

A PARK, RECREATION
AND OPEN SPACE STUDY
Maricopa County, Arizona

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A PARK, RECREATION
AND OPEN SPACE STUDY
Maricopa County, Arizona

September 1970

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Prepared by

THE MARICOPA COUNTY PLANNING AND ZONING DEPARTMENT
111 South Third Avenue
Phoenix, Arizona 85003

For

MARICOPA ASSOCIATION OF GOVERNMENTS
3800 N. Central Avenue
Phoenix, Arizona 85012

TITLE: A PARK, RECREATION, AND OPEN SPACE STUDY
MARICOPA COUNTY, ARIZONA

AUTHOR: The Maricopa County Planning and Zoning Department

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by the year 1990

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ABSTRACT: This study begins with a discussion of the ecological setting,
a definition of open space, and a discussion of the scope of
the report. Principles and standards for public parks and
open space recreational facilities are analyzed from both
the national and local standpoint. Existing conditions -
historical background; physical setting; and population and
socio-economic factors - are analyzed; also, projections of
future trends are made. Inventories of all types of open
space are included, and future needs and requirements are
presented. Finally, recommendations are made for the
development of a regional open space land program including
planning administration.

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"The bow cannot always stand bent, nor can human frailty subsist without some lawful recreation"

-Miguel De Cervantes, "Don Quixote", 1605

* * * * *

"To-day it is hardly necessary to urge the desirability of a proper system of town planning. The advantage of the land around a growing town being laid out on a plan prepared with forethought and care to provide for the needs of the growing community seems self-evident; and yet it is only within the last few years that any general demand for such powers of town planning has been made. The corporations and other governing bodies have looked on helplessly while estate after estate around their towns has been covered with buildings without any provision having been made for open spaces, school sites, or any other public needs. The owner's main interest, too often his only one, has been to produce the maximum increase of value of ground rent possible for himself by crowding upon the land as much building, as it would hold. The community, through its representative bodies, having watched the value of land forced upon to its utmost limit, has been obliged to come in at this stage and purchase at these ruinous values such scraps of the land as may have been left, in order to satisfy in an indifferent manner important public needs. In this way huge sums of public money have been wasted."

-Sir Raymond Unwin, "Town Planning in Practice", 1909

PREFACE

This study upon parks, recreation and open space has been prepared for the Maricopa Association of Governments under a contractual agreement with the Maricopa County Planning and Zoning Department. The Maricopa Association of Governments (MAG) is a voluntary association of the governments of fifteen cities and towns, and Maricopa County, organized as a non-profit corporation under the provision of the Statutes of the State of Arizona. Supporting funds for this study have been provided by the U.S. Department of Housing and Urban Development (HUD).

The general concept of open space as used in this study is based on the Federal Housing Act of 1961, as amended. "Open space use" was defined to include any land used for (A) park and recreational purposes, (B) conservation of land and other natural resources, or (C) historic or scenic purposes. Essentially, the study concentrates on the central urbanized area. However, because of the obvious mobility of the people of the area, investigations were also made within a 100-mile radius of central Phoenix. It should also be pointed out that, for the most part, the study was confined to public open space and recreational facilities. Although not covered in this report, it must be recognized that there are many other facilities that contribute to an overall open space and recreational program. Among these are private and semi-private schools; churches; commercial sports fields; tracks and amusement areas; and special facilities such as zoos, civic centers, museums and governmental malls.

Realizing that a regional study should reflect the goals, standards and objectives of all of the component parks, particular attention has been given to the investigations and reports made by the various jurisdictions within Maricopa County. In effect, this study is a digest of local open space assets and problems related, in turn, to the region as a whole. An important contribution of this report is the bibliography contained herein of the various park, recreation and open space plans that are available for various portions of Maricopa County.

Many persons have been involved in this study and it would be impossible to recognize all of them for their contributions. Special recognition should be given, however, to the park, school and government officials who furnished the inventory data upon which basic analysis of existing conditions were made. Without this close look at today, predictions of future needs would have been meaningless.

In order to correct existing deficiencies as noted in this report and to provide the recreational and open space land needed for the future, the total support of all citizens, as well as government officials, will be required. Citizen support for a fine system of parks and recreational programs must begin with respect for the outdoor world. Second, it is hoped that this report will be given wide publicity and support in order that all the people will be aware of problems and possible solutions. The adoption and implementation of programs should then follow in natural course.

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SUMMARY OF MAJOR FINDINGS AND RECOMMENDATIONS

Nationally, as well as locally, there is increasing recognition and concern of the need to preserve open space in our urban and rural areas and to make provision for open space where it is needed and presently non-existent or deficient. The needs extend from small recreational spaces to very large areas for environmental resource conservation. Lands must not only be provided for intensive use but consideration must also be given to maintaining the ecological balance within the area.

In order to relate open space needs to present and future population, certain principles and standards are needed. Since many planning studies have been made by various jurisdictions within Maricopa County, an attempt has been made to combine and summarize this data on principles and standards. Although the standard suggested herein may vary somewhat from those of any single jurisdiction, they are generally consistent with principles and standards commonly accepted throughout the nation. Not only are these standards used for the purpose of this report but it is hoped that they may be of help to those communities that have not utilized such data to guide them in determining open space requirements for various purposes.

Both historically and physically, the study area offers a wide range of open space opportunities. Geologically, there is a great variety of types and ages of rocks. This setting, has resulted in unusual topography, drainage systems and soil types, which in turn have had their effects upon climate, vegetation and animal life.

Ancient Indian cultures that existed in the Salt River Valley were followed by Spanish, Mexican and Anglo-American explorers. Following the Civil War, pioneer settlement saw the area develop into an agricultural community. Still another change took place after World War II when rapid urbanization became predominant. Population grew slowly but steadily in Maricopa County during the first half of the present century. By 1960 there were 663,510 persons in the County and recent 1970 census figures reveal that population has reached 963,132 persons representing 45.2 percent increase in growth during the past decade. It is anticipated that this trend will con-

tinue and it is predicted that the population in Maricopa County may attain approximately 2,000,000 persons by the target year 1990.

The unusual population growth as indicated and expected, makes it essential that there be an inventory of the type, scope and extent of existing park land, school sites and other open space, and that estimates be prepared as to the type and magnitude of open space that may be needed to accommodate future as well as present needs. In the preparation of this report, detailed inventory data has been obtained from the public school system and from the various cities and towns located within Maricopa County. In addition, other pertinent information has been acquired from State and Federal agencies. The foregoing data has been carefully tabulated and summaries are included in the text and the Appendix.

Quantitatively, there are 2,595 acres presently used for neighborhood, community and large parks and playgrounds in Maricopa County. Based on established standards, there is a present deficiency of 4,310 acres for these categories, which deficiency will increase to an estimated total of 11,745 acres for the target year 1990. Although other factors must be considered in determining land needs for schools, population relationships indicate that approximately 7,340 additional acres will be needed by 1990.

Although there are serious deficiencies for the categories named above, Maricopa County (including the parks situated in several cities) is fortunate in having the largest regional park system in the nation. There are presently 110,417 acres in the system providing more than twice the amount of acreage anticipated to be needed by 1990. It should be pointed out, however, that of the total acres considered to be developable for intensive use, there would be an excess of only 809 acres by the target year, 1990.

Specific recommendations for the development and administration of a regional open space program for Maricopa County, include the following but not in any suggested order of priority:

1. The overwhelming majority of the population in Maricopa County resides in the urbanized area where the park and recreational needs are paramount.
2. The urbanized areas in Maricopa County, particularly the Phoenix Urban Area, contain a sufficient supply of vacant or undeveloped land in a variety of sizes and locations suitable for every urban purpose.
3. Full public support is needed to preserve the open character of the Phoenix Mountains to make it the second wilderness park in the city. In this way, the mountain-scapes will be saved.
4. The retention of agricultural lands is extremely important when viewed in the context of open space land goals and needs.
5. Selected desert or mountainous areas of Maricopa County that are under the administrative control of either Federal or State agencies are suitable for future parks and recreational areas. The western portion of the County contains a number of such areas.
6. Airport environmental planning and zoning are vital to provide for the compatible use of land and airspace.
7. All development on Indian Reservations should be designed to preserve natural amenities.
8. In the implementation of the adopted Major Street and Highway Plan, the factors of design aesthetics and multiple use should be maximized. Merely functional highways are anachronistic.
9. The waterways of Maricopa County constitute a unique open space asset that should be used to maximum advantage.
10. Many of the flood plains are ideal for a natural greenbelt, and for recreational facilities including hiking and riding trails.

11. Assist the Valley Forward Association to make the Rio Salado Project a reality. Proper development of the Salt River flood plain would be an asset for the entire County.
12. State enabling legislation to permit local jurisdictions to adopt and enforce flood plain regulations is needed urgently.
13. High priority should be given plans for corrective flood control measures. September 1970 flooding could occur again, unfortunately.
14. If Central Arizona Project (CAP) waters are adequate, Maricopa County should give consideration to the provision of intensively developed aquatic parks in the area of flood control structures.
15. Aquatic recreational opportunities are outstanding for the proposed Orme Lake area (in conjunction with CAP).
16. The "Canal Parks" plan should be reviewed and updated if warranted.
17. The Arizona State Parks Board should continue to establish state parks in Maricopa County.
18. Full cooperation should be extended to the State Land Commissioner to apply meaningful multiple use management techniques to the administration of State owned lands.
19. Maricopa County should be assisted in every way possible to purchase the park lands it now leases from the United States.
20. Maricopa County should pursue its program of more intensive development of the parks within its present system.
21. The adoption of local jurisdictional bond issues by voters provides an important way to acquire and develop needed local park facilities.
22. At the Federal level, it is recommended that the concept of multiple use management be continued in a meaningful way. The provision of more recreational facilities, within budgetary limitations, is desirable as Maricopa County grows.

23. Improved state enabling legislation is needed to strengthen county planning, and state enabling legislation is needed for cities and towns.
24. The Federal government offers many programs to provide for outdoor recreation. Administratively, it is necessary to determine the appropriate approach after consulting with MAG on the most recent requirements.
25. There are numerous methods to acquire and preserve open space lands.
26. Three methods that could be used more effectively to acquire and preserve open space lands are through subdivision regulations and control, easements (conservation and scenic), and gift.
27. MAG must develop a sound open space program based on accepted goals and policies.

In summary, this study constitutes the initial effort to furnish basic input towards the development of an open space program. It is essential that functional open space land planning be treated as a continuing matter to reflect changes in trends and desires of the people.

CHAPTER I

INTRODUCTION

The Ecological Setting

Since the birth of our nation, there have been men who are best remembered for their wise and unprecedented concern for the environment and the need for the protection and conservation of our gifts of nature. From Jefferson to Emerson and Thoreau, the list expands to include the great explorers of the caliber of John Wesley Powell and land reformers such as Carl Schurz. The following quotation sounds the theme of present-day attitudes:

"To waste, to destroy, our natural resources to skin and exhaust the land instead of using it so as to increase its usefulness, will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them amplified and developed."

But, this was not written in 1970 -- rather, it was part of President Theodore Roosevelt's message to Congress on December 3, 1907.

Many other "champions of conservation" have come to the forefront since the turn of the century. It is only since World War II, however, that a majority of the people have expressed their growing concern over apparent abuses to our everyday environment -- water and air pollution, noise and junk; and last, but by no means least, "people pollution". Even today, it is being proposed that we are passing from the "Age of Space" to the "Dawn of the Age of Ecology".

From the academic point of view, the study of ecology is an old and respected subject. The word itself is derived from the Greek combining forms of oikos, meaning house and logos, meaning study. Specifically translated, ecology is a

branch of science concerned with the interrelationships of organisms and their environments. Today, it is popular to refer to and to debate the subject of ecology -- as Jimmy Durante would say, "Everybody wants to get in the act". What this may all lead to is difficult to predict. It has been suggested that before the subject is talked to death, that a new name for "ecology" be invented in order to keep it alive. A possibility might be to call it "politics" or "the latest crusade".

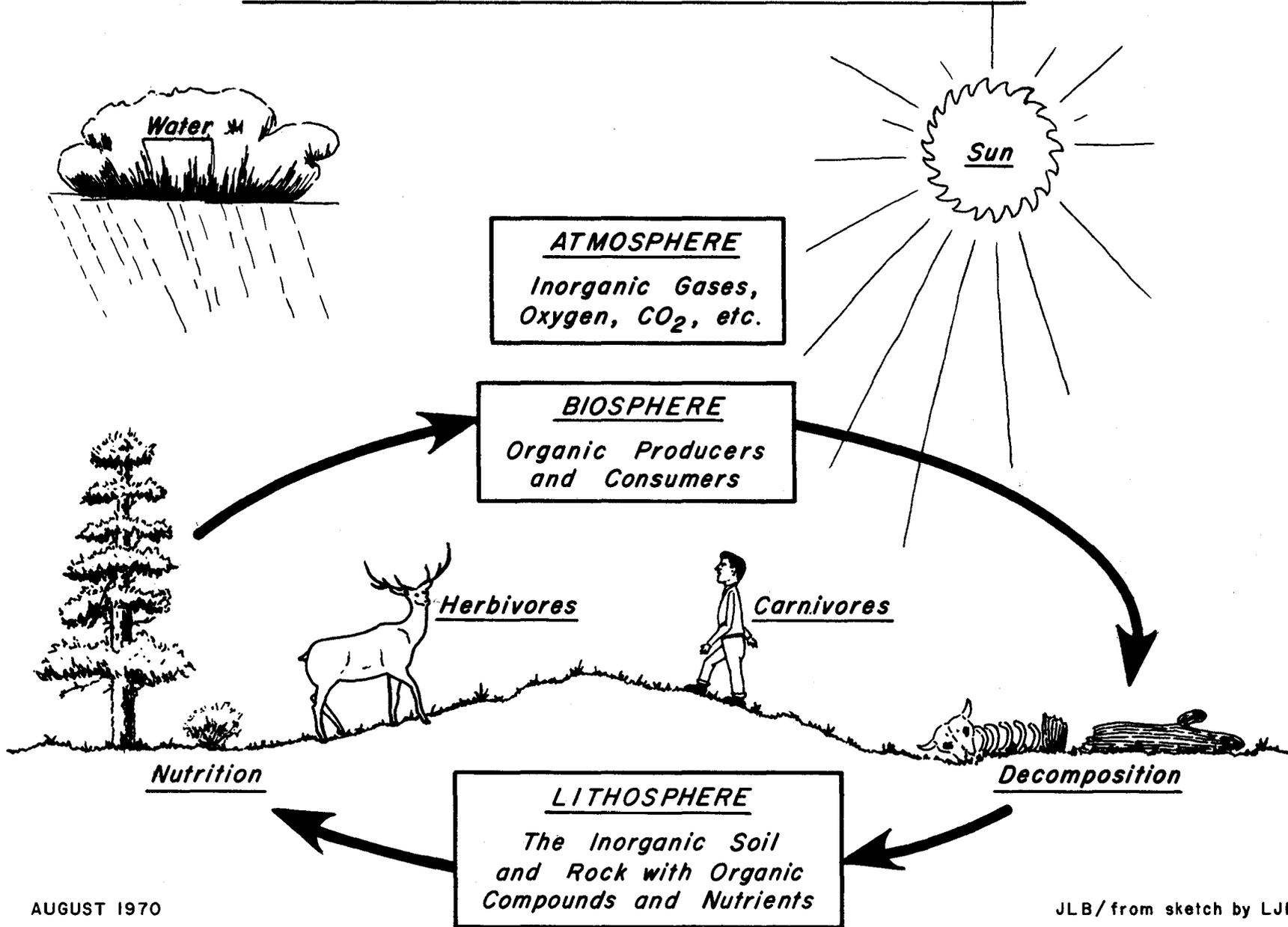
To better understand ecology, however, an attempt must be made to understand what the specialist means by his concept of an "ecosystem". Simply defined, an ecosystem is the sum total of all of the living (organic) and non-living (inorganic) parts that support a chain or cycle of life within a given area. Plate 1 is an attempt to illustrate graphically the relationship of the essential parts in a typical cycle:

All the processes in the cycle, although illustrated simply, are actually quite complex. Interruptions in the cycle -- either natural or man-made -- cause the degeneration of our environment. Two illustrations of the relationship of man as an organism to the ecosystem might serve to point out problems common to metropolitan areas. Animals in order to live, water in order to be pure and factories in order to operate, all consume oxygen. In turn, all the above emit carbon dioxide which, again in turn, is used by plants in the process of photosynthesis, that is, oxygen producing. As more open land is used by people and by factories, more oxygen is required while, at the same time, more vegetation is being removed thereby reducing the amount of oxygen produced.

A second illustration concerns water. The topsoil, where properly maintained, acts as a giant sponge in the absorption of rainwater. Not only is the water stored in the upper layers for the use of plants but some quantities may reach lower layers to recharge subsurface aquifers. An increase in paving and rooftops not only reduces the amount of area available for absorption but it also increases the amount of quick runoff. Although flood control structures may limit up-stream flows, sheet-flooding of local areas remains a critical problem.

PLATE I

"AN ECOSYSTEM"



AUGUST 1970

JLB/ from sketch by LJR

The above are two separate and basic reasons for the conservation of open land. With the increases in leisure time and mobility there is an increasing recognition of the need for space for recreational purposes and these needs will be examined in subsequent parts of this report.

