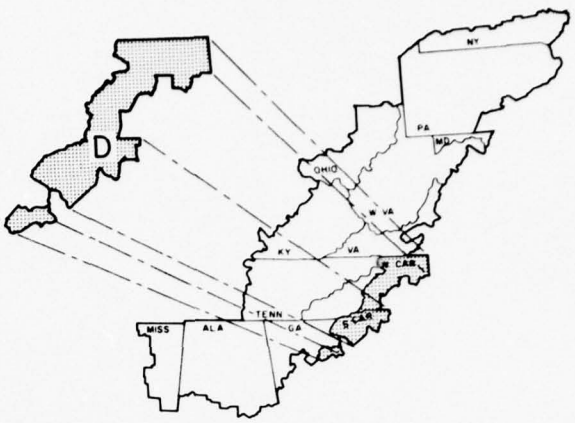
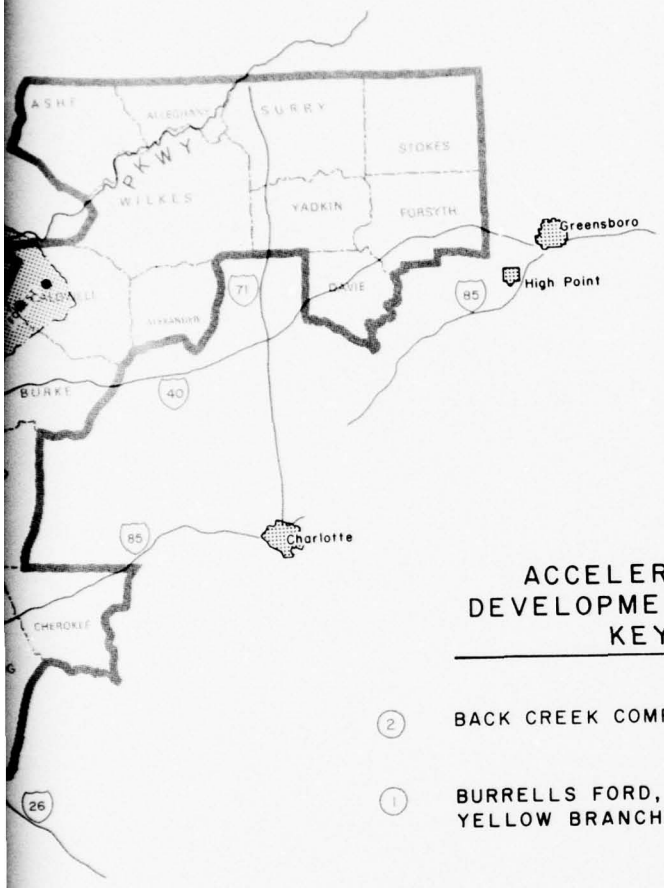


VICINITY MAP



ACCELERATED DEVELOPMENT AREA KEY

(2) BACK CREEK COMPOSITE - PRIORITY 2

(1) BURRELLS FORD, CHERRY HILL, YELLOW BRANCH - PRIORTY 1

LEGEND

● EXISTING DEVELOPMENT

(1) ACCELERATED DEVELOPMENT

10 5 0 10 20 30 40 50
SCALE IN MILES

REPORT FOR
DEVELOPMENT OF WATER RESOURCES
IN
APPALACHIA

WATER SUB-REGION D

NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 1968

23 FIGURE B-5

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5. SUB-REGION E

Chattahoochee, Talladega, Tombigbee, Holly Springs, and Bankhead National Forests

Introduction

The forest environment, mountains and streams of the 1,195,000 acres of National Forest lands provide the setting for Corps of Engineers, Tennessee Valley Authority, and Power Company reservoirs. The Appalachian Trail, proposed Extension of the Blue Ridge Parkway, and a number of major Forest Service developments also will provide the recreationist a variety of opportunities. The highest mountains in both Alabama and Georgia, located within the area, are major attractions.

Recreation Situation

There are 69 developed recreation sites on National Forest lands with a capacity for 6,670 persons-at-one-time. In 1966, over 1.6 million visitor days were reported for National Forest lands in this sub-region. Additional developed capacity for almost 34,000 persons-at-one-time will be required to meet future needs. This is in addition to the 2 to 5 million who would use the proposed Talledega Scenic Drive when completed. Utilization of planned PL-566 and other reservoir projects are included in Forest Service and proposed accelerated programs.

Recreation Objectives

National Forest objectives are to meet its fair share of the increasing demands for outdoor recreation opportunities. Within the next ten years, the Development Program for the National Forests included construction of facilities for 34,000 persons-at-one-time, costing in excess of $5 million. To meet the rapidly increasing demands, about $3.8 million should be made available under an accelerated program.

In addition to the above program, special projects, including the proposed 75-mile Talladega Scenic Drive, should be initiated. These special projects costing an estimated $23.7 million would provide facilities for 15,000 persons-at-one-time, with an additional 2 to 5 million people annually using the Scenic Drive.

The six major special projects are:

1. Lake Lewis Smith - Alabama Power Company - Winston County - Alabama (See item 1 on Figure B-6). Located about 50 miles north of Birmingham, major recreation complexes on this lake could provide water oriented opportunities for 4,500 persons-at-one-time. Construction Priority 1 has been established for this complex. This development is

accessible from I-65 by U.S.-278 and U.S.-78. Annual visitor day use by 1980 is expected to be 150,000 visits.

Estimated cost, $4,000,000.

2. Talladega Scenic Drive - Cleburne, Calhoun, Clay, and Talladega Counties, Alabama (See item 2 on Figure B-6). This proposed 75-mile scenic drive would be used by 2 to 5 million people annually. Recreation facilities at four proposed PL-566 lakes and other recreation development for 1,750 persons-at-one-time will be needed. Priority 2 has been established for construction of this project. It crosses I-20 west of Heflin and is easily reached from U.S.-278, 280 and 231. Annual visitor day use by 1980 is estimated to be 150,000.

Estimated cost, $13,800,000.

3. Lake Marvin - Floyd County, Georgia (See item 5 on Figure B-6). This proposed project includes purchase of a 50-acre lake near Interstate 75 and northwest of Calhoun, Georgia. Over 1,500 people could use the planned developments. Priority 3 has been established for construction of the complex. It is accessible from the Blue Ridge Parkway Extension, proposed, and from I-75 and I-59. Annual visitor day use by 1980 is expected to be about 500,000.

Estimated cost, $850,000.

4. Nottely Lake - Tennessee Valley Authority - Union County, Georgia (See item 4 on Figure B-6). No major public recreation developments are currently available on this north Georgia lake. Over 1,700 persons-at-one-time could be accommodated at one major complex. Construction priority 4 has been established for this complex. It is easily reached from Appalachian Corridor A. Annual visitor day use by 1980 is estimated to be 150,000.

Estimated cost, $1,000,000.

5. Turkey Pen, Mud Creek, Noontotia - Fannin, Union, Lumpkin, and White Counties, Georgia (See item 3 on Figure B-6). These three recreation complexes are needed to meet demands of users of the proposed Blue Ridge Parkway Extension, Brasstown Bald, and Russell Memorial Highway. Two 25- to 50-acre impoundments and related developments could be used by 3,400 persons-at-one-time. Construction Priority 3 is established for this complex. It is readily accessible from the Blue Ridge Parkway Extension, I-85 and Appalachian Corridor A. Annual visitor day use by 1980 is expected to be 500,000.

Estimated cost, $2,250,000.

6. Rock Creek Complex - Murray County, Georgia (See item 6 on Figure B-6). This complex would be centered around a 25- to 50-acre impoundment. Including the purchase of 5,100 acres of land, this project would provide capacity of 1,700 persons-at-one-time. This complex has construction Priority 3. It is readily accessible from Appalachian Corridor A and I-75. Annual visitor day use by 1980 is expected to be nearly 600,000.

Estimated cost, $1,750,000.

Lake Nottely and Turkey Pen, Mud Creek, Noontotia (numbers 2 and 5 above) are on or adjacent to the Upper Hiwasse River Interstate Complex. They are included in the Appalachian Regional Commission's Highlands Recreation Study.

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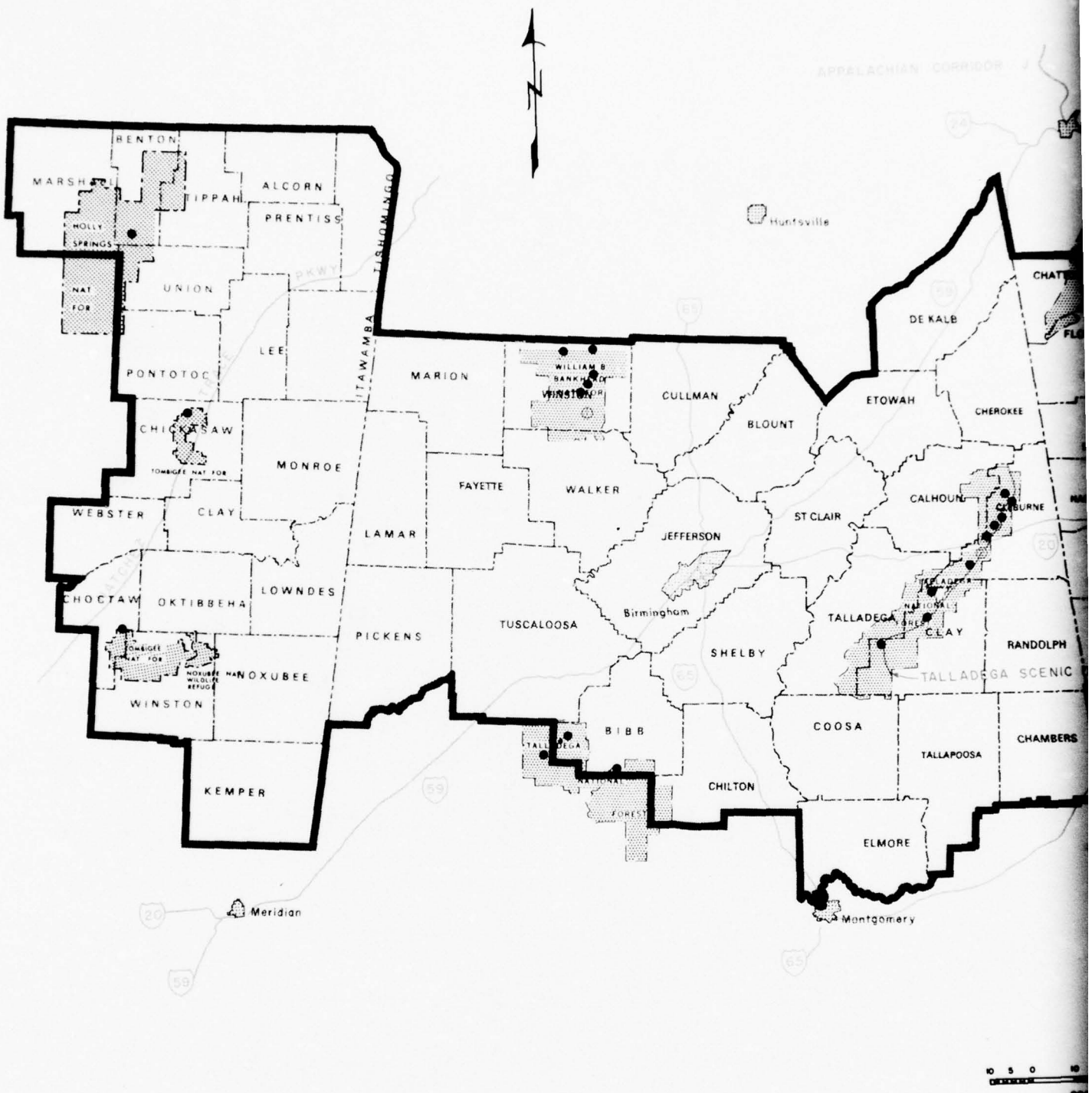
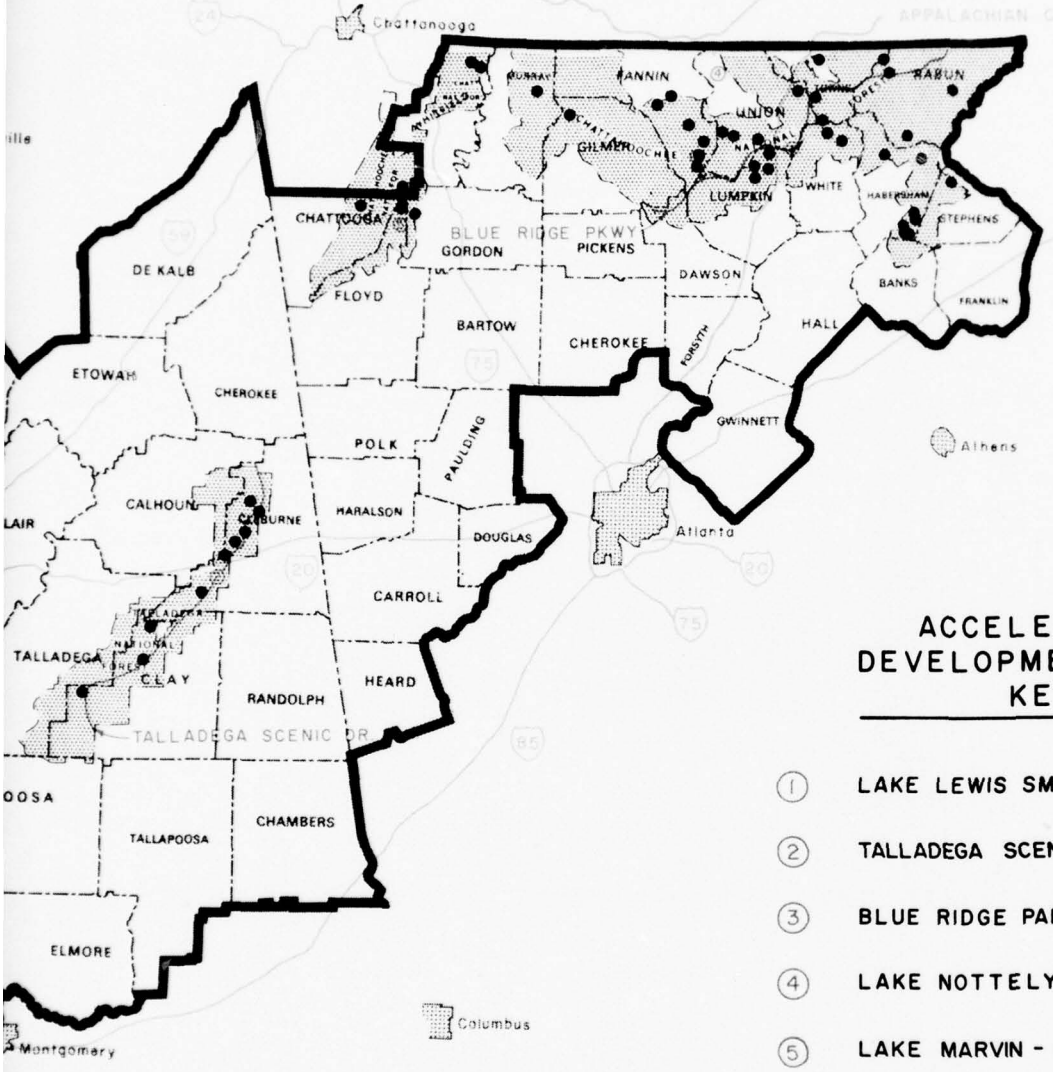
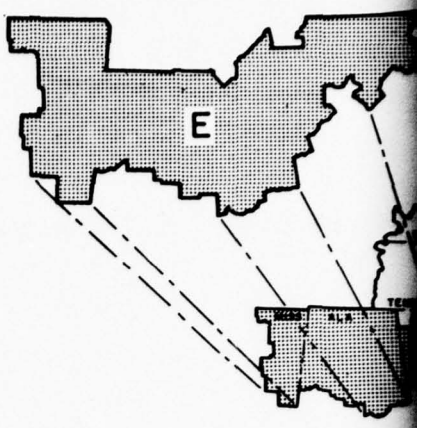
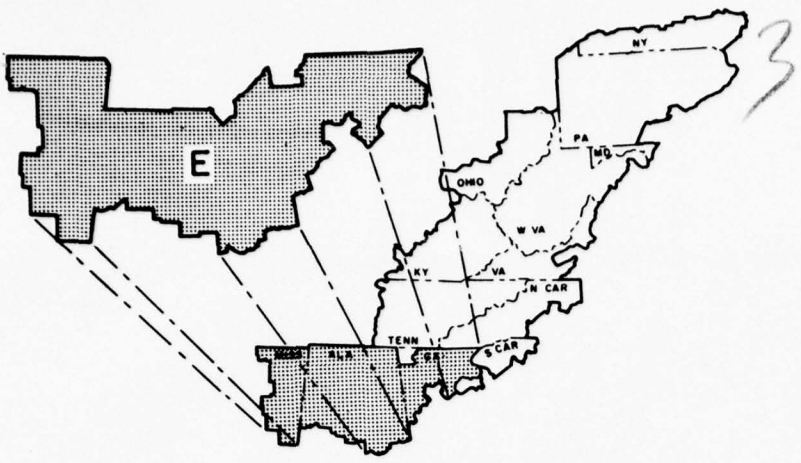






ACCELERATED DEVELOPMENT AREA KEY

1. LAKE LEWIS SMITH - PRIORITY 1
2. TALLADEGA SCENIC DRIVE - PRIORITY 2
3. BLUE RIDGE PARKWAY - PRIORITY 3
4. LAKE NOTTELY - PRIORITY 4
5. LAKE MARVIN - PRIORITY 3
6. ROCK CREEK COMPLEX - PRIORITY 3



VICINITY MAP

LEGEND

● EXISTING DEVELOPMENT

(2) ACCELERATED DEVELOPMENT

ERATED
IENT AREA
EY

MITH - PRIORITY 1

ENIC DRIVE - PRIORITY 2

ARKWAY - PRIORITY 3

Y - PRIORITY 4

- PRIORITY 3

COMPLEX - PRIORITY 3

REPORT FOR
DEVELOPMENT OF WATER RESOURCES
IN
APPALACHIA

WATER SUB-REGION E

NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 1968

FIGURE B-6

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6. SUB-REGION F

Allegheny National Forest

Introduction

The Allegheny National Forest is located on the Allegheny Plateau in northwest Pennsylvania and is wholly within the drainage of the upper Allegheny River. Over 3.9 million people live within a 100 mile radius and over 55 million within a 300 mile radius. The Forest's location provides a vital link in serving future needs of American people and a unique opportunity for many of them to enjoy forest recreation pursuits.

Little of the Allegheny scenery can be classed as spectacular or awe-inspiring. Aesthetic values lie in the pleasant tranquil atmosphere of the forest. Especially attractive are the driving routes along some of the larger streams and rivers because of the variety in landscape.

Varied recreation opportunities are found throughout the Forest. Broadly, it is divided into two recreation areas, each with its characteristic, interrelated recreation resources. The two areas are: (1) Allegheny River Reservoir area, in which are concentrated the high-density recreation facilities needed to serve mass water-oriented uses; (2) the Allegheny Highlands. The Allegheny Highlands provide most of the open space for dispersed type of activities, such as hunting, hiking, and riding. This area will contain small impoundments and campgrounds.

High-speed highways in Ohio, Pennsylvania, and New York provide rapid access routes to the area from distant population centers. The new Southern Tier Expressway (Appalachian Corridor T) will provide interchanges with principal arteries between New York and Pennsylvania. The transportation system throughout the National Forest will provide for scenic drives and loops to meet the need of driving for pleasure which is a principal use of the Forest.

Recreation Situation

Prior to 1950, recreation demand was light and simple facilities satisfied this demand. Boating was a minor use in the past, as no natural lakes were available. By 1965, however, capacities of developed facilities on the National Forest fell far short of the actual demand. Studies have shown that the recreation season is growing longer; that people are enjoying trips in the early spring and late fall and also participating in a wider variety of activities. The use of snowmobiles has brought people out in large numbers during the winter to enjoy the outdoors.

An accelerated effort is needed to bring developed capacities up to actual demand, particularly at new reservoirs and other water-based areas. Boating and canoeing have increased and form a major activity in these areas. Polluted water is a growing problem in many areas. The more pollution, the less recreation opportunity. There is a need for good roads and a system of scenic drives providing loops of three to six hours duration.

The potential for providing recreation needs is available. The Forest is in a strategic location, accessable to metropolitan populations. The resource lends itself to diversified forms of recreation, but the demand can be satisfied only by accelerated rate of development and good quality water.

Recreation Objectives

The recreation objective on the Allegheny National Forest is to provide the full recreational use of the Forest coordinated with other management objectives and with due consideration to public needs and demands. Allegheny National Forest facilities will be designed to complement and supplement the development of other agencies and individuals, and will not be created in competition with them. Lands vital to the development of the recreation resource will be acquired. To properly meet public recreation demands in the future, the highest priority for acquisition of lands with recreation potential are: (1) those along the main streams; (2) potential impoundment sites; and (3) those offering vista developments along roads and other dispersed recreation opportunities. The accelerated program will be able to accommodate 18,700 people-at-one-time.