Finally, it is interesting to note that the two common words, ecology and economics -- representing two major areas of concern to modern society -- were derived from the same origin. Where ecology means the study of the household, economy comes from the Greek oikos, household, and nemein, meaning to manage. Webster expanded the definition of economy to "the efficient and sparing use of the means available to the end proposed". By following this basic concept of economy, a true ecological conscience can be developed.

What is Open Space?

Open space, in its broadest possible meaning, is a land or water surface upon which man has little or no constructional development and which is open to the sky -- that is, provides an uninterrupted view.

Under Title VII of the Federal Housing Act of 1961, as amended, "open space use" means any use of open space land for (A) park and recreational purposes, (B) conservation of land and other natural resources, or (C) historic or scenic purposes. Hence, it is the view of the government that open space should not only be "preserved", but that it should be "provided, preserved and developed". It is assumed that "development" implies beautification, improvements and facilities which will increase the use and enjoyment of open space by all the people of the area.

Types of Open Space

Within the context of the above, an open space plan should not only assure ecological balance and environmental resource conservation but should also provide for the leisure needs and desires of everyone. Hence, classes of possible open space are as follows:

A. Open Space for Parks and Recreation Purposes

1. Local, regional, state and national parks and monuments.
2. Lakes, streams and reservoirs.
3. Hiking, riding and nature trails.
4. Zoos, arboretums and botanical gardens.
5. Golf courses, athletic fields, tracks.
6. School playgrounds and sports areas.

B. Open Space for Conservation of Land and Other Natural Resources

1. River flood plains.
2. Flood detention basins in watershed areas.
3. Slope areas over 30%.
4. Wildlife habitats and wilderness areas.
5. Unique geological features and natural areas.
6. Unique agricultural areas and experimental farms.

C. Open Space for Historic or Scenic Purposes

1. Archeological sites.
2. Historic sites and buildings.
3. Scenic highways and roadside beautification.

Although the above fall within the definitions of the Public Law, under the broad definition of open space, the list is not complete. Other classes of open space which should be considered include the following:

1. Public service corridors - railroads, canals, major transmission lines.
2. Airports and airport approach zones.

3. Cemeteries and large institutional areas.

4. Public land reserves.

Open Space Concepts

Although definitions and classifications may be useful, the changing concepts of open space are important to the development of a plan. As Zisman and Ward have said, "The concepts of open space have come out of history in the expansion of the country, the nature of the society and the economy, and the play of forces on the land and its use. Land, it seemed, was plentiful in the wide open spaces, it was there for the taking, it could be exploited at will, it could be used or not used wastefully, it was subject to all kinds of claims and eventually became something precious to preserve and conserve".⁽²¹⁾

A continually growing population, the pressures of urbanization, and a definitive conservation movement have profoundly changed the view of open space. No longer is a supply of "vacant land" sufficient to supply the ecological, physical, or social needs for open space. Along with a growing awareness that land is not unlimited, new concepts of open space have developed. In the past, open space was not considered to have a utility of its own. Now, it is recognized that open space must be considered as a functional land use in itself and can help shape development. In addition, the philosophy of "multiple use" - schools and parks, flood control dams and water recreation, utility corridors and trails, flood control structures and sanitary land fills -- has become increasingly popular and will eventually become mandatory.

Recent scientific research on environmental quality, recreational amenities and urban landscape in general has drawn man's attention to a promising new development. Known as "spatial perception," attention is being directed toward man's overall awareness of his environment and his view of the spatial organization around him. Although much more work needs to be done, there is the sobering thought that environmental problems may be fraught with dangers that may not readily yield to manipulation by methods and techniques that have had questional success in the past.

Scope of the Report

Within the broad aspects of open space as defined, and within the context of regional ecology, as explained, the scope of this report would seem to be limitless. Lewis Mumford, who has been a student of metropolitan areas since 1914, summarized as follows:

"For weekend recreation we must treat the whole region as a potential park area and make it attractive at so many points that the hideous congestion of the slowly unwinding procession of weekend traffic will be minimized, or disappear entirely in a more lacy network of regional distribution. As for daily use, the same requirements for open space now apply to both the most congested cities and the most sprawling suburbs: for the first must be loosened up for the sake of health and pleasure, while the second must become more concentrated and many-sided for the sake of a balanced social life."(7)

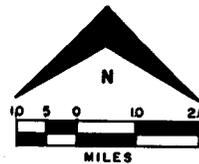
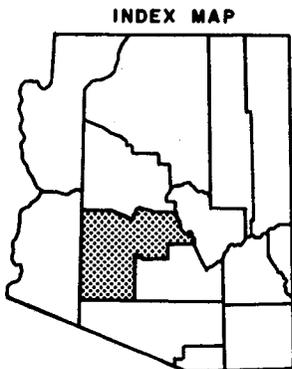
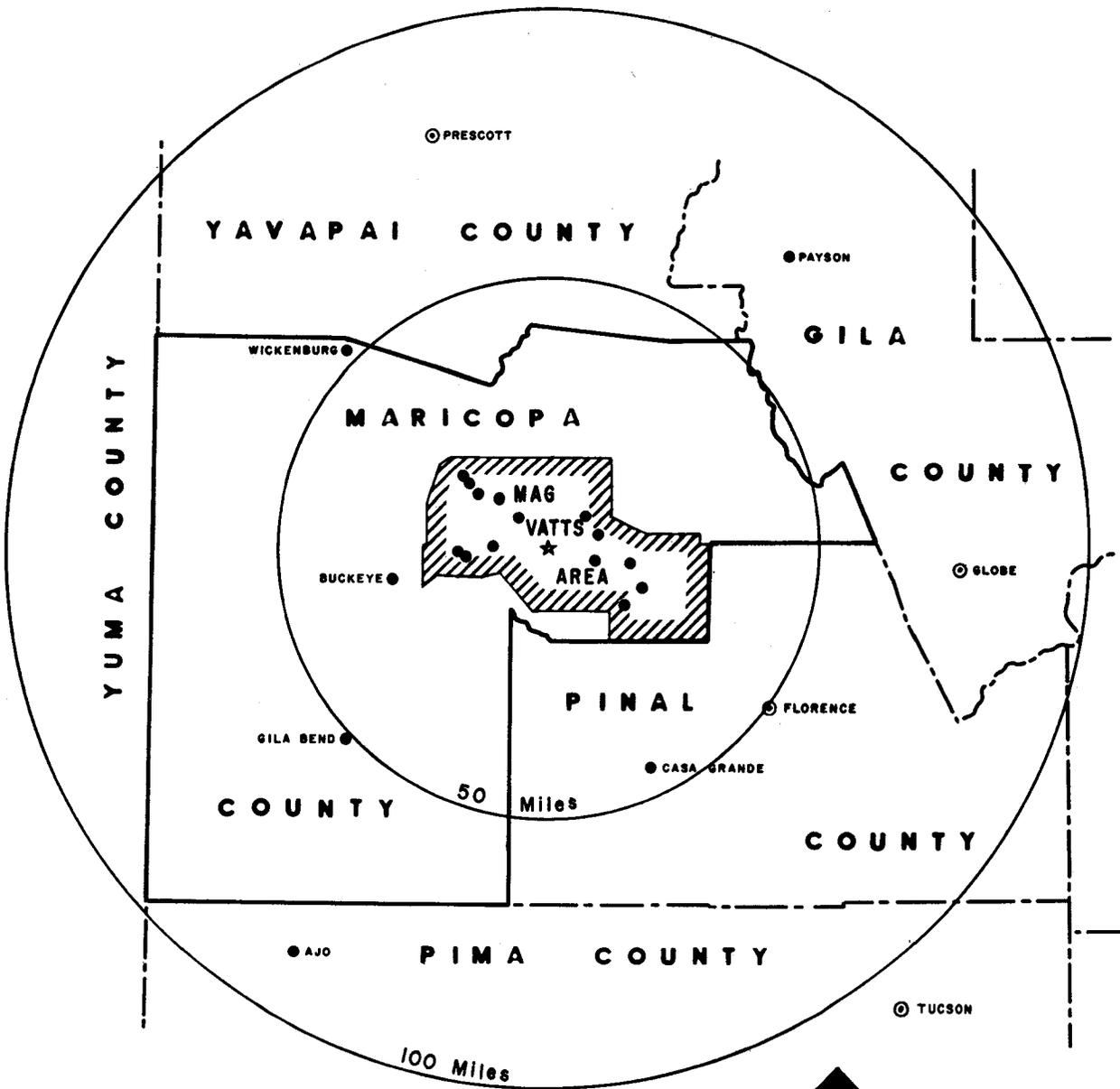
In summary, it is the general purpose of this report to:

1. Describe and evaluate current principles and standards for major public parks and other public recreational facilities;
2. Analyze existing conditions, both local and regional;
3. Project present and future open space requirements; and
4. Recommend a functional open space plan.

Geographical Areas of the Study

Plate 2 shows the geographical area included in this report. Most of the larger county parks and open areas are located outside of the Phoenix urban area and Maricopa County is the Standard Metropolitan Statistical Area. For these reasons, this study includes all of Maricopa County which contains a total of 9,226 square miles of area. In addition, major open spaces within a radius of 100 miles are considered.

The evaluation of the major urban-type facilities is confined to the central portion of Maricopa County within which most of the population is located. In 1967,



**GEOGRAPHICAL
AREAS
OF THE REPORT**

recognizing the need for cooperative action, Maricopa County and the fifteen incorporated cities and towns in the Phoenix urban area joined to form the Maricopa Association of Governments (MAG). The jurisdictional boundaries for the organization were adopted from those established in 1965 by the Valley Area Traffic and Transportation Study (VATTS). This group defined an area of study as outlined on Plate 2. For the purposes of transportation analysis and projection, the area was divided into a total of 688 Traffic Analysis Zones. Forecasts of population and selected socio-economic factors have been made for each separate zone and this information will be used to help determine future open space needs.

Previous Studies

All the jurisdictions in the study area have been active for years in a continuing attempt to solve the problems relating to recreational and open space needs. In the Bibliography, there is a listing of planning reports that have been published by the various jurisdictions and agencies concerned with the broad aspects of open space. Throughout the text of this report, references are made to these earlier studies, particularly those of area-wide significance. A brief discussion of certain reports is as follows:

In 1958, the National Recreation Association published a report entitled "A Study of Recreation and Parks in Phoenix and Maricopa County, Arizona".⁽²⁷⁾ This report was prepared for the Phoenix Community Council and the Maricopa County Parks and Recreation Commission. In the Preface it was stated:

"Only through community-wide interest and enthusiastic support can the recreation and park system be made what it should be. It is the purpose of this report to inform the citizens and provide a guide for progressive activities in this direction."

As will be seen later in Chapter III on the analysis of existing conditions, this study has been invaluable as a basis for park and recreation planning and development.

Another important study was prepared in 1965 by Sam L. Huddleston & Associates, for the Maricopa County Parks and Recreation Commission, and it was adopted by the

County Board of Supervisors on September 19, 1966. Consisting of two volumes, the report was entitled the "Maricopa County Regional Park System Plan".⁽²⁴⁾ Volume I covered such general subjects as population, future needs, activities analysis, physical setting and design standards. Volume II consisted of detailed studies of the individual large parks in the County system. Further reference to this report will be made under the sections involved within the analysis of regional parks.

Most cities and towns include parks and recreation as an element of their comprehensive plans. For example, the report completed by the City of Phoenix in June, 1969, entitled "The Park and Recreation Plan - Phoenix, Arizona".⁽⁶⁰⁾ was adopted by the City's Parks and Recreation Board and the Planning Commission and recommended for adoption by the City Council. This report is a thorough and detailed study and a long range plan "for the location, size and development of open space and recreation facilities to serve the citizens of Phoenix to the year 1990."

A recent publication is "Meeting Arizona's Current Outdoor Recreation Needs" prepared by the Arizona Outdoor Recreation Coordinating Commission (AORCC).⁽⁸³⁾ The study is subtitled "A Report Concerning Maintenance and Implementation of the 1967 Arizona Outdoor Recreation Plan". This recent plan was prepared for the purpose of strengthening and supplementing the original study.⁽⁸⁴⁾ Findings and proposals were based upon 1965-66 statewide inventory data, and upon recreation activity and participation data derived from the 1960 National Recreation Survey (NRS). Since the aforementioned investigations were on a state-wide basis, this report has been a valuable reference for parks and recreational facilities within a 100 mile radius of Phoenix.

CHAPTER II
PRINCIPLES AND STANDARDS FOR PUBLIC PARKS AND
OTHER OPEN SPACE RECREATIONAL FACILITIES

General

Over a period of many years certain "principles and standards" for public parks and recreational facilities have evolved and these have been adjusted to local conditions and needs. However, principles and standards often vary between different governmental jurisdictions. Nonetheless, certain general guidelines for defining desirable space and activity needs have proven to be useful. This section discusses existing principles and standards for public parks and other recreational facilities and recommendations for obtaining greater uniformity of principles and standards.

In view of the most recent concern for "the total environment" and all facets of open space functions and activities, accepted standards become less definitive. It would be interesting and helpful if a regional "ecosystem" as previously discussed could be devised and used to determine the land area requirements for all public parks and other open space. However, the day may not be far away when there will be a formula for "so many plants, so much oxygen and so much water per so many people" - not just for their usefulness, but for actual survival.

Still, for a meaningful evaluation of existing conditions and for projections into the future, sound principles and specific standards are necessary. This does not mean that they must be hard and fast rules, but rather, that they should serve as a bench mark and general guide. Obviously, there will be a variation of standards from locality to locality. These variations will depend upon the difference in population density and characteristics, income, mobility, and conditions such as topography and availability

of public lands. However, for purposes of this report certain standards are applied uniformly as a basis for determining whether the total amount of existing open space is in scale with present needs and in order to estimate the probable future requirements needed to serve the future population that has been estimated by the year 1990. Before discussing this, a brief review of human recreational desires and needs will follow.

"What Americans Do Most"

In the early 1960's, following instructions of the President and the Congress, the Outdoor Recreation Resources Review Commission (ORRRC) conducted a survey and collected a large volume of detailed data on national recreation needs and desires. ⁽¹⁰⁾ The purpose of the survey was to enable those persons concerned to evaluate in broad general terms the needs and demands for outdoor recreation for both the present and the future. Adopted from the report, Plate 3 shows "What Americans Do Most - In the Nation and the West" for twenty-three different recreational activities.

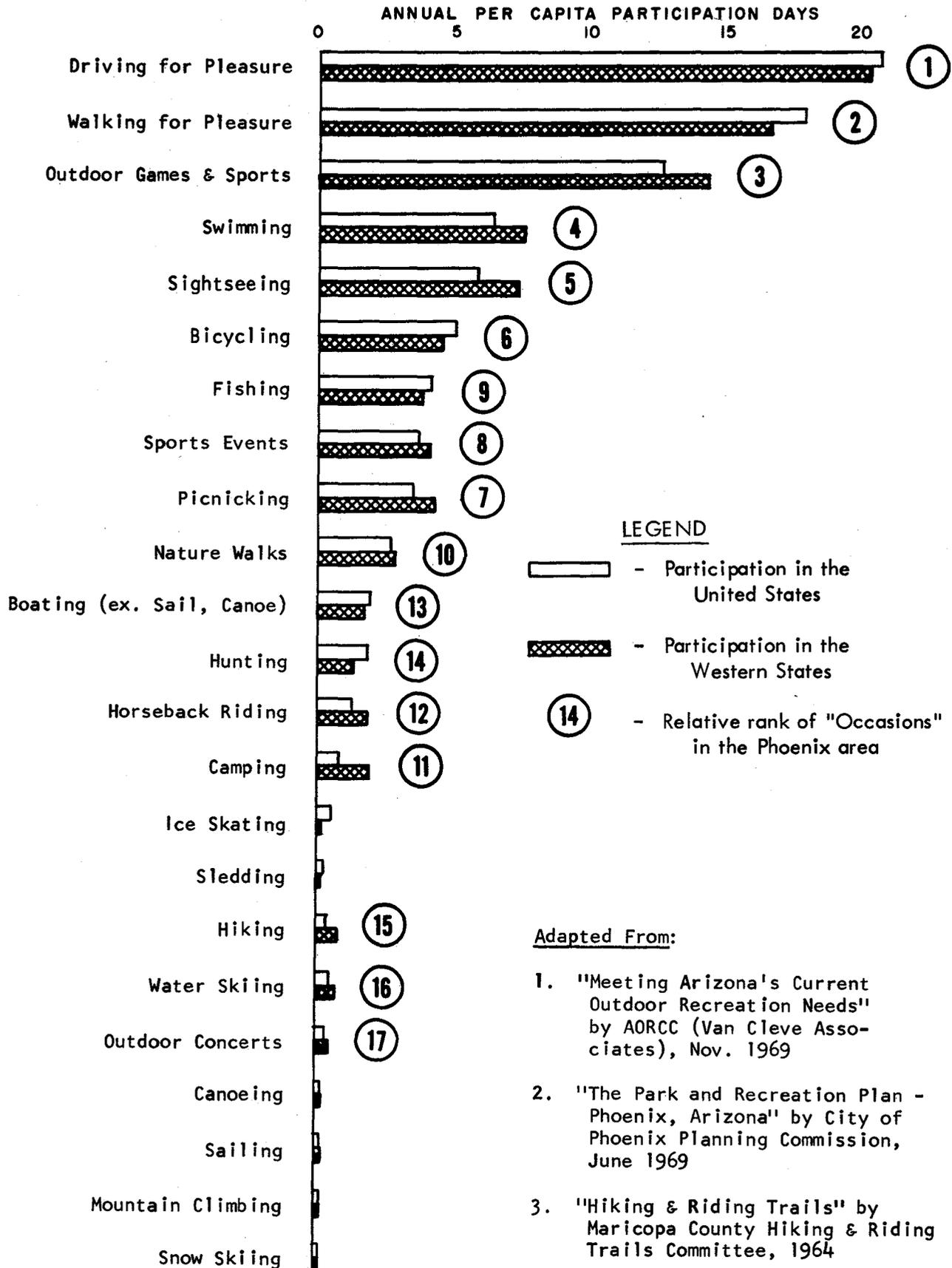
Participation in such activities as outdoor games and sports, swimming, picnicking, camping and horseback riding is shown to be somewhat greater in Arizona than in the nation. The usefulness of this information is limited because of the small number of persons interviewed. For example, in the recent AORCC report, previously referred to, it was pointed out that:

"The survey employed a sample of 4,375[±] households in the U.S., of which about 608 were in the Western Region (eleven states having widely varying climatic, population, urbanization and other characteristics). It appears that the actual Arizona sample comprised no more than 29 to 55 households."