Total estimated cost of recreation development is $31,449,000, which includes $19,592,000 for the following acceleration:

A. Recreation facility development on 1300 acres of land. Priorities for development are:

Priority	Name
1	East Branch Spring Creek #38
2	South Branch Tionesta Creek
3	Queen Creek #29
4	Buzzard Swamp
5	East Branch Spring Creek #20
6	Fork Run
7	Little Salmon
8	Bear Creek #16
9	Mill Creek Site #1
10	Mill Creek Site #32
11	North Branch Sugar Run
12	Salmon Creek
13	Fox Dam

Priority	Name
14	East Hickory
15	Meade Run
16	Spring Creek
17	Three Mile
18	North Branch Millstone
19	Bear Creek #9
20	Watson Branch

Estimated Cost, $6,284,000.

B. Recreation dams impounding 1950 surface acres of water. Priorities for development are:

Priority	Name
1	East Branch Spring Creek #38
2	Tionesta South Branch
3	Queen Creek #29
4	Buzzard Swamp
5	Spring Creek
6	Fork Run
7	Little Salmon Creek
8	Mill Creek #31
9	Mill Creek #1
10	Salmon Creek
11	Bear Creek #16
12	North Branch Sugar Run
13	Fox Dam
14	East Hickory
15	Three Mile
16	Bear Creek #9
17	Watson Branch
18	Queen Creek #21
19	Meade Run
20	Four Mile
21	Branch Creek #1
22	East Branch Tionesta
23	Pibeon Run
24	Branch Creek #2
25	Branch Creek #3
26	Crane Run
27	West Branch Millstone #2
28	Mill Creek #3
29	Turnip Run
30	West Branch Millstone #1
31	Otter Creek
32	East Branch Millstone
33	Watermiil

Priority	Name
34	Mill Creek #28
35	Bucklick
36	Brush Creek
37	Beaver Creek
38	West Branch Blue Jay
39	Jo Jo
40	Bear Creek #33
41	Meadows Branch
42	Windy City
43	Hunter Creek
44	Lower Sheriff
45	Glenn Charles
46	Erwin Run

Estimated cost, $4,888,000.

In addition, two special projects within the development program which need immediate and continued financing to fully develop the recreation resource are:

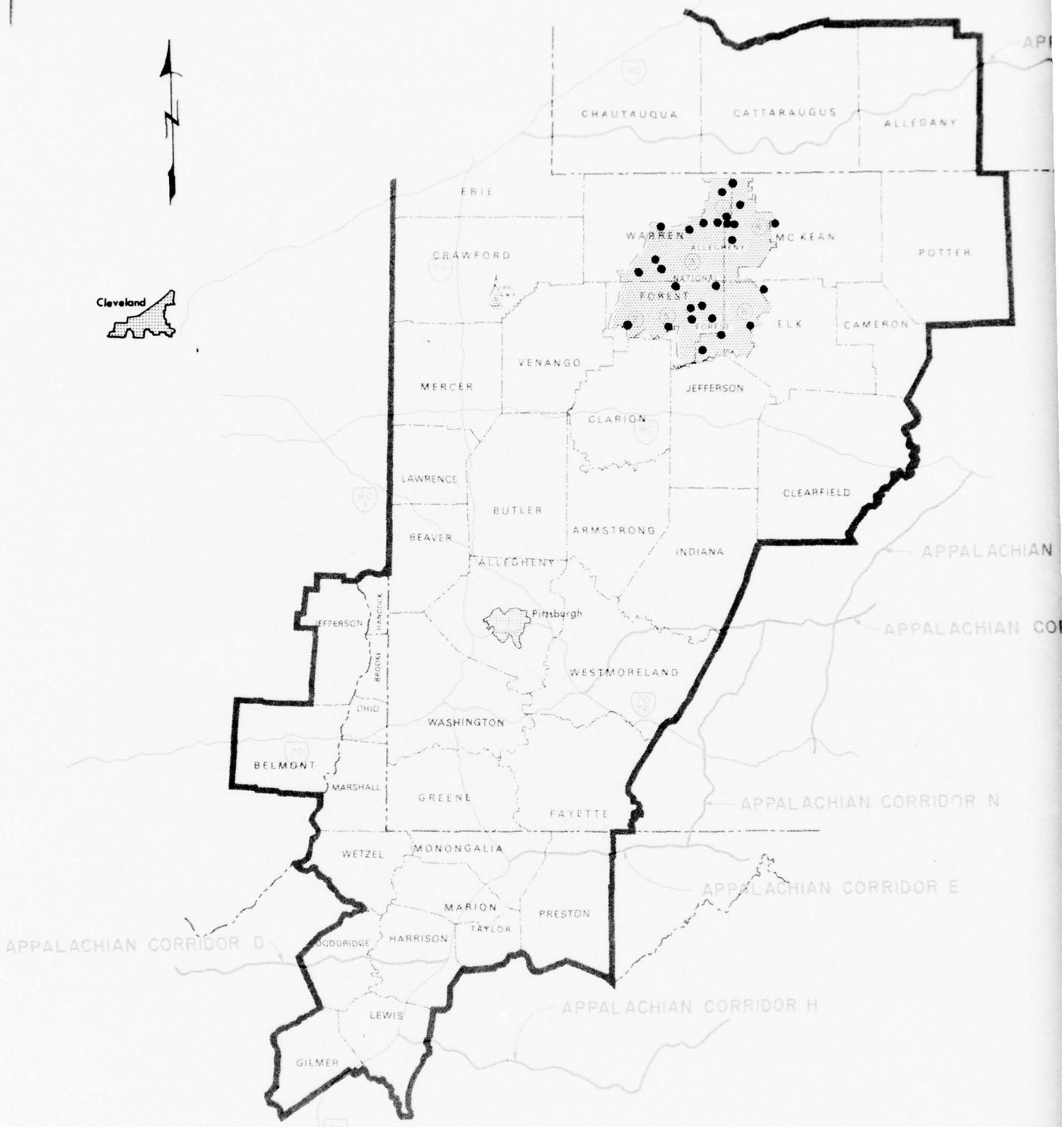
1. Allegheny Reservoir Recreation Area (See item 1 on Figure B-7). The Allegheny Reservoir, constructed by the Corps of Engineers, is a multipurpose project for flood control, low-flow augmentation and recreation. There is a broad scope of recreation resources: a large expanse of water, sinuous shorelines, rolling wooded hills, steep escarpments, and seasonal charm. All of these can be carefully developed toward the optimum in outdoor recreation use. Recreation facilities have been constructed at a number of sites on the reservoir by the Corps of Engineers and the Forest Service. The demand for outdoor recreation is already large. A preliminary estimate of demand on the recreation area in 1976 is 2,129,200 recreation visits. Continued recreation development of National Forest lands in the Allegheny Reservoir Recreation Area for picnicking, camping, fishing, swimming, water sports, and nature studies can provide and sustain a diversity of recreation experiences.

Estimated cost, $7,500,000.

2. Glaesner Run Recreation Area (See item 2 on Figure B-7). Located on the Tionesta Reservoir, development in the first five years will include 44 campsites, 80 picnic sites, a boat launching area and a swimming beach.

Estimated cost, $920,000.

These proposed accelerated recreation developments and special projects are in the Allegheny Interstate Complex now under study by the Appalachian Regional Commission as a part of the Highlands Recreation Study.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VENANGO
MERCER
JEFFERSON
CLARION
LAWRENCE
CLEARFIELD
BUTLER
ARMSTRONG
BEAVER
INDIANA
ALLEGHENY
Pittsburgh
WESTMORELAND
WASHINGTON
BELMONT
MARSHALL
GREENE
FAYETTE
WETZEL
MONONGALIA
MARION
PRESTON
TAYLOR
HARRISON
LEWIS
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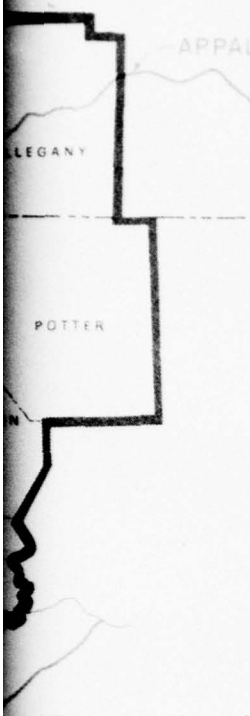

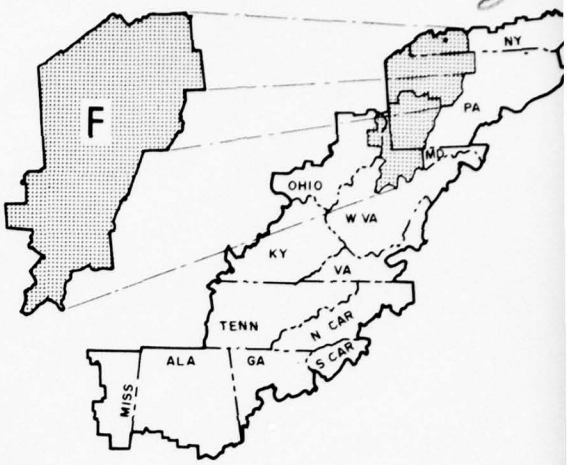

VICINITY MAP

ACCELERATED DEVELOPMENT AREA KEY

① ALLEGHENY RES – PRIORITY I

② TIONESTA RES – PRIORITY I

③ SHEFFIELD DISTRICT– 8 RECREATIONAL DAMS AND 3 RECREATIONAL SITES

④ BRADFORD DISTRICT– 5 RECREATIONAL DAMS AND 2 RECREATIONAL SITES

⑤ MARIENVILLE DISTRICT– 15 RECREATIONAL DAMS AND 7 RECREATIONAL SITES

⑥ RIDGEWAY DISTRICT– 19 RECREATIONAL DAMS AND 8 RECREATIONAL SITES

LEGEND

● EXISTING DEVELOPMENT

① ACCELERATED DEVELOPMENT

REPORT FOR
DEVELOPMENT OF WATER RESOURCES
IN
APPALACHIA

WATER SUB–REGION F

NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 19

FIGURE B-

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7. SUB-REGION G

Daniel Boone and Jefferson National Forests

Introduction

The mountain pastoral landscape of the 285,000 acres of National Forest lands provide the setting for the Mount Rogers National Recreational Area in Virginia and the forest environment for Cave Run Reservoir currently under construction by the Corps of Engineers.

Recreation Situation

These areas, located close to large metropolitan areas of the east and north central states, are relatively undeveloped. The small existing 35 developed sites have a capacity of about 1,300 persons-at-one-time. In 1966, recreation use at these 35 small camp and picnic sites amount to 78,000 visitor days. Total recreation use on National Forest lands in this sub-region amounted to 453,500 visitor days in 1966. Additional recreation development with a capacity of about 22,700 persons-at-one-time will be required to meet 1975 needs.