Some estimates of recreation needs and desires have been made in local planning studies. In the recent Phoenix plan ⁽⁶⁰⁾, estimates of total occasions (number of visits) were made for the years 1960, 1976 and 1990 for most of the activities listed in Plate 3. The relative rank of these occasions are shown in the table. In the Huddleston study of the County's regional park system ⁽²⁴⁾, considerable data was collected on the use of each of the several parks -- "how many people participating in what activities where."

WHAT AMERICANS DO MOST.....

In the Nation and in the West



Further, it was pointed out, that "Factors which influenced past recreation use may or may not continue indefinitely."

When consideration is given to what might be called the "unique characteristics" of the county area - climate, the existence of a great variety of natural features and the large amounts of Federal and State land and proximity thereto - it appears that the desires of residents and visitors in Maricopa County would vary considerably from those in other parts of the nation. Although it is not within the scope of this report, it is obvious that an intensive program of research and analysis is needed to determine what park and recreation facilities both residents and visitors in Maricopa County now use and what facilities they would use if they were available.

Principles and Standards for Parks and Recreational Facilities

In their 1958 study, the National Recreation Association (NRA) proposed that there should be 10 acres of urban-type recreational land per 1,000 total population in the Phoenix-Maricopa area.⁽²⁷⁾ This standard suggests that one-quarter of the total (2.5 acres per 1,000 persons) be allocated to local playgrounds and playfields and that the remainder, 7.5 acres per 1,000 persons, be allocated to neighborhood and larger city-wide parks. Similarly, in 1960, the American Public Health Association⁽⁹⁶⁾ stated that:

"**recommendations are based on the generally accepted goal of 10 acres per 1,000 persons as a city-wide total for active and passive recreation space**."

Supplemental to the recreational land within the incorporated areas, NRA also recommended an additional 10 acres, and preferably 20 acres, for each 1,000 people to be in regional-type facilities consisting of large regional parks, open space land reservations and special-use areas such as parkways and trails.

A noted authority, George D. Butler, in his comprehensive study entitled "Standards for Municipal Recreation Areas"⁽¹⁰¹⁾ concluded that there was considerable agreement that, in addition to urban requirements, 10 acres in outlying regional parks should be provided for each 1,000 people living in the region. It is important to note,

however, that more recent proposals indicate that 15 acres ("Open Space: The Choices Before California")⁽⁸⁶⁾ to 25 acres ("Delaware Valley Report")⁽⁹²⁾ per 1,000 people would be desirable as a long-range goal.

Since the aforementioned general standards have been widely accepted, they will be used as a framework for analyzing standards in Maricopa County. In order to make a meaningful analysis, it is necessary to divide park and recreational facilities into several distinct types taking into consideration the kind of facility, function, land area requirements, locational requirements and needs of present and future population.

Using the above as a guide, major open space is classified and analyzed as follows:

1. Play areas and small spaces.
2. Neighborhood facilities - parks, playgrounds, elementary schools.
3. Community facilities - playfields, parks, junior and senior high schools.
4. Areawide open space and regional facilities.
5. Special-use areas and facilities, highway corridors.

Each of the aforementioned types is discussed separately in the following sections of this report. Since principles and standards for schools are based on somewhat different criteria than those for parks and other open space, these standards will be discussed in the following section.

Principles and Standards for Public Schools

One of the most widely accepted reports on school standards is the National Council on Schoolhouse Construction's (NCSC) "Guide for Planning School Plants".⁽¹⁰⁵⁾ In the 1953 edition of their report, the Council proposed minimum elementary school sites of five acres plus an additional acre for each 100 pupils of predicted ultimate maximum

enrollment. For secondary schools, a similar formula using 10 acres as the basic figure was established. Many local studies up through the early nineteen-sixties accepted these proposals for basic planning purposes.

In the 1964 edition, however, the Council stated the following:

"Experience has clearly indicated that present school sites of such area are inadequate. Many school districts are exceeding these minimum site guidelines. They are discovering that larger sites result in substantial improvements in educational programs, community services, and efficiency of operation."

Recognizing that the site problem would vary with the needs of the type of school organization, they went on to say:

"While it is recognized that for many schools much larger areas are preferred, the acceptance of the following suggestions will be an improvement for many of the schools throughout the country:

1. For elementary schools, it is suggested that there be provided a minimum site of 10 acres plus an additional acre for each 100 pupils of projected ultimate maximum enrollment. Thus, the site of minimum size for an elementary school of 200 pupils would be 12 acres.
2. For junior high schools, it is suggested that there be provided a minimum site of 20 acres plus an additional acre for each 100 pupils of projected ultimate maximum enrollment. Thus a site of minimum size for a junior high school of 500 pupils would be 25 acres.
3. For senior high schools, it is suggested that there be provided a minimum site of 30 acres plus an additional acre for each 100 pupils of projected ultimate maximum enrollment. Thus, the site of minimum size for a senior high school of 1,000 pupils would be 40 acres."

It must be remembered that the foregoing site size guidelines should be considered as minimum aims and should be exceeded wherever possible.

In order to compare standards recommended by various national authorities with the proposals of local planners, a detailed review was made of published studies conducted

within Maricopa County. Of the nineteen (19) jurisdictions within the County, fifteen (15) have either prepared plans or have had plans prepared by consultants. As previously stated, a list of these reports can be found in the Bibliography.

Nine jurisdictions in the County included some specific recommendations for standards for schools in their planning reports. Table A in the Appendix shows "Planning Standards for Public Schools Recommended by Local Jurisdictions." The Table 1 is a compilation and summary of criteria pertaining to school standards taken from these reports:

It can be seen that basic site acreage recommendations made by local planners are somewhat lower than those proposed by NCSC. It is believed, however, that for planning purposes, NCSC's minimum standards should be accepted by all local jurisdictions, and these standards are used in this study. On this basis, and using optimum pupil capacities as determined from local planning reports, desirable school site sizes for Maricopa County would be as follows:

Elementary	-	17 acres
Junior High School	-	28 acres
Senior High School	-	48 acres

Play Areas and Small Spaces

In many of the older and densely populated cities in our country, small recreational sites are often considered valuable as substitutes for backyards and "sidewalk" play areas. These areas, consisting of a centrally located portion of a city block, are often referred to as "playlots" or "totlots". They are designed to provide space and facilities for pre-school children and their attendant mothers.

Gradually, new ideas have developed concerning these small sites and at the same time, some new names have evolved such as green spots, sit down parks, vest pocket parks and now the more recent term "minipark". In recent years there has been a great

TABLE 1

SUMMARY OF PLANNING STANDARDS
RECOMMENDED FOR SCHOOLS IN MARICOPA COUNTY

	<u>Elementary School</u>	<u>Junior High School</u>	<u>Senior High School</u>
<u>BASIC SITE ACRES</u>			
Average	6.67	13.75	27.50
Median	(1)	12.50	27.50
<u>PUPIL CAPACITY</u>			
<u>Minimum</u>			
Range	200 - 500	200 - 600	300 - 1,500
Average	358	433	833
Median	375	(2)	800
<u>Maximum</u>			
Range	600 - 1,250	720 - 1,250	2,000 - 2,500
Average	883	993	2,213
Median	900	(2)	2,100
<u>Optimum</u>			
Range	400 - 900	525 - 1,250	1,000 - 2,500
Average	663	831	1,750
Median	690	(2)	1,750
<u>SERVICE RADIUS</u>			
Range	1/2 - 3/4 Mile	1 - 1 1/2 Miles	1 1/2 - 2 Miles

Notes: (1) Four reports recommended five acres and two recommended ten acres minimum site size.

(2) Not enough information with which to determine median.

deal of emphasis on the need to develop small parks in the low-income, densely populated neighborhoods where larger sites are no longer available or financially feasible. Also, it has been recognized that small open space areas can be developed to provide services for all age groups and especially for older people. Finally, small open spaces located throughout a neighborhood can add "spots of beauty" and generally contribute to the up-grading and enjoyment of the local environment.

Many planning reports fail to mention these small open space local facilities in their discussions of area standards. There is some feeling that "old-line park officials" do not think highly of miniparks, claiming that they are too small to be useful and are impractical for a municipality to administer and maintain. As an alternative, it has been proposed, that where practical, the land be provided by the city with construction, equipment and maintenance to be furnished through local civic and community action. Within the geographic area embraced by this study, there has been effort to obtain citizen involvement in small space development, especially within the city of Phoenix.

The analysis of existing conditions for all types of facilities will follow in Chapter III of this report. Since these small spaces are really a very local problem, and since the spatial impact is not great, it would appear that miniparks should not be considered important in a regional study.

Several thoughts, however, as emphasized by Mumford in "The Urban Prospect"⁽⁷⁾ might well furnish reason for reflection:

"We shall never succeed in dealing effectively with the complex problems of large units and differentiated groups, unless at the same time we rebuild and revitalize the small unit.

"It is the quality of the open space - its charm and its accessibility - that counts for more than gross quantity."

Neighborhood Facilities

Webster's definition of neighborhood as "the people living near one another" is interesting from the sociological viewpoint but is little use in delineating a definite area of a neighborhood. For purposes of planning in urban areas, a neighborhood is commonly

considered to be the geographical area tributary to an elementary school and within walking distance thereof.

In terms of population to be served, it is generally agreed that a neighborhood should average from 5,000 to 6,000 persons; however, extremes vary from as low as 2,000 to as high as 10,000. In terms of general area, there is agreement that an urban neighborhood should not be more than one square mile and should not be crossed by a major barrier such as a highway or large drainage area. The square-mile grid system of roads and streets resulting from original land surveys establishes a natural starting point for neighborhoods in terms of "service radius" -- usually one-quarter to one-half-mile -- which is considered to be an easy and reasonable walking distance.

Insofar as acreage is concerned, the amounts vary somewhat with the type of neighborhood facility being considered. Three basic types are usually recognized, serving both active and passive interests:

1. The Neighborhood Playground.
2. The Neighborhood Park.
3. The Elementary School.

At present, there is much interest in the obvious value of multiple use of neighborhood facilities and much work is being done in this direction. Combinations of the above, i.e., playground-parks and parks-schools-playgrounds are considered to be most desirable. This subject will be discussed further in following sections of this report.

Neighborhood Playgrounds

Playgrounds are areas for active recreation primarily serving the needs of 5 to 14-year old children but also affording some limited opportunities for youth and adults. Features include play apparatus, athletic courts and fields, and possibly a swimming pool and recreation building. The recommended size of the site varies from 3 to 7 acres. In some reports, site size is described in terms of providing 1.00 to 1.25 acres per 1000 people in the neighborhood.

Neighborhood Parks

The neighborhood park is an area primarily intended to provide an attractive open area and a place for quiet, passive recreation for people of all ages. Desirable features include open grass areas with trees and shrubs; benches and picnic tables; ornamental pools or a lagoon; and a shelter building with restroom facilities. To expand the uses, play apparatus for children and a paved court area may also be included. Generally, the recommended site sizes for neighborhood parks are somewhat less than for playgrounds, especially if the park adjoins the play area. Most planners propose that one (1) acre of neighborhood park area per 1,000 population would be most desirable.

Review of Local Plans for Neighborhood Facilities

As mentioned under the section on standards for schools, fifteen of nineteen jurisdictions in Maricopa County have planning reports. There is, of course, some variance in the methods used for the treatment of standards for parks and recreational facilities in these studies. In fact, several studies did not analyze standards in terms of population and acreage, but rather made only specific recommendations for the geographical area concerned. Table B in the Appendix is a compilation of recommended neighborhood facility standards for the various cities, towns and Maricopa County. A summary of the data contained in Table B is as follows:

	<u>Population to be Served</u>	
<u>Range</u>	<u>Playgrounds</u>	<u>Parks</u>
Minimum	3,000	3,333
Maximum	5,214	6,083
Median	4,107	4,708
	<u>Recommended Acres in Site</u>	
Minimum	4.50	3.93
Maximum	6.28	6.03
Median	5.39	4.98
	<u>Acres Per 1,000 People</u>	
Median	1.51	1.17

It is evident from the aforementioned that locally recommended standards for neighborhood facilities compare favorably with those recommended nationally. The population to be served -- approximately 4,100 to 4,700 persons -- is somewhat below the 5,000 to 6,000 persons generally accepted throughout the country. Recommended median acreages of 5.39 for playgrounds and 4.98 for parks are practically identical to national standards. Finally, the total of 2.68 acres for both playground and parks per 1,000 residents in the neighborhood, is slightly higher -- and preferable -- than the 2.25 to 2.50 acres generally recommended. Standards shown in the preceding summary will be used for analysis purposes in subsequent sections of this report.

Community Facilities

Communities, as well as neighborhoods, should be the basis for planning for recreational, park and open space requirements. The local community is normally a "cluster" of four or more neighborhoods and the facilities provided are often associated with a junior or senior high school. It is generally agreed that community facilities should serve a population of approximately 20,000 persons. The area should be centrally located and be within a mile of every home.

Where all facilities are located in one common area, the site may be called a community center. Ordinarily, however, because of the different types of activity and the corresponding difference in acreage requirements, facilities are more often described as playfields and community parks.

Community Playfields

A playfield is the type of area that furnishes a variety of facilities primarily for the use of active young people and adults. It provides for popular forms of recreation that require more space than would be available in the neighborhood playground. In addition to athletic courts such as tennis and basketball, separate marked sports fields for softball, baseball, football and soccer are generally included. In addition, it would

be considered ideal to have a field house and large swimming pool. An important feature for playfields in the study area should be adequate lighting for night use.

As described above, it is obvious that a play field would provide for the type of organized activities ordinarily found at a junior or senior high school. It is highly desirable and generally advantageous to have the locations adjoining. However, where this is accomplished, there may still be administrative problems of multiple use. Although there is some variation in the recommended size of a playfield site, as a separate facility, there is some general agreement that 20 to 25 acres would be most desirable.

Community Parks

The community park is designed to provide active and passive recreational facilities for all age groups. Its area of service may be an entire town or a large geographical segment of a city. Depending upon its relationship to the playfield and other factors such as topography and environmental interest, site size standards vary from 20 to 50 acres and the population served may range from 20,000 to 50,000 persons.

Review of Local Standards for Community Facilities

As with neighborhood facilities, a review was made of local planning reports to ascertain standards suggested for community facilities in the various local areas. Table B in the Appendix shows a breakdown of various factors for those jurisdictions for which plans have been prepared and are available. A summary of this data is shown as follows:

<u>Population to be Served</u>		
<u>Range</u>	<u>Playfields</u>	<u>Parks</u>
Minimum	19,143	19,200
Maximum	25,000	32,400
Median	22,072	25,800
<u>Recommended Acres in Site</u>		
Minimum	17.44	21.58
Maximum	33.75	47.50
Median	25.60	34.54
<u>Acres Per 1,000 People</u>		
Median	1.16	1.33

The aforementioned table reveals that the population to be served, approximately 22,000 to 26,000, is somewhat higher than the figure of 20,000 persons suggested nationally. Locally recommended site sizes of approximately 25 acres for playfields and 35 acres for community parks are essentially within the range used throughout the country.

In terms of acres of community facilities per 1,000 population, local planning recommendations indicate that a total of 2.49 acres would be desirable. Coupled with the 2.68 acres recommended for total neighborhood areas, local planners propose a total of 5.17 acres per 1,000 persons for these two types of facilities. This means, that in order to obtain the National Recreation Association's goal of 10 acres of local-type recreational land per 1,000 total population, approximately 5 additional acres would have to be provided by larger city-wide or special use facilities. This is discussed further in following sections of this report.

Large Parks and Regional Parks

Previous sections of this report discussed standards for the parks and other recreational areas for neighborhoods and communities. This section discusses principles and standards for large parks and regional parks. It has already been pointed out, that

in order to attain the "10 acres per 1,000 persons" standard, additional areas must be provided. Like the small spaces such as miniparks, large areas have also been given a number of different "titles" locally; among these names are "large", "city wide", "major", "district", "regional", and "reservation" - usually combined with the word "park".

Along with a variance in names, standards are generally considered to be much more flexible but in some cases, this flexibility amounts to almost vagueness. On two factors, however, there has been general agreement that: the site should be a minimum size of 100 acres, and the area should be located within one (1) hours travel distance from the majority of the population centers.

With respect to facilities and usefulness, large open spaces are discussed as the following sub-types: large, city wide recreational parks located within incorporated limits; large regional parks within reasonable access of the urbanized area, and open land reservations and wilderness areas. Design standards call for taking advantage, whenever possible, of unusual natural or scenic features where people can truly enjoy the environment and where the regional "ecosystem" can possibly remain in balance, and undisturbed.

Large Parks

Land area standards for large parks that serve an entire city or town are standards applicable to the community park (i.e., play courts and fields; swimming and boating facilities; and shelter and restroom buildings). In addition, such facilities as golf courses, hiking and riding trails, zoos, and botanical gardens may be provided. The emphasis, however, should be on having as much natural or landscaped open area as possible to meet active and passive recreational needs of the entire city or town.

Authorities have recommended that there should be a large recreational park in each major section of a city and each park should be designed to serve a population of from 50,000 to 150,000 persons. On the basis of a minimum site size of 100 acres, this

would provide from 2.00 to a low of 0.67 acres per 1,000 people. In order to meet overall standards, it is obvious that areas of well over 100 acres would be needed if large populations are to be served.

Regional Parks

Since large sites of a desirable nature are often not available within incorporated limits, large regional parks are needed to supplement city and town facilities. Usually, these large areas are provided and maintained by public agencies for the use of the entire urbanized and surrounding rural area.

Precise standards for size, location and facilities are difficult to establish since there are many potential uses for such areas. However, one principle should be observed: the facilities should be based on natural resource conservation as opposed to the user orientation of smaller recreational areas. Although such activities as hiking, riding, picnicking and camping may be permitted and provided for, open spaces must predominate and vegetation and terrain must be protected. The location of a regional park is normally dictated by the availability and suitability of land for this purpose.

Reservations and Wilderness Areas

The term reservation as used herein does not refer to Indian reservations. Because of the possibility of confusion, "reservation" is seldom used locally within the context or meaning of parks and recreational facilities.

Reservations, as referred to in this report, are generally located a considerable distance from a city and they usually contain 1,000 acres or more of land area. These large areas provide opportunities for recreational facilities that cannot be made available in smaller parks.

On September 3, 1964, President Johnson signed the Wilderness Act, S.4.⁽¹⁴⁾ This act provided for wilderness lands within the federally-owned public estate to be given protection under a national policy so as not to impair their future uses as wilderness. It might appear that this type of program could only be accomplished reasonably

on the national, or, perhaps, at the state level. Yet, in terms of "reservation" of open space this concept, even if on a small scale, can be used by local jurisdictions.

A minimum of 10 acres and preferably 15 to 25 acres of regional or semi-regional parks and reservations should be provided for each 1,000 persons within a reasonable distance from the cities or towns that comprise the urban area to be served. In a recent California study⁽⁸⁶⁾, a summary of 17 regional planning studies throughout the nation revealed recommendations ranging from 7.5 to 40 acres per 1,000 persons with an average of 16 acres per 1000 persons. Again, it must be remembered that these amounts were recommended to be in addition to the amounts in the urban areas - not necessarily as a supplement to them.

Special Use Areas and Facilities

In accordance with the definition of open space as presented in Chapter I, there are many types which have not been discussed in this section on principles and standards. Open space for conservation of land and other natural resources and open space for historic or scenic purposes are not subject to precise measurements. Like regional and reservation areas, the desirability of having these areas and facilities cannot be questioned; but the location and extent are dictated by a great range of variable factors. Principles and standards for golf courses and for hiking and riding trails are discussed as follows:

Golf Courses

Standards for golf courses are fairly consistent whether they are public or private developments. For a nine-hole course, there should be a minimum of 50 acres with a desirable maximum of 90 acres. For an eighteen-hole course, recommendations vary from 100 to 200 acres with the consensus being that 160 acres would be most desirable. In terms of population, there should be one hole for 3,000 persons, or, in other terms, one 18-hole course for approximately 55,000 persons in a given section of the urbanized area. Using 160 acres as the ideal size for an 18-hole course, this would provide approximately three acres of space for each 1,000 population.

Hiking and Riding Trails

A systematic program for the development of trails for riding, bicycling, hiking, nature walks, or a combination of these, is a relatively new planning endeavor. New emphasis has been necessary since these activities are becoming widely popular throughout the country and especially so in Arizona. One of the most comprehensive studies on this subject is "Hiking and Riding Trails" published in 1964 by the Maricopa County Hiking and Riding Trails Committee, Phoenix, Arizona⁽²⁸⁾. The unit of measurement used in determining the demand for trails was the "activity day", defined as the participation by one person in one activity in one day. Based on population, the total degree of participation was estimated for the County area. This demand was then translated into "trail miles" rather than total acres or acres per 1,000 people as with other recreational standards. Further reference to this report will be made in a following chapter.

As a comparison, some less complicated standards for rough estimates of number of recommended miles of trails should be mentioned. In "Trails for America", the Bureau of Outdoor Recreation has suggested that 25 miles of multi-use trails per 50,000 population may be adequate. On the basis of an average trail width of ten feet, a 25-mile trail would occupy approximately 30 acres. In addition, the Bureau of Land Management has recommended the following:

1. Rest stops of approximately one-half acre every three to five miles -- 2.50 acres
2. Overnight camp site -- 3 - 5 acres
3. Parking, loading and unloading areas -- 3 acres

In summary, an ideal 25-mile multi-use trail system would consist of approximately 40 total acres or 0.80 acre per 1,000 people.

Recommended Principles and Standards

The analysis of existing conditions in the study area and the projections for future needs for all types of open space and recreational facilities will be based on the foregoing discussions. Guided by the National Recreation Association's recommendations as "bench marks", separate standards as determined from a compilation of local planning data will be used. Table 2 is a "Summary of Recommended Standards for Public Park and Recreational Open Space". Recommended standards for schools have been presented in a preceding section. Projection of future needs for public open space to be presented in the following Chapter will be based on these recommended standards.

TABLE 2

SUMMARY OF RECOMMENDED STANDARDS FOR PUBLIC PARK AND RECREATIONAL OPEN SPACE

	<u>Age Group</u>	<u>Service Radius</u>	<u>Area Necessary (in acres)</u>			<u>Population Served</u>			<u>Acres/1,000 Persons</u>
			<u>Minimum</u>	<u>Maximum</u>	<u>Median or Desirable</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Median</u>	
<u>URBAN FACILITIES</u>									
<u>Neighborhood</u>									
Playlot-Minipark	Pre-School, Older Adults	1 Block or 1/8 mile	0.18 (2,400 sq ft)	2.00	0.50 (21,780 sq ft)	300			
Playgrounds	5-14 yrs	¼ to ½ mile	4.50	6.28	5.39	3,000	5,214	4,107	1.51
Parks	All ages	¼ to ½ mile	3.93	6.03	4.98	3,333	6,083	4,708	1.17
<u>Community</u>									
Playfields	Young People and Adults	1 to 2 miles	17.44 ac	33.75	25.60	19,143	25,000	22,072	1.16
Parks	All ages	1 to 4 miles	21.58	47.50	34.54	19,200	32,400	25,800	1.33
<u>Large Parks</u>									
	All ages	30-60 minutes travel time	50.00		100.00	50,000	150,000		2.00
<u>Special Use Areas</u>									
Golf Courses (18 Hole)	Young People and Adults	Easy Driving Distance	100.00	200.00	160.00			55,000	3.00
Hiking and Riding Trails	Young People and Adults	Reasonable Access			25 lineal miles			50,000	0.80
<u>EXTRA-URBAN AREAS</u>									
Regional Parks	All ages	1-2 hours travel time	100.00				A11		10-25
Reservations and Wilderness Areas	All ages	1-2 hours travel time	1,000.00				A11		10-25

CHAPTER III
EXISTING CONDITIONS AND TRENDS

Historical Background

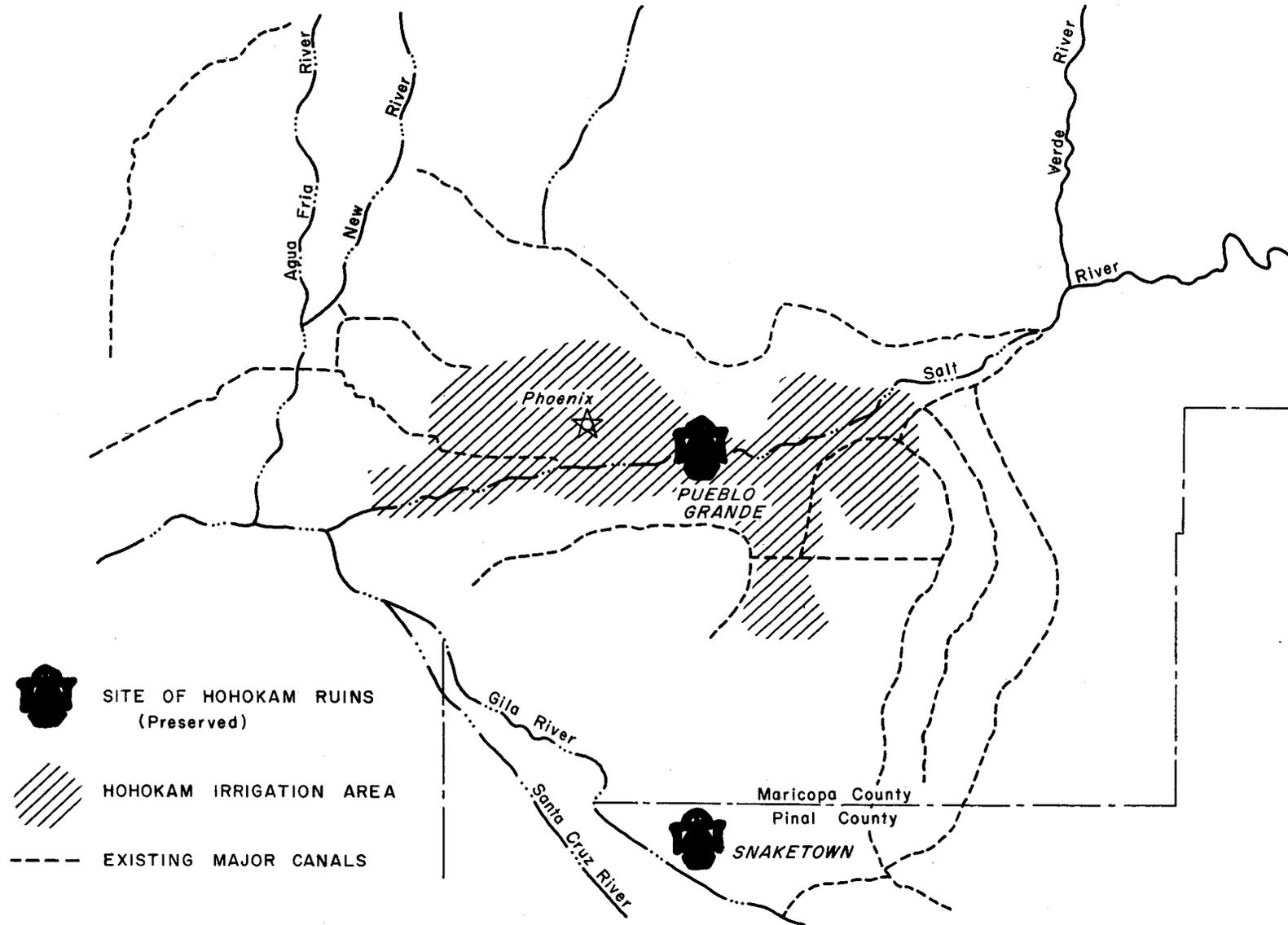
"Those Who Have Gone"

Studies of the prehistoric history of Arizona have revealed that various Indian tribes roamed the state from very early times, possibly as early as 8000 B.C. A people, now known as the Hohokam (a Pima word meaning "those who have gone"), were the first, however, to permanently settle in the Salt River Valley and the nearby portions of the Gila River Valley. Extensive archeological work has indicated that the Hohokam had a well developed culture in the area about 2000 years ago. Discoveries of sites occupied by these people are still being made although much of the evidence has been destroyed by the "progress of civilization". It is now a criminal offense to disturb any known prehistoric site located on Federal lands without a proper permit. In addition, fortunately, private land owners are cooperating in seeing that evidence of these ancient cultures is examined and studied by properly trained persons.

The Hohokam constructed dwellings of poles, brush, rock and mud plaster and practiced a primitive form of desert agriculture. Most interestingly, from an idea either borrowed or independently developed, they constructed extensive irrigation works using water from the Salt and Gila Rivers.

In the early 1920s, and before their destruction, over 150 miles of these serving canals were measured in the area shown on Plate 4. It is likely that, at one time there may have been a combined total length of over 250 miles of canals in this portion of the Valley. It staggers the imagination to stop and realize that this great engineering project

PLATE 4



LAND OF THE HOHOKAM

AUGUST 1970

JLB / from sketch by LJR

was accomplished with only the crudest of wooden and stone implements. In fact, the undertaking has been compared to the building of the Egyptian pyramids and the temples of other ancient Indian civilizations of Mexico and Central and South America. (126) Yet today, only at Pueblo Grande located in eastern Phoenix has a small portion of this great system of canals been preserved and protected.

In spite of the apparent advanced stage of their development, the Hohokam people mysteriously abandoned their villages and fields, about 1400 A.D., and left for parts still unknown. Many reasons for their disappearance have been postulated. For example, there is some evidence that they may have been oppressed by other more warlike tribes - their scattered villages had been abandoned in favor of more protected compounds. It appears, nevertheless, that a contributing factor was their abuse of the very natural resources which had caused them to settle in the valley in the first place. It is very likely that they had upset the ecological balance by the waterlogging and alkalization of the irrigated land. With its productivity gone, and unable to repair the damage, the Hohokam were forced to move elsewhere.

Those Who Came Later

The basic natural resources of the Salt and Gila River Valleys, water soil and climate, continued to attract the cultures that followed the Hohokam. When the Pimas were first found by the Spanish explorers in the Sixteenth Century, they had built villages and were also practicing irrigated farming. Because of the difficulties with the warring Indian tribes to the south, the Spaniards and later the Mexican settlers never penetrated the Gila and Salt River valleys. When the intensive Anglo-American settlement of the area began after the Civil War, the Pima Indians still cultivated portions of the middle Gila Valley. The land now occupied by the cities of Phoenix, Scottsdale, Tempe and Mesa was essentially vacant.

Growth of an Urban Area

Throughout the exploration and settlement of our country, two basic ideas relative to the location and subsequent development of our cities have evolved:

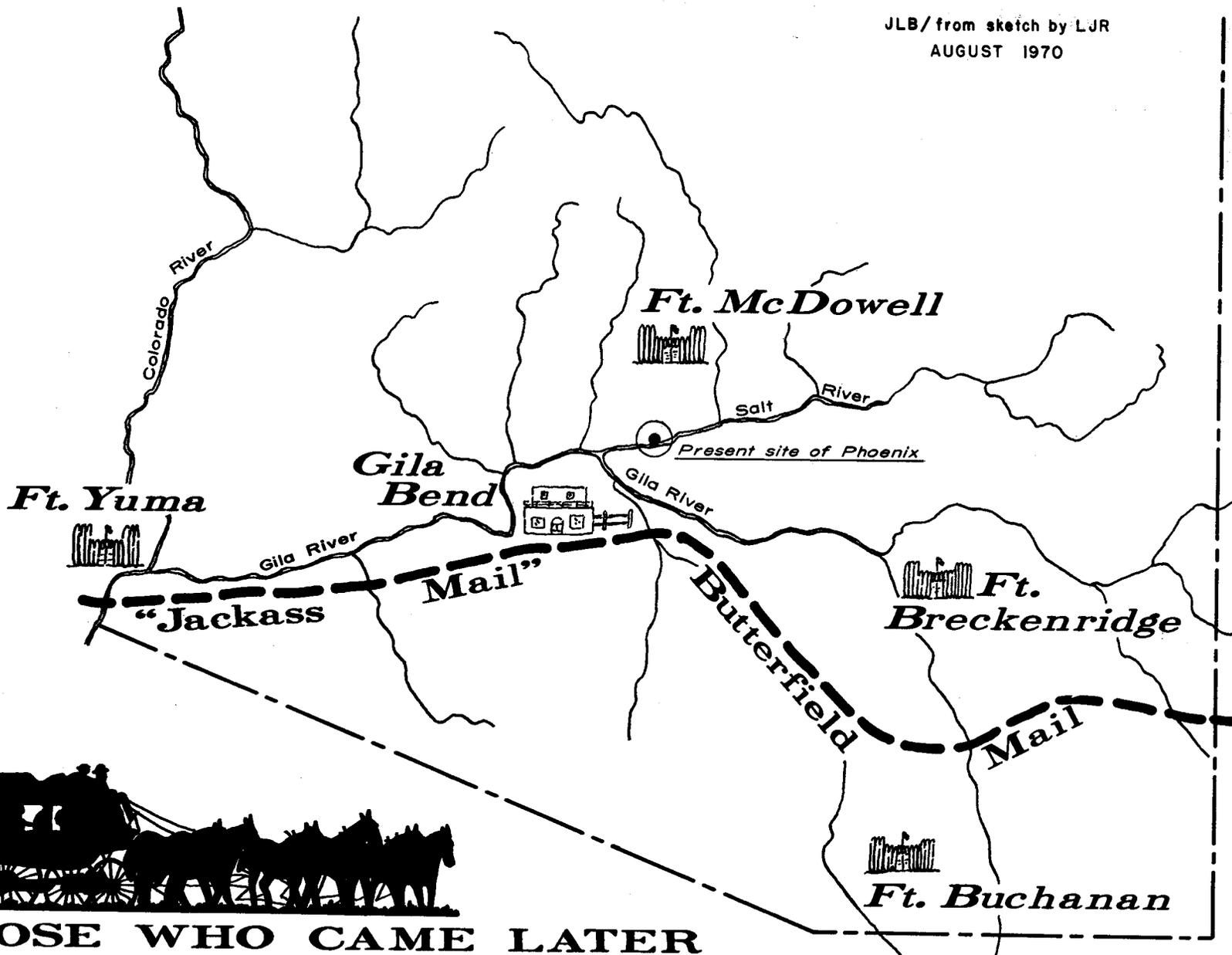
1. Proximity to natural resources, and
2. The break in transportation thesis.⁽¹⁾

The importance of natural resources in the settlement of the valley has been observed in the case of an ancient civilization. Although the resources may have been abused, nature has a way of healing herself when left undisturbed. Hence, in the late 1800's, the area was "ripe" for a new settlement.