Recreation Objectives

Within the next ten years, public recreation facilities for almost 21,000 additional persons-at-one-time will be needed. The total estimated cost for planning and constructing 102 sites is $4,227,100, which include $3,032,500 for accelerating installation of the facilities.

In addition, accelerated financing is needed for two special recreation projects. Total estimated cost - $56,853,000.

The recreation development proposals are:

1. Mount Rogers National Recreation Area - Jefferson National Forest (See item 1 on Figure B-8). Created by Congressional Action--PL 89-438--on May 31, 1966, this superlative area will provide a diversity of recreation opportunities. Including a 55-mile scenic drive, five major water-oriented recreation complexes, winter resorts, and the high mountain grass or sod area, this national recreation area will attract 1 million visitors by 1972. Construction Priority 2 has been established. It is accessable from Appalachian Highway Corridor O, and Interstates 77 and 81.

Estimated cost, $41,853,000.

This proposed accelerated recreation development includes or is adjacent to the Mt. Rogers - New River Complex now under study by the Appalachian Regional Commission as a part of the Highlands Recreation Study.

2. Cave Run Reservoir - Daniel Boone National Forest (See item 2 on Figure B-8). When completed, the Corps of Engineers reservoir project is expected to attract about 1 million visitors annually. Accelerated financing is needed to meet this expected recreation demand. As currently planned, developments at this reservoir include major resort-type developments, marinas, camping, picnicking, swimming, boat landing ramps, docks, hiking, and riding, as well as fishing and hunting opportunities. Access road costs of an estimated $5 million are included in the Estimated Project Cost. Construction Priority 1 has been established for this complex. It is readily accessable from Appalachian Highway Corridor B and Interstate 64.

Estimated project cost, $15,000,000.

Monongahela National Forest

Introduction

The part of the Monongahela National Forest (732,700 acres), located in Sub-region G of the Appalachian Region in eastern West Virginia, is in the heart of the Alleghenies. Here are some of the loftiest mountains in the East. Approximately two-thirds of the National Forest is on the Allegheny Plateau, a mature plateau of strong relief. Elevation ranges from 1,200 feet to over 4,000 feet, forming an attractive setting for recreation. Evergreens interspersed with extensive hardwood forests create pleasing patterns in the landscape. Changing of seasons cause variations in the scenic splendor of the mountains. As the leaves fall, rock outcroppings appear, making the ruggedness of the terrain more apparent. Five major rivers--the Greenbrier, Gauley, Cheat, Elk, and Tygart--have their headwaters within the Forest. There are no natural lakes.

The National Forest is accessible by a number of U.S. and State highways. Forest Service roads and numerous state secondary roads traverse the Forest. A large portion of land in National Forest ownership is limited to ridges and steep slopes, while good recreation sites in the valley are in private ownership. The ownership pattern within the Forest is a limiting factor in good development sites. Fifty percent of the land within the Forest boundary is in private ownership, controlled by individuals, holding companies and corporations.

Recreation Situation

There was a steady increase in recreation use after World War II, particularly since 1950. After 1950, recreation visits have increased 370 percent, while the number of visitor days increased over 600 percent. Sharp increases in recreation use have followed the development of new facilities.

Future projections point out that demands will be intense for all types of outdoor recreation in this area. Further projections indicate that there is not enough land or fishable water to meet the projected demand. Good swimming sites and streams are scarce, and there are not enough good potential sites to meet the projected demand. The Forest will be able to serve and meet demands if the following is done:

1. Acquire land for use for swimming sites, hunting and fishing, boating and unusual interest area development.

2. Establish water-based areas to use and to augment flows for recreation.

3. Acquire control of mineral rights under proposed impoundments, backwoods zones, scenic areas, and large development sites to insure protection of recreation values.

4. Acquire lands for access to streams, hunting areas, etc.

5. Provide for unpolluted water in existing streams and reservoirs.

All of the above indicate a need to increase the present level of financing to accelerate programs. The present level of financing is falling short of the rate of planned programs and existing needs. The Monongahela National Forest can offer a significant contribution to the wealth of the Region if its programs are accelerated.

Recreation Objectives

The major objective of recreation management on the Monongahela National Forest is to enhance a combination of favorable climate, rugged mountain topography, pleasant woods and waters, and a variety of wildlife species so that visitors may obtain a satisfying recreation experience.

The normal 10-year program is based on a projection of trends in past financing. Program acceleration is the financing needed in addition to the normal program to complete the recreation development program within the planning period. The accelerated program will be able to accommodate 28,400 people-at-one-time.

Total estimated cost of the accelerated recreation development program is $25,833,000, which includes the following:

A. Recreation Facility Development. A mixture of topographic features form an attractive setting for facility development on 268 separate recreation sites. These sites will occupy a total of 2060 acres of land and will be primarily in association with recreation lakes. Priorities for development of recreation facilities have not yet been established except for 21 recreation sites associated with recreation dams listed below.

Estimated cost, $7,905,000.

B. Recreation Impoundments. These structures will impound a total of 925 acres of water. Priorities for development are:

Priority	Name
1	Prison Camp
2	Williams River
3	Eagle Lake
4	Desert Branch
5	Laurel Fork
6	Camp Five Run
7	Laurel Creek
8	Thirty-five other dams; 640 surface acres

Estimated cost, $4,992,000.

C. Rowlesburg Reservoir and Horseshoe Lake sub-impoundment (See item 3 on Figure B-8). Development of the Rowlesburg Reservoir and Horseshoe Lake sub-impoundment by the U.S. Corps of Engineers will enhance the attractiveness of the Monongahela National Forest to recreationists, including hunters and fishermen. It is expected that there will be an increase of recreation use on the Monongahela National Forest due to the development of these projects. It is estimated that there will be an initial annual visitation of 1,300,000 visits and ultimately 3,650,000 visits to the Rowlesburg Reservoir Area. National Forest Recreation Development plans for the Rowlesburg Recreation Area include 600 camp units, 240 picnic units, 60 boat-in camp units, 18 launching ramps, 2 beaches and various other recreation facilities. Preliminary cost estimates for the 10-year special project development including recreation facilities and service roads is as follows:

Rowlesburg - $8,820,000

Horseshoe Lake Sub-Impoundment - $3,000,000

Total - $11,820,000

These proposed accelerated recreation developments and special projects are in the Spruce Knob-Seneca Rocks Complex now under study by the Appalachian Regional Commission as a part of the Highlands Recreation Study.

Wayne National Forest

Introduction

The Wayne National Forest is located in Southeastern Ohio. Major urban areas lie within 150 miles of the existing and potential recreation areas. There are 360,000 people living within the exterior boundaries of the Forest and 3.4 million within 150 miles. The Forest's location provides a unique opportunity for many people to enjoy outdoor recreation.

Recreation developments are limited, for the most part, because of a fragmented ownership pattern throughout the National Forest. Also, a large portion of the land in National Forest ownership is limited to ridges and steep slopes, while more desirable recreation sites are in private ownership.

Rolling green hills and narrow ridges on the National Forest form an excellent backdrop for outdoor recreation pursuits. The rough terrain provides a great potential for hiking and riding trails. There are no natural lakes in the National Forest, but the potential for impoundments is excellent. Highway access is excellent; Interstate Highway 70 skirts the north boundary from Columbus, Ohio, to Wheeling, West Virginia, in the east. Plans call for a 4-lane Appalachian Highway Corridor from Cincinnati, Ohio to Parkersburg, West Virginia, which will run through the Forest from southwest to northeast. The Forest has a most favorable location for good access and nearness to population centers.

Recreation Situation

The National Forest purchase unit boundary encompasses 1,454,975 acres, of which about 9 percent (130,000 acres) is within National Forest ownership. The scattered ownership is a severe deterrent to an adequate recreation development program. Coordination between the Forest Service and the State of Ohio is vital to proper recreation development in this area.

In 1956, the recreation use was 71,300 visitor days. By 1964, the use had increased to 138,700 visitor days. The trend is increasing in all areas. By the year 2000, the projected use will be well over 1.5 million visitor days. This will have a tremendous impact on the Forest.

There is good potential for developing recreation impoundments. Most of the acreage suitable for recreation development is within and adjacent to the proposed impoundments. Land acquisition is needed for scheduled development and coordination with impoundment priorities to satisfy the critical recreation need. National Forest and State recreation facilities are presently inadequate to meet the demand. Water-based recreation is extremely limited. Accelerated land acquisition and recreation development programs are necessary to fulfill the demands. The Forest is actively acquiring land in an effort to provide a land base needed to meet these demands, but a much more expanded program is needed. Present acquisition efforts have been most successful in the headwaters areas of these proposed impoundments and these lands will greatly improve watershed protection benefits.

Within the boundaries of the Wayne National Forest, there are undoubtedly many impoundment proposals which remain to be investigated, and others not specifically mentioned here that would merit Forest

participation. It is the intent of the Forest to evaluate these proposals as they become active and develop plans for participation; should it prove desirable.

Recreation Objectives

The objective of recreation management is to provide for the full recreational use of the Forest coordinated with other management objectives with due consideration for public needs and demands. These include an accelerated land acquisition program, reclamation of strip mined land, and reduction of acid mine drainage. The role of the Forest is to provide recreation developments which will complement and supplement State development.

Present programming is not adequate to carry out these recreation objectives. Program acceleration is needed to complete the proposed development program within the planning period. The accelerated program will be able to accommodate 1,600 people at-one-time. Total estimated costs of the recreation development program is $8,573,000, which includes the following acceleration:

A. Buckhorn Dam (See item 4 on Figure B-8). The Forest Service will provide the cost allocated to recreation for the Buckhorn Dam to be constructed by the Soil Conservation Service. The structure will impound 628 acres.

Estimated cost, $628,000.

B. Recreation facility development on 810 acres of land, listed here by priority (For location, see items 5 thru 11, 13, 14 and 16 thru 18 on Figure B-8).

Priority	Name
1	Little Muskingum
2	Burr Oak
3	Paw Paw
4	Rich Fork
5	Baker Run
6	Ohio River
7	Hocking River
8	Cranenest
9	Ohio River Overlook
10	Symmes Creek
11	Millers Fork

Estimated cost, $3,162,300.

C. Special Projects. The following three special recreation projects are listed by priority, and are needed to meet recreational demands:

1. Buckhorn Recreation Area (See item 4 on Figure B-8). The Forest Service will design and construct recreation facilities at the Buckhorn Reservoir to be constructed by the Soil Conservation Service. Facilities are to include two campgrounds, 3 picnic areas, 1 swimming beach, 3 boat launch sites, and a visitor trail, project roads and parking lots.

2. Sunday Creek (See item 18 on Figure B-8). The Sunday Creek Reservoir will be a multi-purpose project for flood control, fish and wildlife, and recreation. The reservoir is to be constructed by the Corps of Engineers. The Forest Service will develop recreational facilities having a capacity of 1500 persons-at-one-time. These facilities will include one campground, two picnic areas, two boat launch sites, a swimming beach, necessary sanitary facilities and access roads. When developed, the multi-purpose reservoir will attract an estimated 400,000 visits annually.

Estimated cost, $1,000,000.

3. Monday Creek (See item 15 on Figure B-8). The Modnay Creek Reservoir will be a multi-purpose project for flood control, fish and wildlife, and recreation. The reservoir is to be constructed by the Corps of Engineers. The Forest Service will develop recreational facilities having a capacity of 1775 persons-at-one-time. These facilities will include one campground, two picnic areas, two boat launch sites, a swimming beach, necessary sanitary facilities and access roads. When developed, the multi-purpose reservoir will attract an estimated 450,000 visits annually.

Estimated cost, $1,370,000.

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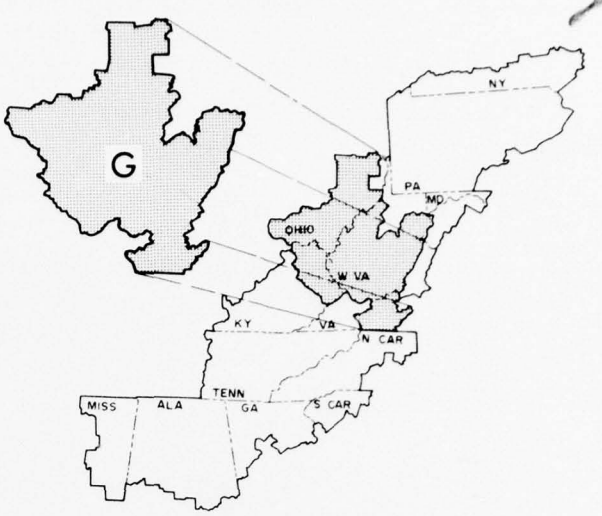

VICINITY MAP

Pittsburgh

LEGEND

EXISTING DEVELOPMENT

ACCELERATED DEVELOPMENT

10 5 0 10 20 30 40 50
SCALE IN MILES

ACCELERATED DEVELOPMENT AREA KEY

1. MOUNT ROGERS NRA - PRIORITY 2
2. CAVE RUN - PRIORITY 1
3. ROWLESBURG - PRIORITY 1
4. BUCKHORN (PINE CREEK) - PRIORITY 1
5. LITTLE MUSKINGUM - PRIORITY 1
6. BURR OAK - PRIORITY 2
7. PAW PAW - PRIORITY 3
8. RICH FORK - PRIORITY 4
9. BAKER RUN - PRIORITY 5
10. OHIO RIVER - PRIORITY 6
11. HOCKING RIVER - PRIORITY 7
12. SUNDAY CREEK - PRIORITY 2
13. CRANENEST - PRIORITY 8
14. OHIO RIVER OVERLOOK - PRIORITY 9
15. MONDAY CREEK - PRIORITY 3
16. SYMMES CREEK - PRIORITY 10
17. MILLERS FORK - PRIORITY 11
18. PRISON CAMP - PRIORITY 1
19. WILLIAMS RIVER - PRIORITY 2
20. EAGLE LAKE - PRIORITY 3
21. DESERT BRANCH - PRIORITY 4
22. LAUREL FORK - PRIORITY 5
23. CAMP FIVE RUN - PRIORITY 6
24. LAUREL CREEK - PRIORITY 7
25. CHEAT DISTRICT - 8 RECREATIONAL DAMS AND 58 RECREATIONAL SITES
26. GAULEY DISTRICT - 3 RECREATIONAL DAMS AND 53 RECREATIONAL SITES
27. BARTOW DISTRICT - 18 RECREATIONAL DAMS AND 70 RECREATIONAL SITES
28. MARLINTON DISTRICT - 4 RECREATIONAL DAMS AND 27 RECREATIONAL SITES
29. WHITE SULPHUR SPRINGS DISTRICT - 2 RECREATIONAL DAMS AND 39 RECREATIONAL SITES

REPORT FOR
DEVELOPMENT OF WATER RESOURCES
IN
APPALACHIA

WATER SUB-REGION G

NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 1968

FIGURE B-8

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8. SUB-REGION H

Daniel Boone National Forest

Introduction

Located southeast of Lexington, Kentucky, this portion of Daniel Boone National Forest is bisected by the Mountain Parkway. Featuring 20 or more natural rock bridges, heavily forested river gorges, this portion of the Cumberland Plateau abounds in scenic, geologic, historic, and wildlife attractions. Including recent purchases in the Red Bird purchase unit, over 116,000 acres of National Forest lands are available for public recreation use. An estimated 40,000 to 50,000 additional acres are programmed for puchase within a ten-year period.

Recreation Situation

Recreation use in the past has been heavily oriented toward hunting and fishing with day-use picnicking being quite popular. Recreation use increased between 1965 and 1966 by 11 percent, reaching a total of 121,500 visitor days use. About 20 percent of the 1966 use occurred at 17 small developed sites. These small developed sites can accommodate 680 persons-at-one-time. Red River Reservoir is a Corps of Engineers project now under consideration and study. The completion of this 2,100-acre reservoir will materially increase recreation use in the area. Also, the purchase and development of lands on Buckhorn Reservoir will skyrocket recreation use. Some 136,000 acres surrounding Red River Reservoir are suggested for further study with possible recognition or classification as an area possessing outstanding recreation attributes. With optimum utilization of the recreation resources, this area would attract over 3 million visitors within ten years.

Recreation Objectives

To meet the growing needs for outdoor recreation opportunities within the next ten years, additional facilities are needed to accomodate over 15,000 persons-at-one-time. In the Development Program for the National Forest, the costs estimated for construction of 79 sites amounted to $2.6 million. Under current level of financing, one-fourth to one-third of the needs possibly can be met. To meet the balance of the needs, an accelerated program is needed to plan and construct recreation facilities at an estimated cost of $1,324,300.

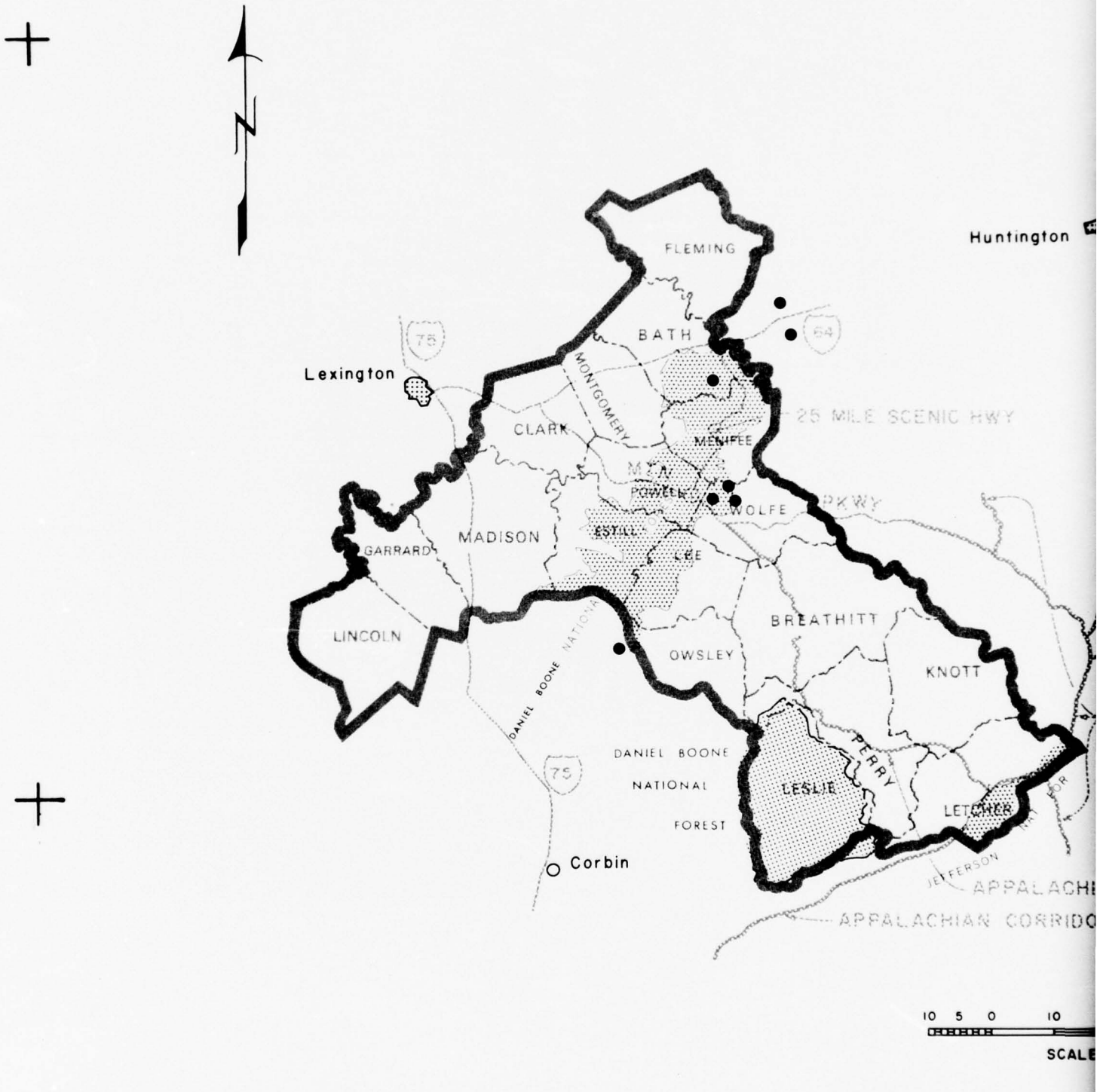
In addition to planned Forest Service constructed sites, 6 privately financed resorts, motels, and commercial service sites on National Forest lands will be needed.

The combined Forest Service and privately financed developments would have a capacity of about 16,500 persons-at-one-time.

In addition to the normal Development Program, with acceleration recommended as shown above, one major project is proposed as logical under an accelerated program. A special identification for the Red River Gorge is needed to focus national attention on this superlative area. Some of the attractions of this fine area are: Sky Bridge, Natural Bridge, Natural Bridge State Park, Princess Arch, Red River Gorge, Tower and Chimney Rocks, Swift Camp Creek, Noda Tunnel, and the Mountain Parkway.