The "break in transportation" thesis holds that wherever the flow of goods or people is interrupted, either on the way to or from their destination, a city will develop. With the discovery of gold in California, the Gila Valley, being the only low-elevation route from the eastern United States to the west coast, became a main line of travel. The establishment of a stage station at Gila Bend and the location of Fort McDowell on the west bank of the Verde River produced a natural and protected point of travel interruption. (See Plate 5).

Within this environmental setting, the Phoenix area grew as essentially an agricultural community during the late 1800's and early 1900's. During this growth and development, water, either as a shortage or as an excess in the form of floods, remained a serious problem. A partial solution was found, however, with the completion in 1911 of the Theodore Roosevelt Dam on the upper Salt River. Subsequent construction of three lower reservoirs on the Salt River, two additional dams on the Verde River and a system of major canals throughout the valley, set the stage for the great urbanization which was to follow after World War II.

JLB/ from sketch by LJR
AUGUST 1970



THOSE WHO CAME LATER

The Physical Setting

Our environment in terms of the total ecosystem depends on the "natural things" that are present: the rocks and soils that make up the land; the variations in climate; the amounts and effects of water; and the relationship of plant and animal life living within this setting. Collectively, the scientific study of the above is called "physiography" and is defined as the systematic description of nature in general.

From the physiographic standpoint, Arizona can be described as a masterpiece. Even within the areal limit of this study there is a unique range and great contrast in natural features and processes, all of which contribute to the potential of a wide variety of open space land and recreational opportunities. A brief review of these features will be made at this point.

Geology

The sum total of the geology of an area depends upon the age and type of rocks, the intensity of deformation and the effects of erosion and sedimentation. Rocks of all the great eras of geologic history - Precambrian, Paleozoic, Mesozoic and Cenozoic - are present in the study area although not all of these time divisions can be recognized in any one place. Since the same type of rocks may occur in any geologic time period, it is reasonable for the purposes of this study to generalize surface rock types as follows:

1. Late Cenozoic and Recent sediments, largely unconsolidated and containing the main soil units.
2. Consolidated sedimentary rocks - sandstones, shales, limestones.
3. Crystalline metamorphic and intrusive igneous rock complexes.
4. Extrusive igneous rocks consisting of volcanic flows and plugs, both deformed and undeformed.

Reference to Plate 6 will show the distribution of the above rock types in the Maricopa County area. It should be noted that the areas of types 3 and 4, i.e. intrusive and extrusive igneous rocks and metamorphic rocks, are of significance in an open space study. These groups are ordinarily referred to as "hard rocks" and are controlling factors in the mountain areas - the areas of higher elevation, steeper slopes and more rugged topography.

Throughout geologic time, stresses within the earth's crust have caused structural movement resulting in the folding, faulting and fracturing of masses of rocks. As a result of broad structural movement, two large physiographic provinces are recognized in the state of Arizona. To the north and northeast of the study area, nearly half of the state lies within the Colorado Plateau province. This broad uplift of essentially bedded sedimentary rocks reaches a relatively high elevation and the rocks have been subject to only moderate deformation. The province is characterized by broad, flat areas intersected by deep erosional channels.

As shown on Plate 6, nearly all of the study area is within the Basin and Range Province. Between the two major physiographic provinces, however, there is an area approximately 50 miles wide that is known as the Transition Zone. Popularly, the northern edge of this zone is called the "Mogollon Rim". This natural "hinge line" is the point of change between the two major provinces. Topographically, the Transition Zone is more rugged than the Colorado Plateau and there has been some faulting. Some of the mountains rise as high as the Rim, although generally the altitude is lower than the Plateau.

Adjacent to the Transition Zone, there is a northwestward trending belt known as the mountain region. This is an area of high, rugged mountains and deeply carved canyons. There are extensive forests interspersed with high desert and grass-covered plains. The region has an average elevation above 5000 feet and its highest peak, Mt. Graham, rises to an altitude of 10,713 feet.

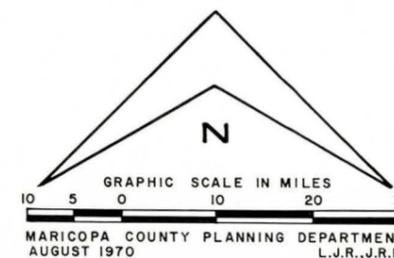
The desert region of the Basin and Range Province is still another geological contrast. As the name of the province suggests, intense structural activity has resulted in numerous

SURFACE ROCK TYPES AND PHYSIOGRAPHIC PROVINCES

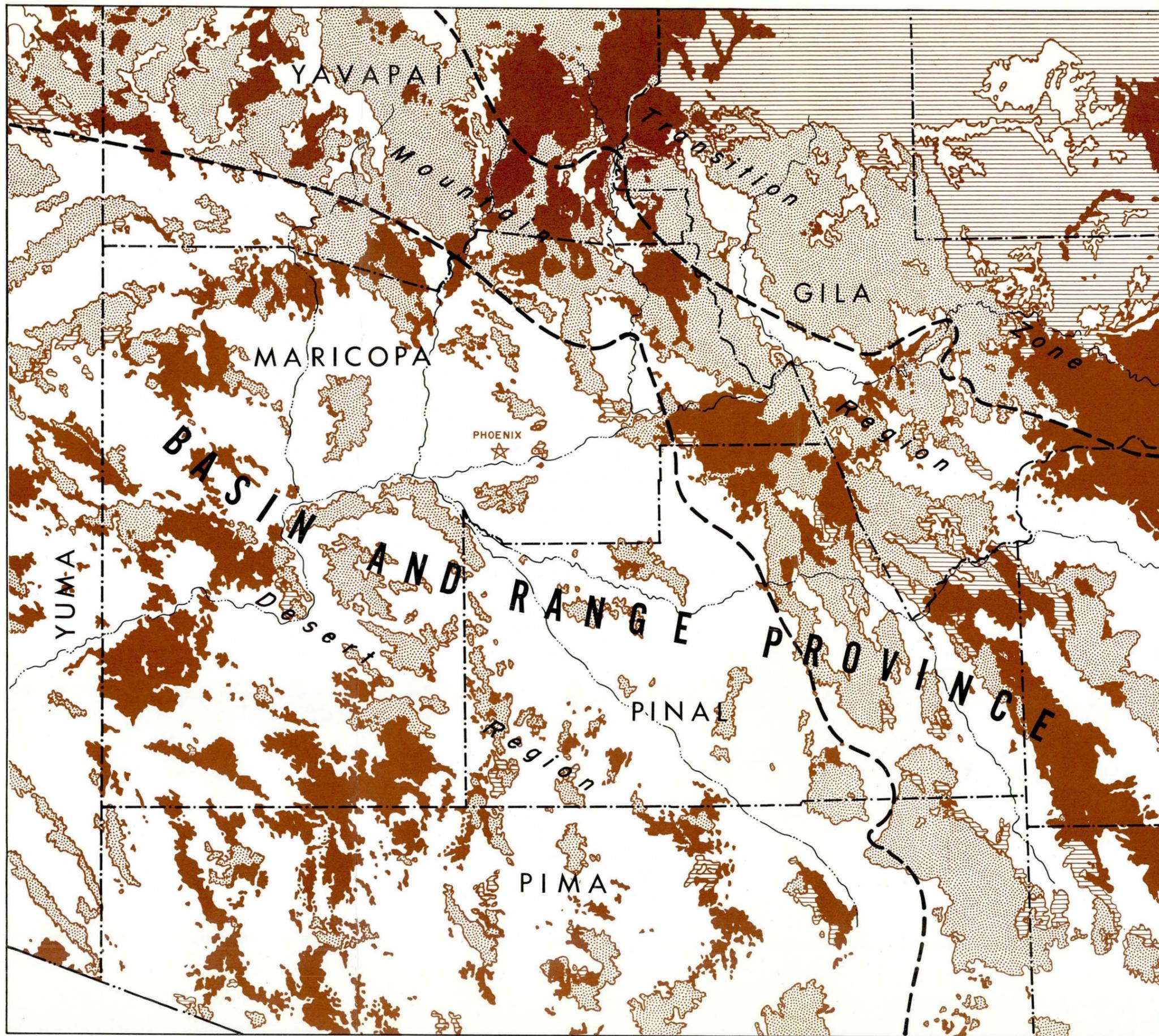
MARICOPA COUNTY REGIONAL AREA

Adapted from:
MAP OF OUTCROPS (series of four)
ARIZONA BUREAU OF MINES
Tucson, Arizona July 1962

The preparation of this report was financed in part
through a comprehensive planning grant from the
Department of Housing and Urban Development.



-  LATE CENOZOIC AND RECENT SEDIMENTS
-  CONSOLIDATED SEDIMENTARY ROCKS
-  CRYSTALLINE METAMORPHIC AND IGNEOUS COMPLEX
-  EXTRUSIVE VOLCANIC FLOWS AND PLUGS



relatively elevated and depressed blocks in which the rocks have been more intensely deformed than those in other regions. The mountain masses rise rather abruptly from the broad plains or dry stream valleys that lie between them. There is little axial alignment of the ranges and they vary in altitude from a few hundred feet to more than 10,000 feet above sea level.

Physiographic Processes

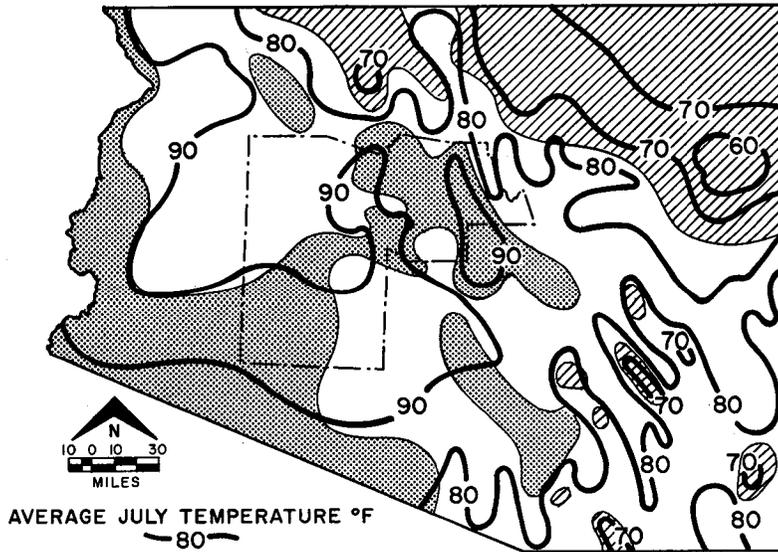
Since soils are derived from the basic geological materials of a particular area, it would seem logical to discuss soils at this point. Erosion and sedimentation, although influenced by rock types and structural forms, are decidedly conditioned by the other interrelated factors of vegetation and climate. Therefore, these factors will be reviewed, not only in terms of physical effects, but also as they may influence open space and recreational activities.

Climatic Conditions: Climate can be defined as the average course or condition of the weather at a particular place over a period of time and includes such factors as temperature, precipitation, humidity and wind velocity. Like the geological conditions in the area of study, climatic conditions are also quite varied. It will be seen that there is a close relationship of climate to the different physiographic areas.

In the desert region, temperatures range for the most part from lows of near freezing in the winter months to daytime summer temperatures as high as 120 degrees. Annual average temperatures are established in the range of the upper 60's and lower 70's. At the higher elevations, summer months are characterized by mild days and cool nights. Plate 7, adapted from the University of Arizona's study entitled "Arizona Climate",⁽¹¹⁶⁾ shows average temperatures in mid-winter and mid-summer in southern Arizona.

Annual precipitation in the study area averages about 10 inches but variations from a low of 1.40 inches to a high of 33.27 inches have been recorded. Rainfall is heaviest and most dependable during the summer months occurring as showers varying widely in intensity. Snow fall contributes very little to annual precipitation except at elevations over 3000 feet. At elevations over 6000 feet, snow accumulates during the winter months

CLIMATIC CONDITIONS SOUTHERN PORTION OF ARIZONA

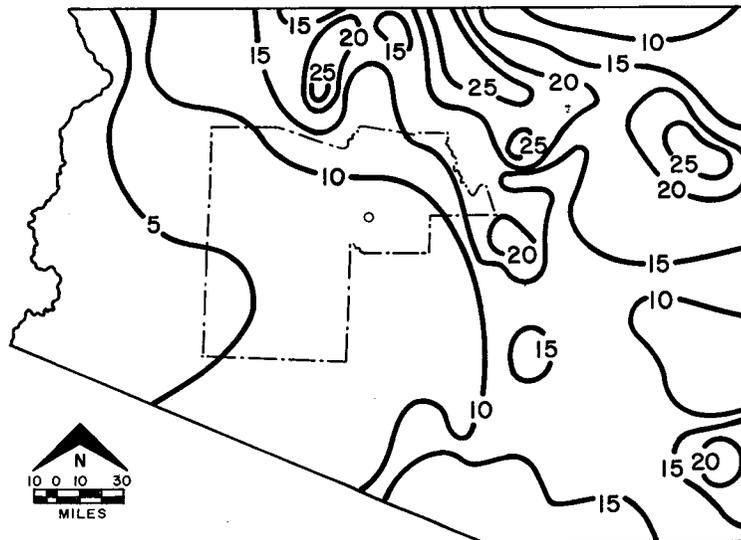


AVERAGE JULY TEMPERATURE °F
— 80 —

AVERAGE JANUARY TEMPERATURE °F
— GREATER THAN 50°F —
— LESS THAN 40°F —

Adapted from: ARIZONA CLIMATE
University of Arizona Tucson, Ariz.

AVERAGE TEMPERATURE (IN DEGREES FAHRENHEIT)



— 10 — PRECIPITATION
IN INCHES

Adapted from: Agriculture
Experiment Station BULLETIN 279
University of Arizona Sept. 1956

AVERAGE ANNUAL PRECIPITATION

and is important as run-off which feeds the streams flowing into the study area. Average annual precipitation in southern Arizona is also shown on Plate 7.

Southern Arizona is known for its low average relative humidity resulting from the combination of clear skies, low annual rainfall and high daytime temperatures. Summer daytime humidities are often below 20 percent while maximum percentages are usually attained during the month of December.

Wind speeds within the study area are usually of such low magnitude that they do not constitute an important element of the average climate. Occasionally, due to unusual barometric conditions, wind gusts over 50 miles per hour have been recorded. Data on wind conditions is very meager, but recent concern with the problems of "smog, smust and smaze" indicates that considerable research on wind conditions is urgently needed.

Vegetation: The type of vegetation found in a particular area is usually considered to be a product of the environment, depending upon a number of variable and interacting factors. In turn, the vegetative cover has its effect on the physiographic processes.

Most of the study area, with the exception of the irrigated lands, is covered by desert-type vegetation. The most common plants are sagebrush, cacti, palo verde, mesquite and salt brush. In the mountain region, south of the Mogollon Rim, the plants consist of chaparral and shrubby oak with pinon and juniper forest covering the elevations between 4,500 and 7,500 feet. Above 7,500 feet, ponderosa pine, spruce and Douglas fir make up the coniferous forests.

As was noted in the discussion of climate, the vegetation found in an area is closely related to the varying conditions present in the physiographic provinces. In regard to recreational use, it should be pointed out that much of the vegetation in the study area exists only in a very delicate balance between survival and death. This fragility must be taken into consideration in planning recreational development.

Summary of Conditioning Factors: As previously mentioned, erosion and sedimentation, although conditioned by climate and vegetative cover, are primarily influenced by

geological and structural features. Likewise, general topography and slope are dependent mainly upon the types of rocks and their physical attitude. For further discussion and illustrative maps on these features, reference is made to Maricopa County's comprehensive plan⁽³⁶⁾ and the AORRC report.^(83,84) For more detailed information on topography and slope, topographic quadrangle maps of the U.S. Geological Survey should be consulted.

Due to general aridity, weathering and erosion in the study area are predominantly mechanical rather than chemical. Great fluctuations of temperature are effective in the disintegration of rock surfaces. The principal erosive process is the headward down-cutting by streams, especially in the areas of heavier rainfall. By these processes, materials grading from coarse to fine are moved and eventually deposited as a variety of soil types.

Soils

In June 1969, the U.S. Department of Agriculture Soil Conservation Service in cooperation with the Soil Conservation Districts in Maricopa County published a "General Soil Map" covering the entire county.⁽¹²⁰⁾ In the text accompanying the map, it was stated:

"The general soil map shows the distribution pattern of soils as they exist in a given area. The mapping unit delineations are groupings of the predominant and associated soils as they occur on the landscape. Usually, the mapping unit contains a few dominant and several minor soils in a pattern that is characteristic although not strictly uniform. These associated soils are likely to differ from each other in one or more properties such as texture, slope, depth, stoniness or natural drainage. Some of the dominant soils in a delineation of associated soils may occur in other areas with different groups of soils, or in a significantly different pattern. Thus, the general soils map does not show the exact kind of soil at any particular place, but shows a pattern of occurrence on defined landscapes.