As envisioned, the Red River Gorge project would include a scenic highway between Mountain Parkway, Red River Reservoir, Cave Run Reservoir, and Interstate 64. This 25-mile scenic highway would cost an estimated $25 million. Land acquisition needs, including easements, are estimated to be 66,000 acres costing $4.4 million. Recreation developments highlighting the various natural rock arches, escarpments and historical features would cost an estimated $7 million. Access and interior road costs, exclusive of the proposed scenic highway, are about $2 million.

Estimated total costs - $38,400,000.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Lexington
Corbin
FLEMING
BATH
MONTGOMERY
CLARK
MENIFEE
POWELL
WOLFE
ESTILL
LEE
MADISON
GARRARD
LINCOLN
OWSLEY
BREATHITT
KNOTT
PERRY
LESLIE
LETCHER
DANIEL BOONE NATIONAL FOREST
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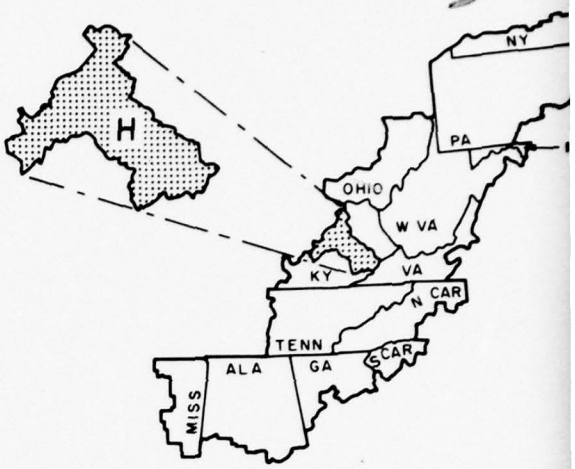
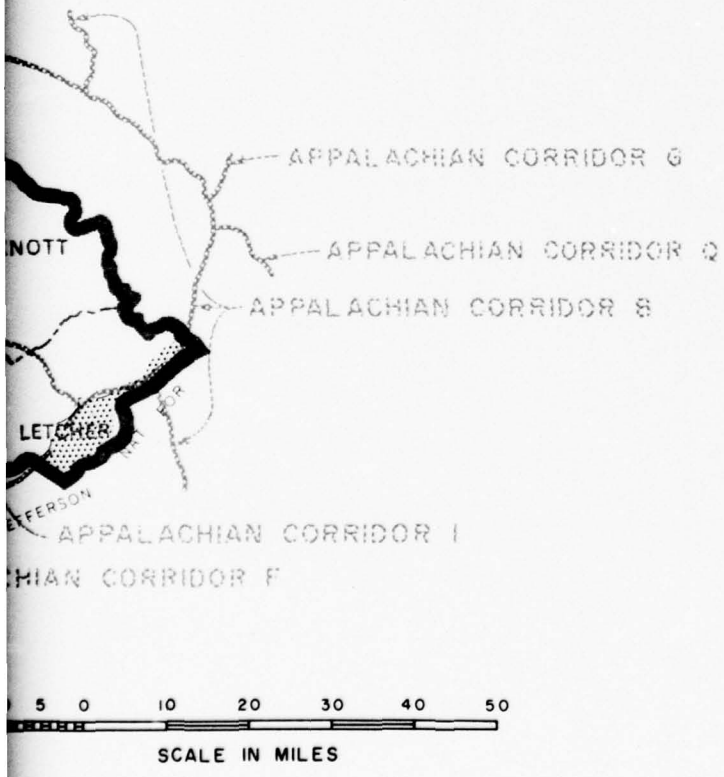


VICINITY MAP

Huntington

ACCELERATED DEVELOPMENT AREA KEY

① RED RIVER – PRIORITY I



LEGEND

● EXISTING DEVELOPMENT

① ACCELERATED DEVELOPMENT

REPORT FOR
DEVELOPMENT OF WATER RESOURCE
IN
APPALACHIA

WATER SUB-REGION H

NATIONAL FOREST

RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE

49 FIGURE B

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9. SUB-REGION I

Daniel Boone National Forest

Introduction

The heaviest concentration of National Forest lands are found in the ten southernmost east Kentucky counties within the boundaries of the Daniel Boone National Forest. Rugged mountains, steep river bluffs, natural arch formations, scenic rivers, and waterfalls describe the recreation attributes of this area.

Less than 35 percent of total land area within the boundaries of the forest are in National Forest ownership. Some 344,000 acres of National Forest lands are available for public recreation use. Since a large portion of the Red Bird purchase unit is within this sub-region, a large land acquisition program is progressing. Of over 76,000 acres programmed for purchase in Kentucky, possibly 30,000 or more are within this sub-region. Acquisition needs are difficult to establish as Corps of Engineers reservoir projects are in the preliminary planning stages.

Recreation Situation

Recreation use in the past few years has been heavily oriented toward dispersed-type activities such as hunting, fishing, hiking, sightseeing, and driving for pleasure. Fishing on Lake Cumberland within the National Forest boundaries and on streams has been about 20 percent of the total impact. Existing developments at 65 sites provide for 2,378 persons-at-one-time. In 1966, about 20 percent of the 471,700 visitor days use occurred at these developed sites. In addition to the existing Lake Cumberland, Laurel River Dam is under construction by the Corps of Engineers.

Two streams which may be desirable for scenic rivers exist within the Daniel Boone National Forest. These are the Big South Fork of the Cumberland River, and Rockcastle River. Scenic attributes of these two streams fully justify further study, with PL 90-483 authorizing such a study on the Big South Fork. This interdepartmental study is currently in progress.

Recreation use within the sub-region will materially increase. With construction of all or part of proposed Corps of Engineers structures, recreation use will skyrocket. These projects are Devils Jumps, Cumberland Falls, Parkers Branch, and Jellico Creek. In addition to proposed projects, the completion of Laurel River Dam, now under construction, will result in tremendous increase in recreation use in the Forest. One additional impoundment will be created with the construction of I-75 at Woods Creek. This 600- to 700-acre impoundment will also provide water-oriented opportunities. Recreation use for this sub-region will continue to increase as the proposed impoundments are completed.

Recreation Objective

To meet ten-year recreation demands, facilities for an additional 50,000 persons-at-one-time will be needed. In addition to Forest Service development, 19 or more privately-financed resorts, motels, and commercial public service sites on National Forest lands will be needed. These developments would have a capacity of almost 6,000 persons-at-one-time. To meet this objective, an estimated $9.4 million is needed to accelerate planning and constructing of the recreation facilities.

Pending the outcome of studies for scenic rivers or other alternative on the Rockcastle River and the Big South Fork of the Cumberland, together with negotiations with the Corps of Engineers on those projects previously mentioned, any accelerated program must be flexible to permit adjustments as needed to meet changing situations.

Laurel River Reservoir

Immediate acceleration is needed for recreation developments for Laurel River Reservoir. As envisioned, project requirements include 17 miles of primary access roads, 15 miles of interior access road construction, 2,000 acres of land to be acquired and 12 recreation site complexes. Recreation developments for this project, with Interstate 75 touching the upper reaches of the reservoir, are planned to not only meet the needs of the surrounding population, but vacationists, as well as those enroute to other vacation destinations. Approximately 8,000 persons-at-one-time can be served. Exclusive of all road, land acquisition costs and private financing for resort and marina developments on National Forest lands, the estimated recreation cost is $3,500,000.

Other Reservoirs

As the Corps of Engineers plans and programs are activated, additional recreation development needs will materialize. Preliminary estimates of these recreation needs include:

1. Parkers Branch Dam: An estimated $5 million recreation development program will be required with a similar amount needed for access road construction.

Estimated cost, $10,000,000.

2. Devils Jumps Dam: This created recreation resource, if fully utilized, would require a $4 to $6 million development program. Access road construction costs at this project would approach the $15 million mark.

Estimated cost, $20,000,000.

3. Rockcastle Narrows Dam: An estimated $2 million recreation development program would be needed at the project, with up to $2.5 million required for access roads.

Estimated cost, $4,500,000.

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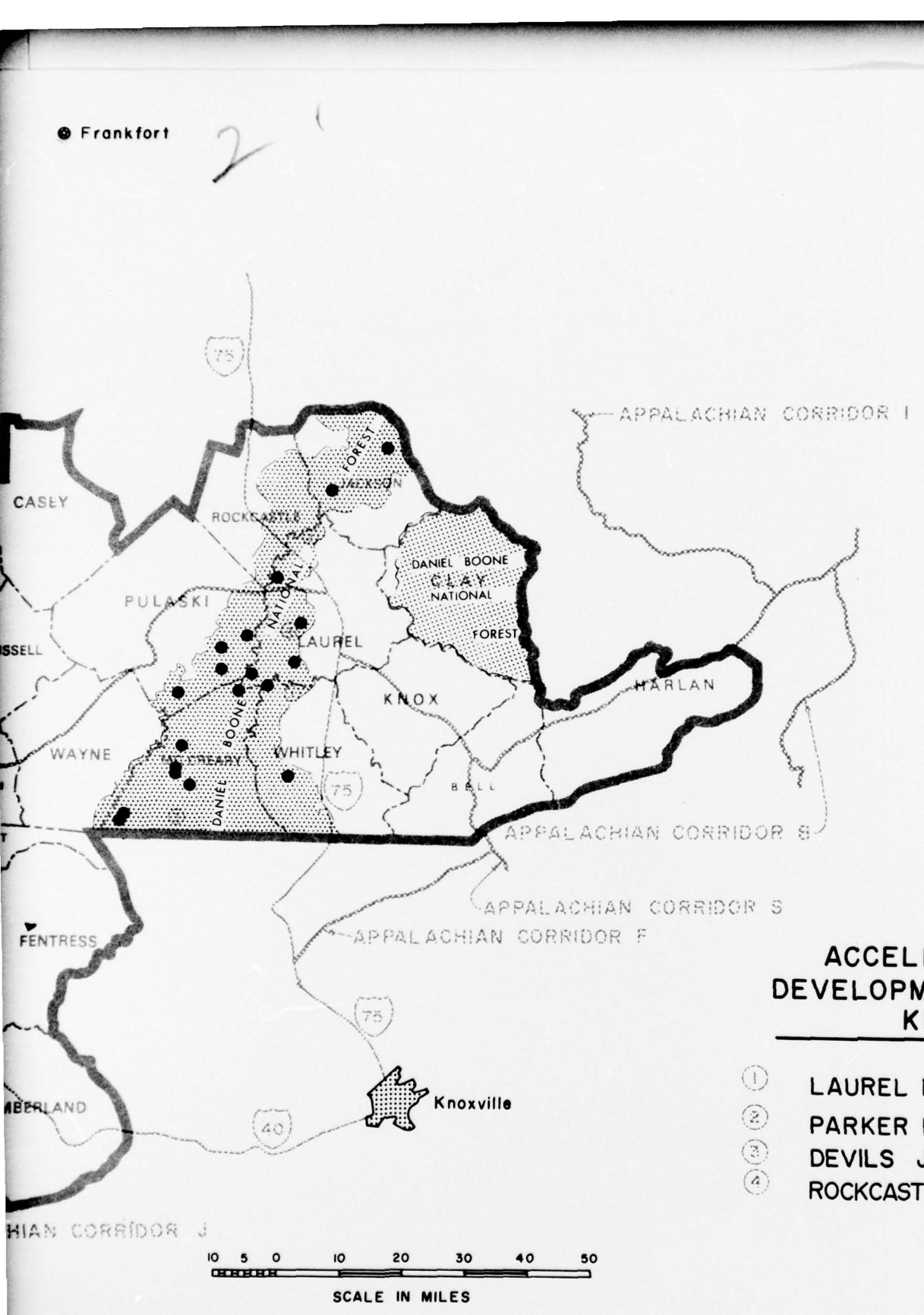
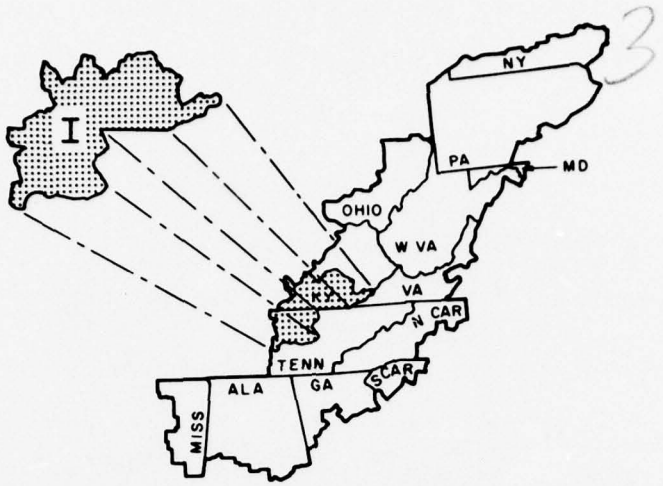