"A general soil map showing patterns of soils is useful to people who want a comprehensive concept of the soils, who want to compare different parts of a county, or who want to know the general location of soils suitable for a particular use. It is useful for general planning only. It is not suitable for on-site planning. On-site investigations must be made to obtain reliable information for specific sites."

Nine main soil types with a number of subtypes under each category were identified for mapping purposes. The types range from finely-textured torrifluents ("rain-flowing") to shallow, stony soils over specific rock types. In all cases, there is a close relationship between the geology and the development of the soil in a particular area. In the evaluation of open space, this relationship must always be recognized.

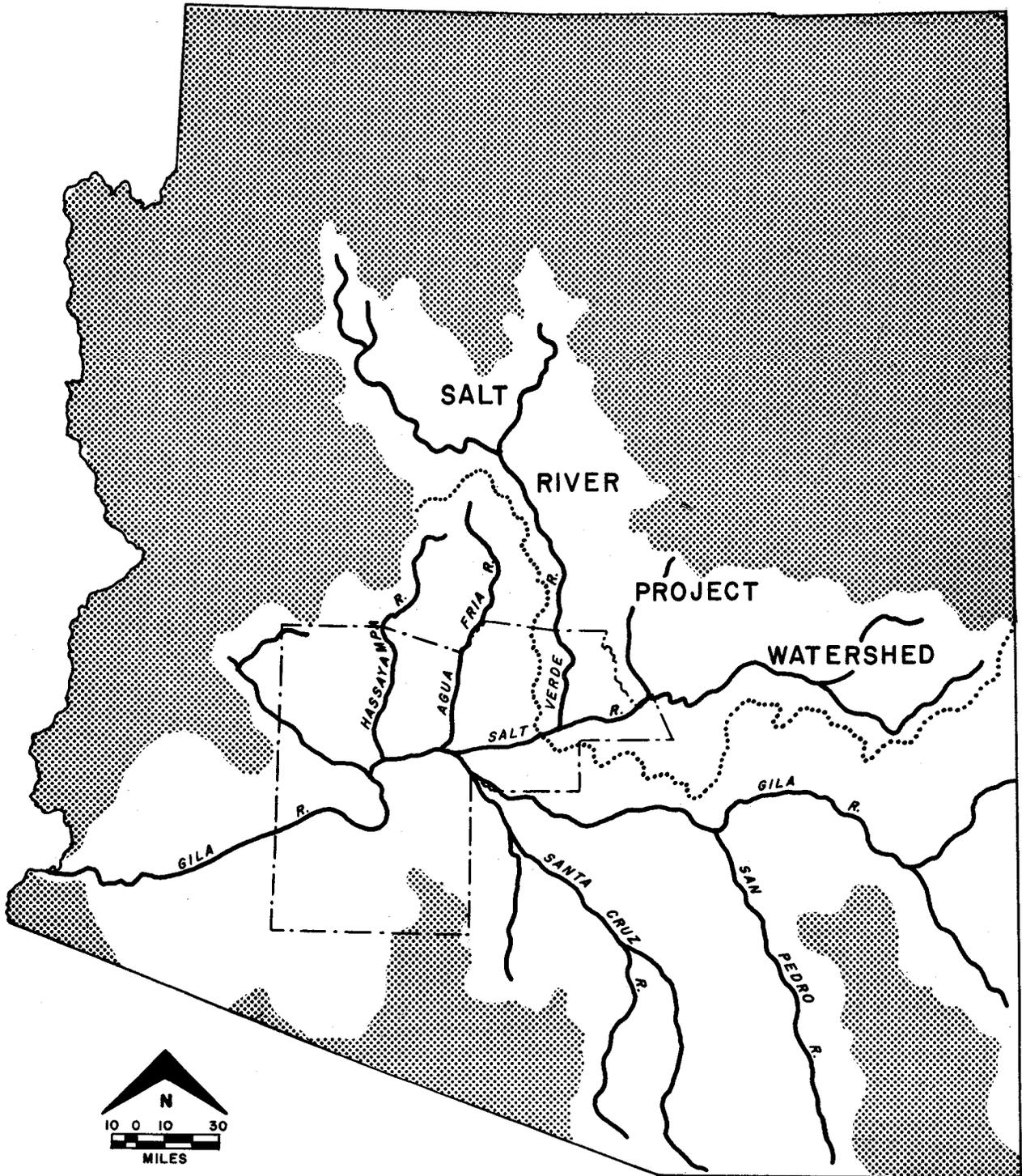
Water Resources

In an arid or desert region, water is the prime resource since even the best of soils cannot support life without adequate moisture. Physically, socially, economically and even politically, people living in such areas become "water-oriented". The popularity of the lakes, reservoirs and flowing streams in Arizona demonstrates that people have become water-oriented "recreationally" also.

Water, as a resource, includes a number of related aspects. The amounts of water received in the area from rain and melting snow has been discussed previously. In addition, drainage, flooding, groundwater reservoirs and, finally, usage and conservation are all part of the water resource systems.

Drainage: Over 90 percent of the surface area of the state drains into the Colorado River and on into the Gulf of California. There is a sharp division of the larger drainage basins, however, with the Mogollon Rim again being the major hinge line. To the north of the Rim, surface drainage follows a northwesterly pattern into the little Colorado River. Below the Rim, the direction of flow is reversed and the major drainage is west and southwest. This area is known as the Gila River Basin (including the Salt River Sub-Basin) and nearly one-half of the state's land area is within this drainage system. It should be noted, nevertheless, that an estimated 85 percent of Arizona's population lives within the Gila-Salt River Basin.

Plate 8 shows the areal extent of the basin and the major streams which are the principal arteries of water flow. Reference to the plate will show that the system is of a typical dendritic pattern. Headwaters in the higher elevations carry off the waters of



GILA RIVER DRAINAGE SYSTEM

melting snow and the more prevalent rainfalls. Prior to the construction of dams for reservoir purposes, many of the major streams in the basin had some permanent flow, although others have always been intermittent.

The United States Geological Survey in a paper entitled "Arizona Water"⁽¹¹¹⁾ estimates that, "...in an average year, the state receives 80 million acre-feet of water from rain and snow. An acre foot is the amount of water which would cover 1 acre to a depth of 1 foot (326,000 gallons)." As pointed out, this is a great amount of water, but it is a statistical fact that more than 95 percent of total precipitation in Arizona is lost by evaporation or is used by vegetation in the process of transpiration. Hence, "...the sun which blesses Arizona with its light and warmth on the one hand, steals away its water on the other."

To relate volumetric data on surface water drainage more closely to the study area, a brief examination of the Salt River Project (SRP) will be made. This Project, through its system of reservoirs and canals, supplies most of the surface water to the central portion of Maricopa County. Reference to Plate 8 will show the area of the Project's watershed. There are 13,000 square miles of surface within the watershed comprising 11.41% of the total land area of the State. SRP estimates that about 20 inches of precipitation falls each year on the watershed. This would be a total volume of approximately 14 million acre-feet of water falling on the surface annually. In accordance with the Geological Survey's calculation that only 5% of total precipitation could be captured by surface runoff, approximately 700,000 acre-feet would be available each year in the Project drainage area.

Flooding and Flood Plains: As noted previously, the early settlers in Maricopa County found a natural system of washes, streams and rivers which, even today are usually adequate to carry off the drainage waters. However, during peaks of thunderstorm activity or rapid melting of mountain snow accumulations, flooding of the system and the adjacent low lands still occurs. These areas that periodically become inundated by excess water are known as flood plains. When the first Reclamation Act was adopted by the United States Government in 1902, the basic purpose was to conserve water and channel

it into more efficient use. A secondary benefit from the series of dams and reservoirs has been the partial control, at least, of major flooding problems.

Urban development, especially since World War II, has disrupted the natural drainage system. Streets, roads, subdivision and industrial building, in many cases have been developed with little regard to this system. The disruption of the natural channels and the increase of run off resulting from the "covering" of soils of high absorbability, has resulted in new flooding problems, especially in local areas. In many parts of the study area, inadequate storm drainage is a serious problem. A recent study has been completed on storm drainage for a large portion of the study area, and for further information, reference is made to this report. ⁽¹²⁷⁾

The Maricopa County Flood Control District was established in 1959. A publication entitled "Comprehensive Flood Control Program Report" was prepared by the District in 1962 and was adopted and approved by the Board of Directors of the Flood Control District of Maricopa County on November 20, 1963. ⁽¹¹⁰⁾ In cooperation with the U. S. Army Corps of Engineers, a number of flood control studies have been conducted for certain drainage districts within the County and other studies are presently being undertaken. A listing of these studies can be found under the bibliography included in the Appendix. ⁽¹¹⁹⁾ It should be mentioned at this point that recent federal regulations require that future flood control structures be planned for multipurpose use, especially for recreation. This will be covered further in following sections of this report.

Groundwater: The natural cycle of water starts with moisture that has evaporated from the land and bodies of water to form vapor or clouds in the air. It then falls somewhere as rain or snow to start the cycle over again. As has been noted, water on any area departs through the atmosphere as vapor or by runoff in stream channels. In addition, when rainfall continues for some time and the top soil becomes saturated, the water may percolate downward to enter the water table and become groundwater.

Subsurface water-bearing strata, called aquifers, consist of sandstone or fine gravels which may be partially consolidated or cemented. The water occurs in the small pore spaces found between the rock grains, and movement of water within the aquifer is

usually very slow. Recharge (the addition of water to the aquifer) takes place where the porous strata are close to the surface, usually at higher elevations, and the areas of entry may be many miles from where the water is withdrawn by pumping. As stated in the U.S. Geological Surveys paper entitled "Arizona Water":

"The water user's experience, however, may lead him to look upon a ground-water reservoir as an 'inexhaustible lake'. The ground-water reservoir is not a lake; nor is it inexhaustible, unfortunately. Although it will take many years to realize the full effects of current withdrawals of ground-water, it is entirely possible to exhaust the supply eventually."⁽¹¹¹⁾

It is not within the purpose of this report to analyze the use, volume, or quality of groundwater in the study area. A number of reports have been prepared in the past and the titles are included in the bibliography. An important regional study is "Present and Future Water Use and its Effect on Planning in Maricopa County, Arizona" which was published in 1965.⁽¹¹⁷⁾ It should be noted from this report that in local areas of the County, serious lowering of the water table from pumping wells was occurring as early as 1940.

Irrigation: From the standpoint of open space, the irrigation system in Maricopa County offers a unique contribution. First, the System has preserved a large area of farms which produce a great variety of crops and fruit. Secondly, the canals themselves furnish a series of open space corridors. The Salt River Project itself maintains approximately 1300 miles of main transmission canals, distribution laterals and ditches in its area of service. The use of the irrigation system in open space planning will be discussed further in forthcoming sections of this report.

Summary

The physical setting of the study area can almost be described in superlatives. In any case, there is no question of uniqueness, variety and contrast. There are probably few areas in our country which offer more opportunity for the development of an outstanding open space and recreational land use plan.

Population and Socio-Economic Factors

Past Population Growth

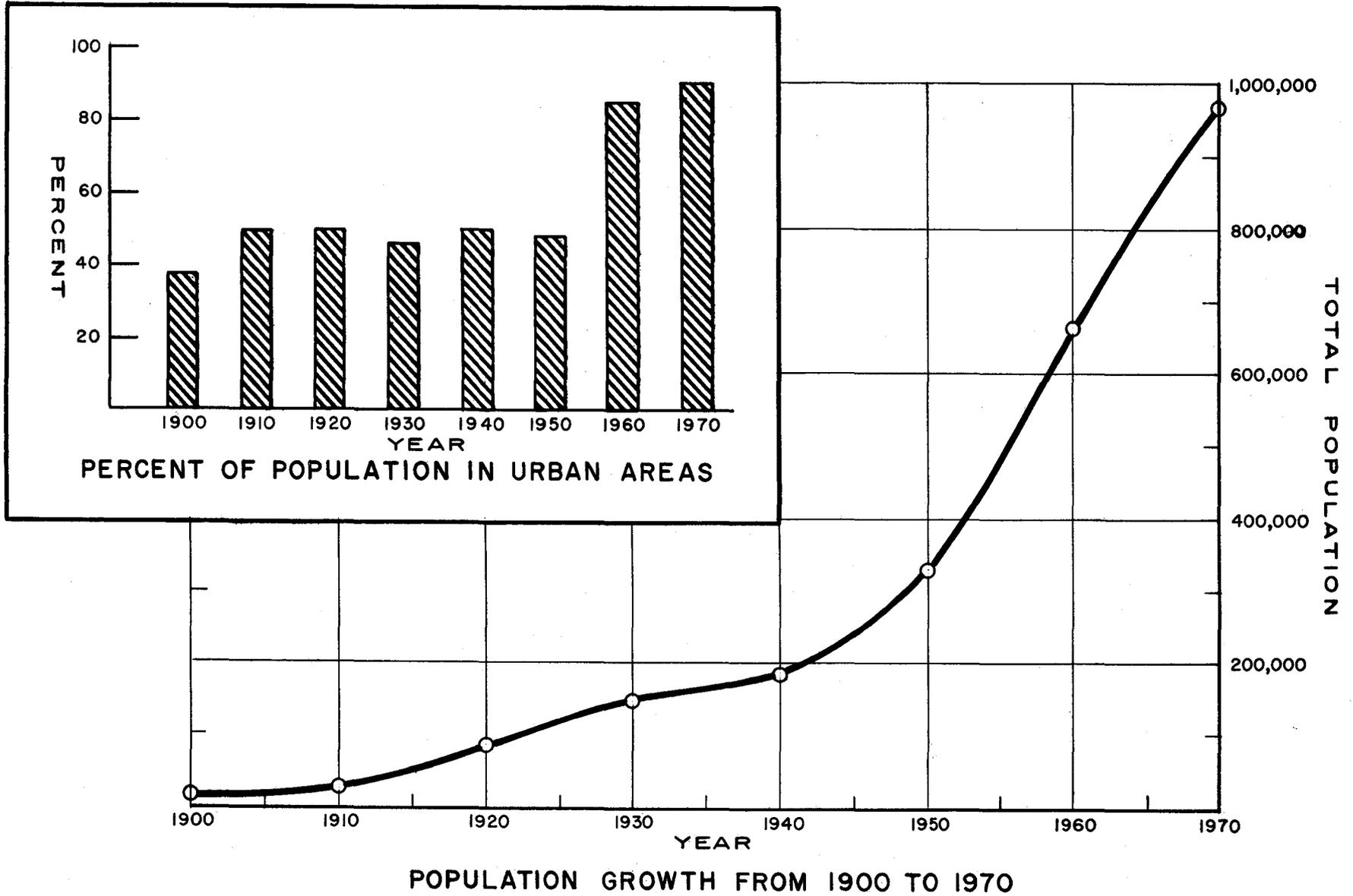
In early 1970, the year of the Census, there was much interest and speculation concerning the possibility that Maricopa County's population might reach the coveted one million mark. When the Census Bureau announced their preliminary count of 963,132 persons, reactions ranged from relief to surprise and almost to indignation. Was the County's spectacular growth since World War II finally slowing down or possibly coming to an end?

Plate 9 shows population growth in Maricopa County from 1900 to the present time. In a developing agricultural area, population increased steadily from 20,457 persons in 1900 to 150,970 persons in 1930. Although there was a westward migration of people from the central portion of the United States during the dust bowl and depression years of the 1930's, the rate of growth in the County declined somewhat during this period. During World War II, many young men were trained and stationed at Air Bases in southern Arizona and, finding the area a desirable place to live, many returned after their days in service to establish permanent residence. This movement, along with new interest in the Southwest as a resort and retirement area, and the availability of land for industrial development, led to an accelerated in-migration which has contributed greatly to the rapid population growth since the late 1940's. Every census since 1950 has shown that Maricopa County has grown more rapidly than the nation as a whole. In addition, many in-migrants are younger than the U.S. population average, and they join a relatively young resident population.

For many years, most of the new population growth occurred in the unincorporated portions of the County. Reference to the previously mentioned Plate 10 will show that from 1900 to 1950, approximately 50 percent of the people of the County resided in urban areas. In addition to migration into cities and towns, the period from 1950 to 1965 was a time of accelerated incorporation and annexation. For example, in the "Future General Land Use Plan for Maricopa County",⁽³⁸⁾ it was observed that:

PLATE 9

POPULATION GROWTH AND URBANIZATION
MARICOPA COUNTY, ARIZONA



"...according to the 1960 Census, some 332,000 persons, which represented 75.7 percent of the Phoenix population, resided in territory annexed by Phoenix between 1950 and 1960. In June 1958 the incorporated area of Phoenix amounted to 52.5 square miles. It has since increased 247.4 square miles as of May 1967."

Table 3, "Population and Area of Incorporated Places and Unincorporated Area for Select Years", presents some additional statistical data on population in Maricopa County. It should be noted that in 1960, 84.8 percent of the population lived in urbanized areas. Recent preliminary census figures now show that almost 90 percent of the County's population reside within incorporated cities and towns. It also should be noted that this 90 percent of the people occupy only 4.49 percent of the total land area of Maricopa County.