ACCELERATED DEVELOPMENT AREA KEY

1. LAUREL RIVER - PRIORITY I
2. PARKER BRANCH - PRIORITY
3. DEVILS JUMPS - PRIORITY
4. ROCKCASTLE NARROWS - PRIORITY



VICINITY MAP

LEGEND

● EXISTING DEVELOPMENT

(1) ACCELERATED DEVELOPMENT

CCELERATED
LOPMENT AREA
KEY

UREL RIVER - PRIORITY I
RKER BRANCH - PRIORITY
VILS JUMPS - PRIORITY
KCASTLE NARROWS - PRIORITY

REPORT FOR
DEVELOPMENT OF WATER RESOURCES
IN
APPALACHIA

WATER SUB-REGION I
NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 1968

55 FIGURE B-10

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10. SUB-REGION J

Bankhead, Chattahoochee, Cherokee, Jefferson, Nantahala and Pisgah National Forests

Introduction

The recreation attributes of the 1,573,000 acres of National Forest land within this sub-region are among, if not the most, spectacular found in the east. Breathtaking scenery, exquisite rhododendron blossoms, towering mountain peaks, renowned crystal clear trout streams and rivers, primeval-like forest environment and shimmering mountain lakes are among the superlative attractions found in this area.

Among the outstanding attractions are--

--The Roan Mountain Gardens, featuring purple rhododendrons atop a grassy mountain bald with spruce and fir trees to add spice to the mix; the Garden sits astride the Tennessee and North Carolina state lines.

--Joyce Kilmer Memorial Forest. This is a 3840-acre living memorial to an outstanding citizen, lover of nature and author of "Trees." This appropriate tract of magnificent virgin trees will become increasingly important with the completion of the Tellico-Robbinsville Scenic Highway.

--The nationally famous Tellico River is one of the finest trout streams in eastern United States.

--The Cradle of Forestry in America, located near Asheville, is the birthplace and site for the early development of Forestry in America.

--The Shining Rock Wilderness. This 13,400-acre wilderness lies adjacent to the Blue Ridge Parkway, and features a shimmering white quartz outcrop and a mountain peak exceeding 6000 feet in elevation.

Recreation Situation

In 1966, almost 3,250,000 visitor days use was recorded on the 1.5 million acres of National Forest land within Sub-region J. There are 166 developments on 1,057 acres which will accomodate 18,176 persons-at-one-time.

Recreation Objectives

Within ten years, almost 600 sites should be intensively developed to provide facilities for 135,000 persons-at-one-time. The total estimated cost is $54,768,500. Under the current rate of financing, facilities for slightly over 30,000 persons-at-one-time possibly could be constructed. To meet the balance of the needs, an accelerated program is needed to plan and construct recreation facilities and 220 acres of recreation impoundments at an estimated cost of $40,202,400.

In addition, an accelerated program is needed for eight major special projects, which would provide facilities for 77,500 persons-at-one-time.

Total estimated cost, $53,850,000.

These eight special recreation projects are (See Figure B-11 for locations):

1. Pisgah Forest Recreation Area, North Carolina: Among the attractions within this area are the Davidson River, Shining Rock Wilderness Area, and the Cradle of Forestry in America. Public Law 90-398 established the "Cradle" to protect and develop this area of historic and aesthetic significance.

This major composite is planned with a daily design load of 15,000 PAOT. Estimated annual visitor day use by 1980 is 6,000,000. It is accessible from I-40, I-26, and I-85. Construction priority 3 is established for this development.

Estimated cost, $27,800,000.

2. South Holston - TVA Reservoir - Tennessee: Optimum development and utilization of this TVA reservoir is needed. Proposed acceleration would provide major developments with facilities to accommodate 7,000 persons-at-one-time.

Estimated annual visitor days use by 1980 is 354,000. Construction priority is 7. The complex is about 15 miles from I-81.

Estimated cost, $5,000,000.

3. Starr Mountain Complex - McMinn and Monroe Counties, Tennessee: This project includes construction of a 120-acre lake with related facilities for 7,500 persons-at-one-time. Estimated annual visitor days use by 1980 is 300,000. Construction priority is 8. The complex is about 17 miles from Appalachian Corridor K.

Estimated cost, $2,800,000.

4. Watauga Lake - TVA Reservoir - Tennessee: An accelerated program for this lake area would provide developments to accommodate 11,000 persons-at-one-time. Annual visitor day use by 1980 is estimated to be 600,000. Construction priority is 4. The complex is about 25 miles from Appalachian Corridor B.

Estimated cost, $5,500,000.

5. Chilhowee Complex - Polk County, Tennessee: An accelerated program for this complex would provide two 30-acre lakes with sufficient facilities for 8,500 persons-at-one-time. Estimated annual visitor day use by 1980 is 400,000. Construction priority is 2. The complex is approximately 5 miles from Appalachian Corridor K.

Estimated cost, $4,500,000.

6. Indian Boundary Complex - Monroe County, Tennessee: Completion of this project is needed to coincide with the opening of Tellico-Robbinsville Scenic Highway. Facilities for 4,000 persons-at-one-time are needed. Estimated annual visitor day use by 1980 is 200,000. Construction priority is 6. This complex is about 35 miles from I-75.

Estimated cost, $2,000,000.

7. Tellico Dam - TVA Project - Tennessee: Utilization of the resources created when this reservoir is completed will require recreation development on National Forest lands.

This complex is planned for a daily design load of 4,500 PAOT. Estimated annual visitor day use by 1980 is 600,000. It is about 25 miles from I-75. Construction priority is 1.

Estimated cost, $2,500,000.

8. The Norton Area - Wise County, Virginia: To provide accomodations for recreationists utilizing Allegheny Parkway when completed, a major recreation complex is needed, including a 50-acre lake with all related facilities for camping, picnicking, swimming, hiking and horseback riding.

Facilities are planned for 5,000 PAOT with an estimated annual visitor day use of 250,000. Appalachian Corridor B is 5 miles distant. Construction priority is 5.

Estimated cost, $3,800,000.

Starr Mountain, Indian Boundary Lake, Tellico Dam, and Chilhowee proposed accelerated recreation projects are in or adjacent to the Townsend-Tellico Complex. South Holston proposed project is in the Boone-Linville-Roan Mountain Complex. The Complexes are now under study by the Appalachian Regional Commission as a part of the Highlands Recreation Study.

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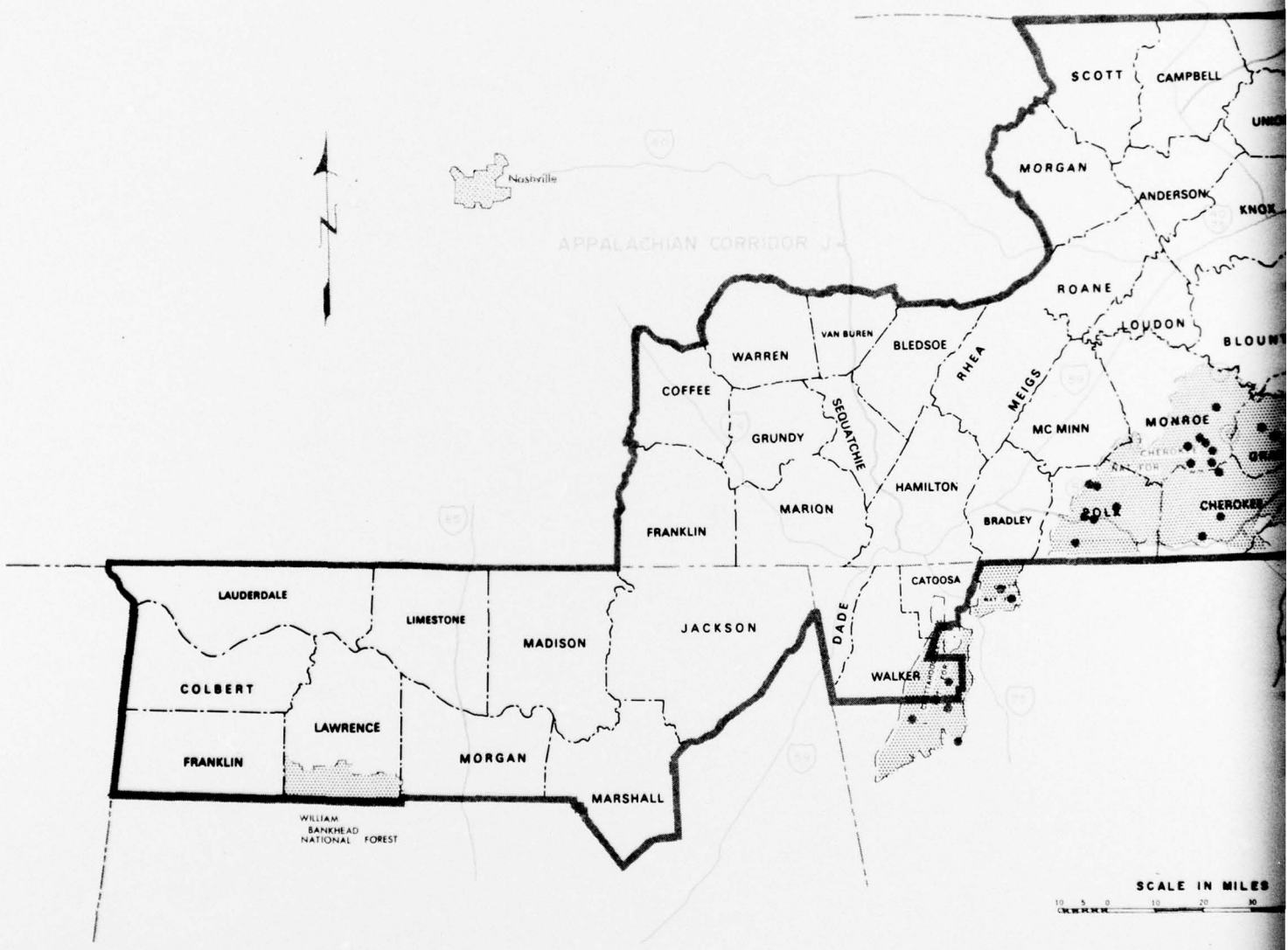
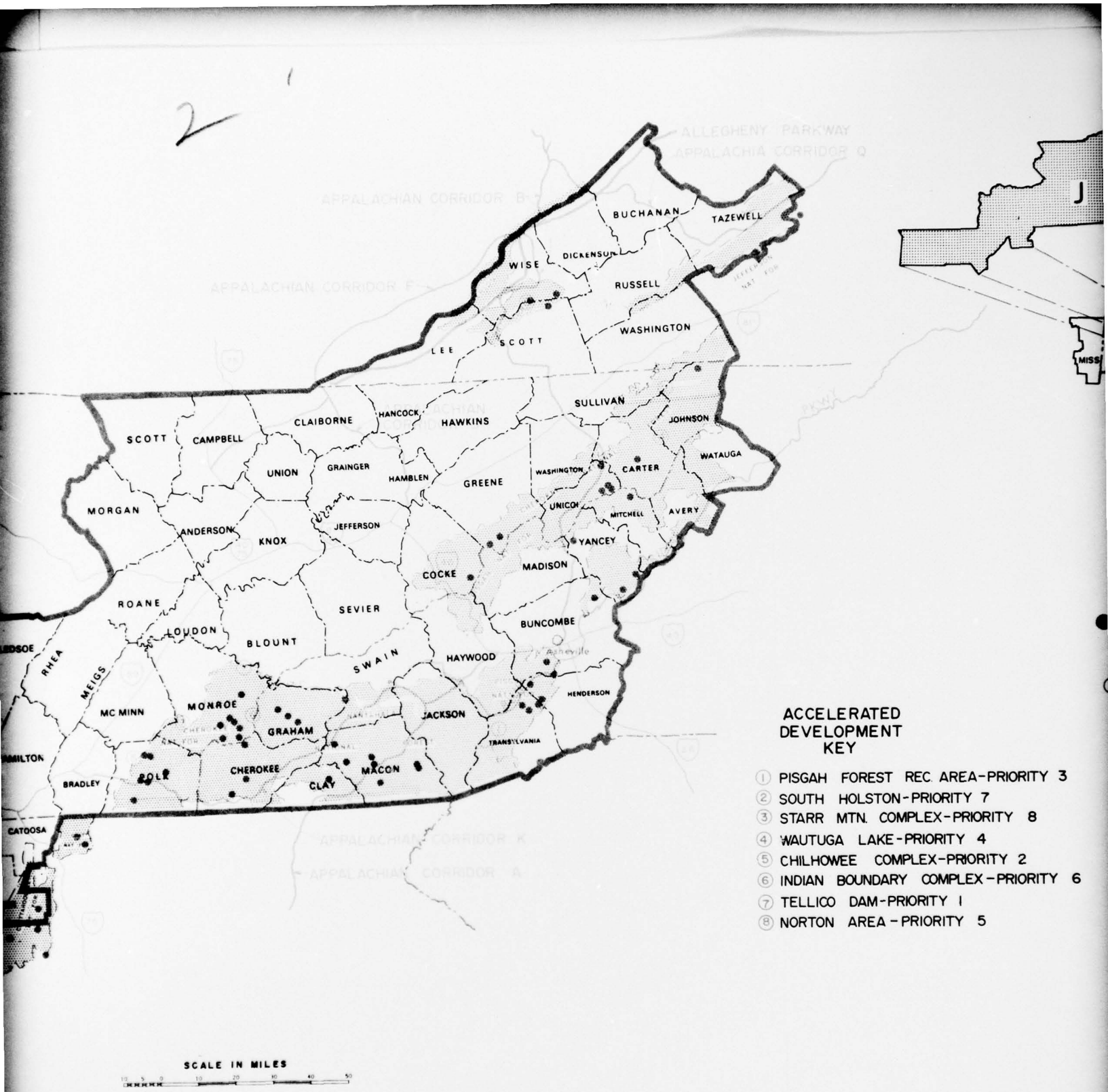
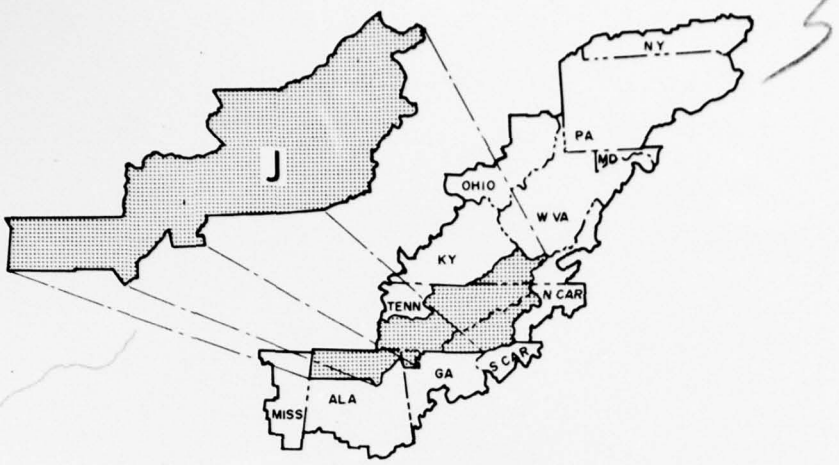




ACCELERATED DEVELOPMENT KEY

1. PISGAH FOREST REC. AREA-PRIORITY 3
2. SOUTH HOLSTON-PRIORITY 7
3. STARR MTN. COMPLEX-PRIORITY 8
4. WAUTUGA LAKE-PRIORITY 4
5. CHILHOWEE COMPLEX-PRIORITY 2
6. INDIAN BOUNDARY COMPLEX-PRIORITY 6
7. TELLICO DAM-PRIORITY 1
8. NORTON AREA-PRIORITY 5

SCALE IN MILES



VICINITY MAP

LEGEND

● EXISTING DEVELOPMENT

① ACCELERATED DEVELOPMENT

ACCELERATED DEVELOPMENT KEY

① PISGAH FOREST REC. AREA-PRIORITY 3
② SOUTH HOLSTON-PRIORITY 7
③ STARR MTN. COMPLEX-PRIORITY 8
④ WAUTUGA LAKE-PRIORITY 4
⑤ CHILHOWEE COMPLEX-PRIORITY 2
⑥ INDIAN BOUNDARY COMPLEX-PRIORITY 6
⑦ TELLICO DAM-PRIORITY 1
⑧ NORTON AREA-PRIORITY 5

REPORT FOR
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NATIONAL FOREST RECREATION DEVELOPMENT

OFFICE OF APPALACHIAN STUDIES JUNE 1968

61 FIGURE B-11

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SUPPLEMENT B - OUTDOOR RECREATION PROPOSALS

PART II - U.S. SOIL CONSERVATION SERVICE

One hundred and ninety-eight USDA upstream watersheds are recommended for the development of water and related resources in the Appalachian Region. This recommendation results from preliminary investigation reports made under the PL-566 program and this study, in addition to watershed investigation reports of individual watersheds under various River Basin Studies. One hundred and eight of these watersheds include recreation as a project purpose. The recreation developments are an integral part of the watershed projects. Additional storage in most of the 198 watersheds could, in the future, also be developed to provide outdoor recreation opportunities.

These watershed recreation developments will create or improve facilities for the enjoyment of outdoor recreation based on the use of or proximity to water. Developments include the land required for public access and public use, in addition to minimum basic facilities such as roads and trails, parking lots, public water supply, sanitary facilities, power facilities, lifeguard towers, beach development, boat docks and ramps, plantings and other shoreline or area improvements, picnic tables, fireplaces, grills, group shelters, facilities for tent, trailer and pick-up camping, permanent-type playground apparatus associated with picnic or camping play area, and appropriate identification, location, and directional signs.

In most of the watersheds, the recreation market area was considered to be the population residing within one hour's driving time of the recreation resource providing these opportunities. Since the demand for outdoor recreation is estimated in the future to be so large, the need was not determined for these watersheds, but the present supply was considered. The recreation activities were confined to swimming, boating, picnicking, and camping. Fishing and hunting were evaluated separately. The recreation-day value of $1.25 to $1.50 per visitor was used for the watersheds.

Estimated costs for recreation development would provide basic facilities for the above outdoor recreation activities. For more details, Appendix A, Agriculture, Forestry and Conservation, should be referred to. The following table summarizes recommended watersheds which include recreation:

RECOMMENDED USDA UPSTREAM WATERSHEDS

Sub-region	Projects (no.)	Structures (no.)	Water Area (Acres)	Recreation Days (no.)	Basic Facilities (Dollars)	Operation & Maintenance (Dollars)	Recreation Benefits (Dollars)
					(in 1,000's)		
A	1	1	400	121	39	3	14
B	5	7	1,730	513	2,239	164	654
C	7	10	600	87	275	18	98
D	5	10	880	278	2,519	138	344
E	5	8	780	125	557	14	177
F	31	43	9,710	6,698	28,998	1,551	8,508
G	29	39	9,120	3,946	18,085	906	5,295
H	5	5	540	90	601	30	115
I	8	12	2,450	308	2,388	95	453
J	12	14	1,020	269	2,418	116	356
Total	108	149	27,230	12,435	58,119	3,035	16,014

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