Projected Future Population Growth

Many agencies and organizations are constantly involved in predicting future population growth in the metropolitan area as well as the County as a whole. In the Introduction, reference was made to the Maricopa County Association of Governments (MAG) and the Valley Area Traffic and Transportation Study (VATTS). For the purpose of traffic analysis, the Phoenix metropolitan area was broken down into 688 Traffic Analysis Zones (TAZs). A Task Force group from local planning agencies, along with the VATTS staff made inventories of population and other socio-economic factors based on the year 1964. Following a number of guides for future growth, i.e. physiography, water, utilities, zoning, etc., detailed projections for separate TAZs were made for the year 1980. On this same basis, projections for the year 1995 were completed in early 1970. A compilation of the above statistics and a discussion of Methodology has recently been published by the County Planning Department as "A Report Upon Population and Selected Socio-Economic Factors - 1964 1980 1995 - Central Portion of Maricopa County, Arizona".⁽¹¹²⁾

TABLE 3

POPULATION AND AREA OF INCORPORATED PLACES AND UNINCORPORATED AREA FOR SELECT YEARS

	1960		1965		1970	
	Population U.S. Census	Area* Jan. '60	Population Est. Nov. '65	Area* Nov. '65	Population ⁽⁶⁾ U.S. Census	Area* July 15, 1970
Avondale	6,151	1.22	6,581 ⁽⁵⁾	1.96	6,313	2.47
Buckeye	2,286	.91	2,593 ⁽⁵⁾	1.10	2,712	1.10
Chandler	9,531	2.15	12,181 ⁽⁵⁾	2.91	13,551	6.00
El Mirage	1,723	.24	3,258 ⁽⁵⁾	2.15	3,269	2.15
Gila Bend ⁽¹⁾	1,813 ⁽⁴⁾	2.82	1,938 ⁽⁵⁾	2.82	1,726	2.82
Gilbert	1,833	1.03	1,831 ⁽⁵⁾	1.03	1,951	1.03
Glendale	15,696	3.80	30,760 ⁽⁵⁾	12.61	35,771	15.02
Goodyear	1,654	.39	1,821 ⁽⁵⁾	.91	2,110	.91
Mesa	33,772	14.03	50,529 ⁽⁵⁾	17.84	62,499	20.85
Paradise Valley ⁽²⁾	2,091 ⁽⁴⁾	2.76	4,650 ⁽⁵⁾	11.09	6,584	13.29
Peoria	2,593	1.02	3,802 ⁽⁵⁾	2.40	4,753	2.79
Phoenix	439,170	187.40	505,666 ⁽⁵⁾	245.70	580,275	247.90
Scottsdale	10,026	3.80	54,504 ⁽⁵⁾	59.85	66,852	67.30
Surprise ⁽³⁾	1,574 ⁽⁴⁾	1.00	2,189 ⁽⁵⁾	1.00	2,429	1.00
Tempe	24,897	14.12	45,919 ⁽⁵⁾	20.71	63,030	25.11
Tolleson	3,886	.43	4,161	.44	3,825	.55
Wickenburg ⁽³⁾	2,445 ⁽⁴⁾	1.37	2,445 ⁽⁵⁾	2.57	2,640	3.43
Youngtown ⁽³⁾	1,559 ⁽⁴⁾	.96	1,709 ⁽⁵⁾	.96	1,871	.96
TOTAL INCORPORATED AREA	562,700 (84.8%)	239.45 (2.6%)	736,537 (84.1%)	388.05 (4.2%)	862,161 (89.51%)	414.68 (4.49%)
UNINCORPORATED AREA	100,810 (15.2%)	8,986.55 (97.4%)	139,541 (15.9%)	8,837.95 (95.8%)	100,971 (10.49%)	8,811.32 (95.51%)
TOTAL COUNTY	663,510 (100.0%)	9,226 (100.0%)	876,078 (100.0%)	9,226 (100.0%)	963,132 (100.00%)	9,226 (100.0%)

*Area in square miles

- (1) Incorporated July 2, 1962
(2) Incorporated May 24, 1961
(3) Incorporated December, 1960

- (4) Unincorporated at time of Census
(5) November 1965, Special Census
(6) April 1970, Preliminary Report

Compiled by Maricopa County Planning Department
September 28, 1962
Revised August 14, 1970

Population estimates for towns and cities obtained from their officials

For the entire VATTS area, total population was determined and projected as follows:

1964	816,429
1980	1,638,786
1995	2,450,000

Plate 10 is a graphic comparison of population projections made by several agencies for the metropolitan area, the County and the State. Reference to the plate will show that all agencies assumed a declining rate of growth for future projections. After the release of the 1970 preliminary census counts for the County and the State, there has been some concern that the rate of decline should have been somewhat lower than had been predicted. Until the more detailed and final Census counts are released and have been thoroughly analyzed, definite conclusions are premature. On a straight-line basis, it is indicated that the County could reach a total population of 2,000,000 by 1990. Since higher estimates are preferred for physical planning purposes, the above figure will be used for the analyses of future open space needs.

For comparative purposes, Plates A and B in the Appendix show 1970 and 1990 population densities in the central portion of Maricopa County. The data used in the preparation of these maps have been adopted from the VATTS study report as mentioned previously. When complete 1970 Census information is available, these maps will necessarily need to be updated.

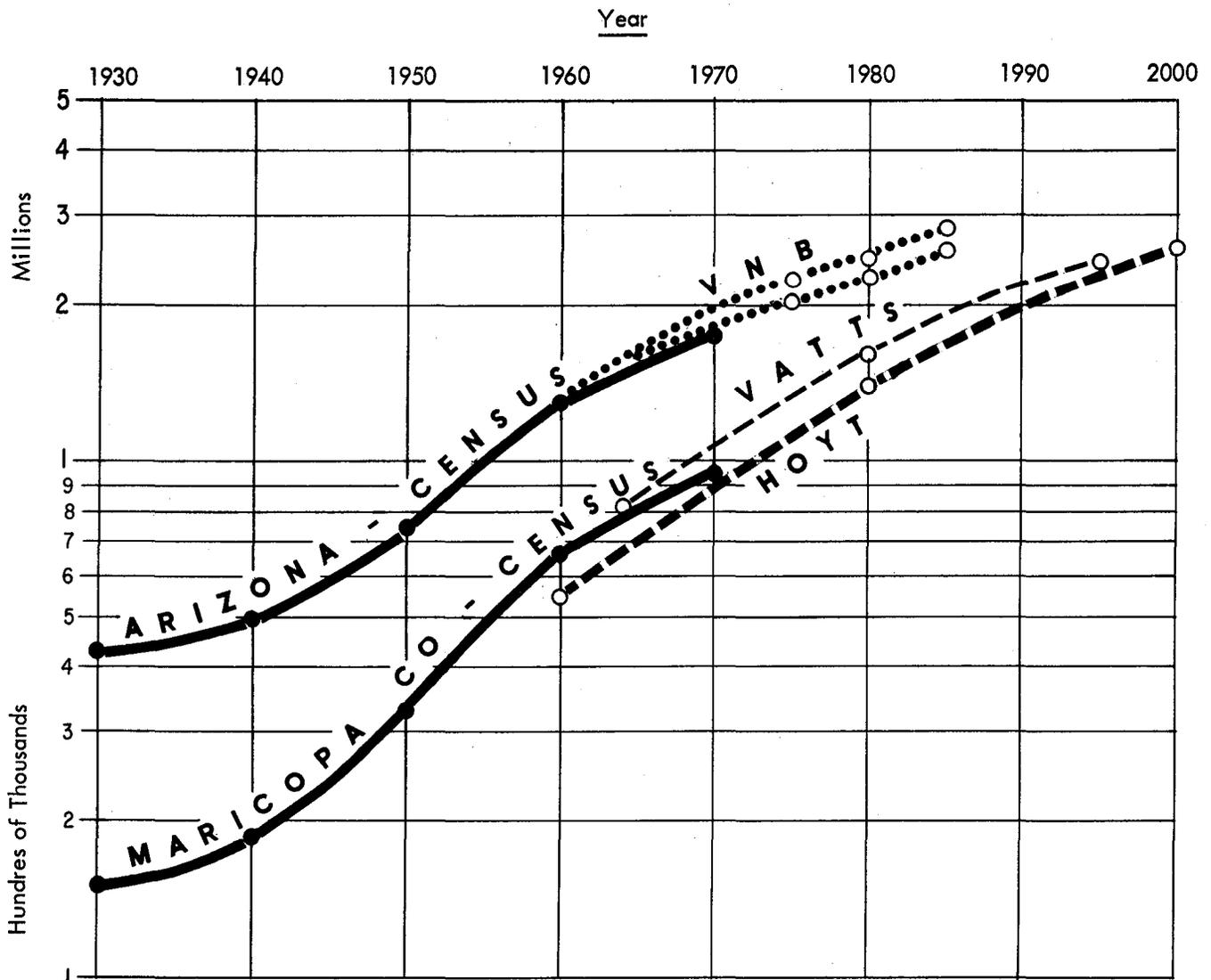
Socio-Economic Trends

Forecasts of people and their activities are essential for a variety of planning purposes. In the VATTS study, it was determined that the following indicators, used singly or in combination, would yield reliable traffic analysis data.

1. Number of housing units.
2. Automobile registration.
3. Amount and location of employment.
4. Amount and location of retail sales.

PLATE 10

COMPARATIVE POPULATION PROJECTIONS



KEY TO PROJECTIONS:

- Valley National Bank (High and Low estimates).
- Valley Area Traffic and Transportation Study for total study area.
- Homer Hoyt Institute, Research Monograph Number 1, for incorporated cities and towns in the Phoenix urban area (1968)

LJR - August, 1970

Plate 11 is a summary of socio-economic data forecasts from the study.

In addition to the population projections, several socio-economic trends established in this report are significant from the standpoint of recreation and open space. First, the number of persons per housing unit will gradually decline thus requiring more units in proportion to the population. Second, there is a clearly defined trend toward increasing levels of auto ownership which will reflect an even greater population mobility. Lastly, the study indicates that employment as a percent of population will continue to rise gradually, thus, theoretically increasing average family income.

Existing Land Use

In 1958, the City of Phoenix and the Maricopa County Planning Department formed a Joint Task Force and conducted a land use survey of the Phoenix Urban Area. Subsequently, the County Planning Department made detailed land-use surveys and studies of Buckeye, Cave Creek, Chandler, Gila Bend, Gilbert, Mesa, Scottsdale, Surprise and other areas in the unincorporated portions of the County. From this information, the Planning Department in 1964, published "Part II - A Part of the Comprehensive Plan for Maricopa County - Population, Community Growth and Existing Land Use".⁽³⁷⁾ In this report, land uses were broken down into four major categories: agricultural, urban, desert, and mountainous lands. In addition, detailed analyses were made of low and high residential, commercial, industrial, public and semi-public, major parks and golf courses, and transportation land uses in the central portion of the County.

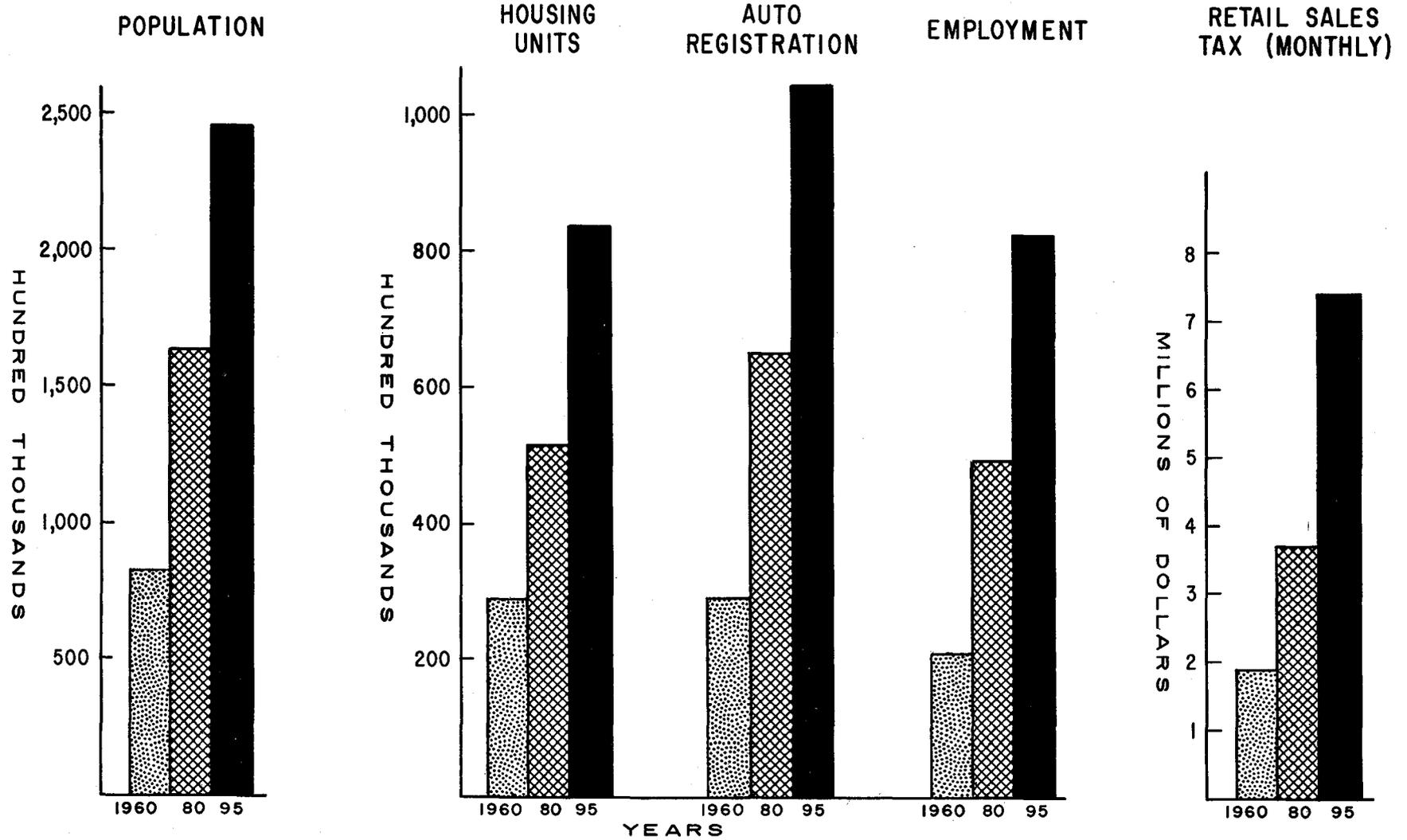
Following the publication of the aforementioned report, similar detailed studies were made of the following areas: Cave Creek and Carefree, Paradise Valley, Eastern Maricopa County, and Northern Paradise Valley. For specific land use information, reference should be made to these reports as well as to the studies made by the several cities and towns, which are listed in the Bibliography.

From the standpoint of regional open space, there has been little change in major land uses in the County since the 1964 report. The major change has been the urbanization

PLATE II

SUMMARY OF SOCIO-ECONOMIC FORECASTS

(From: Valley Area Traffic and Transportation Study)



of more agricultural land and some medium-slope desert land. From estimates made by the County Planning Department, this amounted to the incorporation of an additional 47.15 square miles of land in the period 1964-1970, or an increase from 3.98% to 4.49% of the total area of the County.

Although the present status of land-use studies in terms of open space may be adequate for present purposes, there is a definite need for a new extensive land-use survey and analysis. A detailed survey of this type should not only be made for the purpose of assisting in the solution of many current planning problems, but should be devised so as to provide continuous up-dating of land-use information.

CHAPTER IV

INVENTORIES OF PUBLIC OPEN SPACE

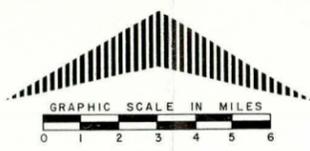
In order to evaluate the current supply of public open space in the urban area, the County, and the regional area, detailed inventories were conducted for various categories of open space. Within the limits of time and resources, an attempt was made to make these inventories as detailed and as useful as possible. In the following sections of this report, summaries of the inventories are discussed and compared with recommended principles and standards as presented heretofore.

Inventory of School Recreational Facilities

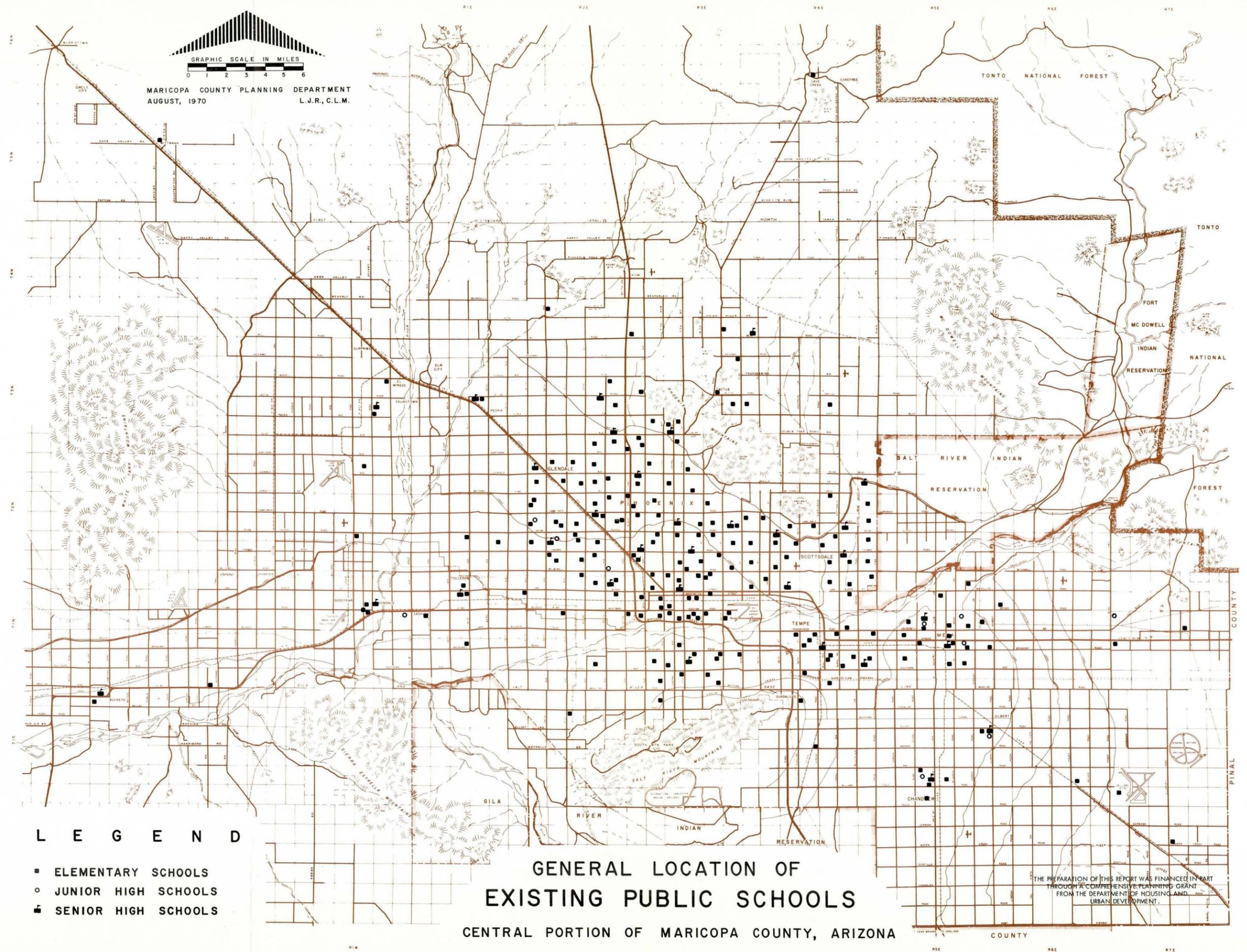
Plate 12 shows the distribution of existing schools in the central portion of Maricopa County. For a comparison with present population concentrations, reference should be made to Plate A included in the Appendix.

With the cooperation of the Office of the Maricopa County School Superintendent, an inventory questionnaire was prepared and mailed to all schools in the County. A copy of this form is included in the Appendix. (Table C). Generally, it was intended that this inventory would provide statistical information on the area of the school site, amount of land devoted to playgrounds or playfields, and the relationships of average daily attendance and design pupil capacity. In addition, information was requested on the types of facilities available and the degree of school-park multi-use at each school.

Response to the questionnaire was excellent. Of the 209 elementary schools as listed by the County Superintendent, 202, or 97%, replied. All thirteen of the junior high schools reported and 31 of 33 senior high schools furnished the requested information. Not all schools reported all the information in each category, but the total response was sufficient to assure reliable analyses.



MARICOPA COUNTY PLANNING DEPARTMENT
AUGUST, 1970
L.J.R., C.L.M.



L E G E N D

- ELEMENTARY SCHOOLS
- JUNIOR HIGH SCHOOLS
- SENIOR HIGH SCHOOLS

**GENERAL LOCATION OF
EXISTING PUBLIC SCHOOLS
CENTRAL PORTION OF MARICOPA COUNTY, ARIZONA**

THE PREPARATION OF THIS REPORT WAS FINANCED IN PART
THROUGH A COMPREHENSIVE PLANNING GRANT
FROM THE DEPARTMENT OF HOUSING AND
URBAN DEVELOPMENT.

Table 4 is a summary of some of the important data obtained from the school inventories. Of the total of 255 schools in the County, 246 reported a total site area of 3,866 acres of which 1,943 acres (57%) were for recreation. Assuming that the schools not reporting would have the same proportionate amount of acreage, there were approximately 4,020 acres in the operating County school system during the past school year. On the same assumption as above, an estimated 2,215 acres were devoted to recreational and open space use.

Although standards for school sites are not ordinarily related to total population, the contribution of school sites to total open space should be observed. Based upon the preliminary 1970 County population of 963,132 persons, and upon the total estimated acreage, there were 4.17 acres of school land per 1,000 persons of which 2.30 acres per 1,000 were provided for recreation and open space.

As discussed previously, standards for schools are based on two fundamental considerations:

1. A basic site size for the type of school, and
2. Ultimate maximum enrollment.

In planning for future schools, "ultimate maximum enrollment" must be translated into terms of design pupil capacity. From the inventories, it has been noted that design capacities and actual pupil attendance varied considerably from school to school. For the analysis of existing conditions, however, average daily attendance is of more importance since it reflects present conditions. Using the figures on average daily attendance recently released by the County School Superintendent and basic site standards recommended by NCSC, it has been determined that there should be a total of 5,470 acres in the entire County school system which amounts to 5.68 acres per 1,000 population. Assuming that 58% of this space was devoted to recreation (and the figure would logically be higher with larger site sizes), there should be 3,118 total recreational acres or 3.24 acres per 1,000 population. This relationship will be applied to projected population in Chapter V of this report.

TABLE 4

SUMMARY OF INVENTORY OF PUBLIC SCHOOLS
AND SCHOOL RECREATIONAL FACILITIES

	Type of School			Totals
	Elementary	Junior H S	Senior H S	
<u>TOTAL NO. SCHOOLS</u>	209	13	33	255
<u>SITE AREA (ACRES)</u> (Figures in Parentheses are Percent of Schools Reporting)				
Total acres reported	2,365 (97)	380 (100)	1,121 (94)	3,866 (96)
Acres for recreation	1,278 (86)	178 (100) (1)	487 (85)	1,943 (86)
Average acres/school	11.71	29.23	36.16	
Estimated total acres for all schools	2,447	380	1,193	4,020
<u>CAPACITY AND ATTENDANCE</u>				
Design pupil capacity	134,968 (86)	11,890 (92)	54,468 (91)	201,326
Average design capacity per school	754	991	1,816	
Total average daily attendance (ADA)	140,755 (100)	13,289 (100)	58,909 (100)	212,953
ADA per school	673	1,022	1,785	
<u>LAND AREA REQUIRED UNDER EXISTING STANDARDS (ACRES)</u>				
<u>Standard</u>				
10 ac/Elem. School	2,090			
20 ac/Junior H S		260		
30 ac/Senior H S			990	
Plus 1 ac/100 pupils ADA ⁽²⁾	<u>1,404</u>	<u>133</u>	<u>589</u>	
Total acres to meet standards	3,498	393	1,579	5,470
<u>PRESENT DEFICIENCIES (Based on Estimates for 100% Schools)</u>				
Total acres	-1,051	-13	-386	-1,450
Average/school	-5.03	-1.00	-11.70	

Footnotes: (1) Includes Fremont Junior High School (Mesa District) which has the usual site size of 160 acres.

(2) ADA used rather than design capacity since 100% figures are available.

It should be recognized, of course, that a composite analysis of a large area such as Maricopa County would not reflect the conditions, problems, or needs of separate school districts or individual schools. It is obvious, nevertheless, that serious land shortages exist and that extensive planning for the future will be needed in order to arrive at recommended standards.

As previously stated, a great amount of detailed information was collected by the school inventories. All of this information will be of value in future studies covering more specific local areas. One element concerning recreational land use, and which is of regional significance, is the data obtained on joint use of park and school facilities. Of the total of 222 elementary and junior high schools, only 23 (10%) indicated that the school site was "adjacent" to an urban park. Of the 33 senior high schools, 12 (36%) reported the availability of some park facilities. In nearly all cases, park facilities used by the schools are limited to swimming pools and baseball fields. On the other hand, nearly all the municipalities have some program for the use of school recreational facilities after school hours and during the summer months.

Again, it is obvious, that there is considerable study and planning needed on a local level in order to implement a desirable multi-use school-park-playground system within all school districts in Maricopa County. Without doubt, a joint school-park study, especially of administrative problems should be made in order to evaluate current conditions and to establish a working basis for future development.

Inventory of Urban Parks
and Local Recreational Facilities

A special form, even more detailed than that used for the inventory of school recreational space, was prepared for the inventory of parks and recreational facilities. A copy of this form is also included in the Appendix (Table D). This detailed information was requested from all municipalities and the County Parks and Recreation Department for

two reasons: (1) to provide information for this report, and (2) to provide current information for an issue of the County Planning and Zoning Department's map entitled "Major Public Park and Recreational Facilities - Central Portion of Maricopa County" and which has not been revised since 1964. It is gratifying to report that there was complete cooperation from all parties concerned in providing the information requested.

Play Areas and Small Spaces

As discussed in Chapter II, there are no universal standards for play areas and small spaces and local names are even more varied than those generally used across the nation. Table 5 shows data by separate cities and towns for land areas that fit into this category. In terms of total numbers and acreage, there is a very minimal development of this type of facility in the study area. Since the majority of play areas and small spaces are located within the city of Phoenix, reference should be made to "The Park and Recreation Plan - Phoenix, Arizona" ⁽⁶⁰⁾ for the location of their "mini-parks".

Neighborhood and Community Facilities

Table 6 shows certain selected data on neighborhood and community facilities as obtained from the parks and recreational inventory. It should be pointed out that this information was requested in April, 1970 and the figures given reflect conditions at that time.

Within the County, there are 84 areas which have been classified as neighborhood playgrounds and/or parks. Of the total acres, 386 acres, or 80 percent, have been developed resulting in an average developed park size of 4.59 acres. Table 2. "Summary of Recommended Standards for Public Park and Recreational Open Space" indicated that the desirable size for neighborhood playgrounds and parks should be from 4.98 to 5.39 acres. Based on a median site size of 5.19 acres, existing neighborhood facilities within the county are 12 percent below recommended area standards.

Thirty-eight areas, embracing 1,131 acres, have been classified as community facilities. Of the total acres, 759 acres, or 67 percent, were reported to be developed,

TABLE 5
INVENTORY OF PLAY AREAS AND SMALL SPACES

<u>City or Town</u>	<u>Local Category</u>	<u>Total Number</u>	<u>Acres</u>		
			<u>Total</u>	<u>Developed</u>	<u>Average Size</u>
Avondale		None			
Buckeye	Green Spot	1	0.50	0.50	0.50
Chandler	Plaza Park, Tot Park	2	1.76	1.76	0.88
El Mirage		None			
Gila Bend	Roadside Park	1	0.50	0.50	0.50
Gilbert	Little green area	2	1.75	1.75	0.88
Glendale	Passive green area	1	2.00	2.00	2.00
Goodyear		None			
Mesa		None			
Paradise Valley		None			
Peoria		None			
Phoenix	Mini-Park, Sitdown Park Play-Lot, Play area	31	13.16	8.97	0.42
Scottsdale		None			
Surprise		None			
Tempe	Mini-Park	1	1.00	1.00	1.00
Tolleson	Park-Community Building	1	1.00	1.00	1.00
Wickenburg	Park	1	1.00	1.00	1.00
Youngtown	Picnic area	1	0.15	0.00	0.15
TOTALS		42	22.82	18.48	0.54

TABLE 6

SUMMARY OF EXISTING NEIGHBORHOOD AND COMMUNITY
PUBLIC PARKS AND RECREATION FACILITIES IN MARICOPA COUNTY

<u>Jurisdiction</u>	<u>Number of Areas</u>	<u>Total Acres</u>	<u>Neighborhood</u>			<u>Community</u>				
			<u>Total Acres Developed</u>	<u>Average Size (Ac)</u>	<u>Average Size Developed (Ac)</u>	<u>Number Parks</u>	<u>Total Acres</u>	<u>Total Acres Developed</u>	<u>Average Size (Ac)</u>	<u>Average Size Developed (Ac)</u>
Avondale	2	13.50	9.00	6.75	4.50	----				
Buckeye	1	10.00	10.00	10.00	10.00	----				
Chandler	1	5.00	5.00	5.00	5.00	1	21.00	11.00	21.00	11.00
El Mirage	1	8.00	2.00	8.00	2.00	----				
Gila Bend	3	28.83	9.69	9.61	3.23	----				
Gilbert	----					----				
Glendale	5	46.00	39.00	9.20	7.80	1	20.00	0.00	20.00	0.00
Goodyear	----					----				
Mesa	7	24.00	22.75	3.43	3.25	4	87.50	47.50	21.88	11.88
Paradise Valley	----					----				
Peoria	----					----				
Phoenix	37	192.01	161.43	5.19	4.36	26	860.53	598.85	33.10	23.03
Scottsdale	5	32.10	18.00	6.42	3.60	3	95.00	70.00	31.67	23.33
Surprise	1	5.00	1.00	5.00	1.00	----				
Tempe	10	61.70	61.70	6.17	6.17	3	47.00	32.00	15.67	10.67
Tolleson	1	6.00	0.00	6.00	0.00	----				
Wickenburg	2	9.00	9.00	4.50	4.50	----				
Youngtown	4	16.58	16.58	4.15	4.15	----				
Maricopa County	4	26.03	20.50	6.51	5.13	----				
TOTALS	84	483.75	385.65	5.76	4.59	38	1,131.03	759.35	29.76	19.98

indicating an average facility size of approximately 20 acres. Locally recommended standards for the size of community facilities ranged from 26 acres for playfields to 35 acres for parks. Using a median site size of 31 acres, presently developed community facilities average 11 acres less, or 35 percent below, recommended area standards.

In order to evaluate current conditions and to project future park and recreational needs, the empirical relationship of acres of land per 1,000 persons is used as the criteria. Using the recently released 1970 preliminary census figure of 963,132 persons in Maricopa County, existing conditions are as follows:

	<u>Total Land Area</u>	
	<u>Acres</u>	<u>Acres/1000 Persons</u>
Neighborhood	484	0.50
Community	1,131	1.17

Local planning standards as presented in Table 2 call for 2.68 acres per 1,000 persons for neighborhood facilities and 2.49 acres per 1,000 persons for community facilities. It is readily obvious that for the County as a whole, there are serious deficiencies ranging from 47 to as low as 15 percent below recommended standards. In order to meet these standards, there is an existing need of 2,097 acres for neighborhood parks and playgrounds and an additional 1,267 acres for community parks and playfields.

Plate 13 schematically shows the distribution and locational relationships of several types of parks in the central portion of Maricopa County. The distribution of neighborhood and community facilities will naturally be related to population concentrations and reference should be made to Plate A in the Appendix.

As with schools, the provision for neighborhood and community facilities is essentially a local concern and responsibility. From the regional viewpoint, however, it is apparent that considerable effort will be needed to increase and improve present facilities as well as to provide for future needs and requirements.

Large Parks and Regional Areas

The following Table 7 lists the large parks in Maricopa County:

TABLE 7
INVENTORY OF LARGE PUBLIC PARKS
IN MARICOPA COUNTY

<u>Jurisdiction/Name</u>	<u>Total</u>	<u>Acres Developed</u>	<u>Acres Potentially Developable</u>
<u>Phoenix</u>			
Deer Valley Park	147.88	0.00	147.88
Encanto Park	61.01	61.01	0.00
Esteban Park	64.08	64.08	0.00
<u>Scottsdale</u>			
McCormick Park	100.00	0.00	100.00
<u>Maricopa County</u>			
Bush Highway Recreation Area	267.40	5.00	262.40
Paradise Valley Park	340.00	40.00	300.00
Totals	980.37	170.09	810.28

The six parks listed have a total of 980 acres of which only 21% (170 acres) has been developed. From the summary of recommended standards (Table 2), there should be two acres of large parks per 1,000 population. Based on the preliminary 1970 Census of population, there are presently 1.02 acres per 1,000 persons, or approximately one-half of the desired total.

Plate 13, previously referred to, shows the location and extent of both large and regional parks in the central portion of Maricopa County. Table 8 lists parks situated in the central portion of Maricopa County that are classified as regional parks. These amount to a total of 110,417 acres, which is the largest county park system in the nation. Based upon present population, there are 110 acres of regional park land per 1,000 persons - far exceeding the normal optimal standard of 25 acres per 1,000 persons. As William H. Whyte⁽²⁰⁾ would probably observe, this is a very good problem to have. It should be noted, however, that only 7.59 percent (3,809 acres) of the total regional park system is presently

TABLE 8

INVENTORY OF REGIONAL PARKS IN MARICOPA COUNTY

<u>Jurisdiction/Name</u>	<u>Total</u>	<u>Acres Developed</u>	<u>Acres Potentially Developable</u>
<u>Gila Bend</u>			
Unnamed	638.64	0.00	638.64
<u>Phoenix</u>			
North Mountain Park	275.00	80.00	0.00
Papago Park	888.64	820.61	60.00
South Mountain Park	14,817.00	800.00	0.00
Squaw Peak Park	546.40	100.00	0.00
Stony Mountain Park	161.00	0.00	0.00
Cave Creek Park and Scenic Drive	595.00	0.00	595.00
<u>Tempe</u>			
Papago Park	275.00	40.00	235.00
<u>Wickenburg</u>			
Unnamed Open Area	288.00	10.00	278.00
<u>Maricopa County</u>			
Black Canyon Shooting Range	1,433.70	1,000.00	200.00
Buckeye Hills	3,627.04	20.00	2,000.00
Casey Abbott Park	2,124.06	600.00	1,500.00
Cave Creek	2,592.37	0.00	1,500.00
Thunderbird	726.68	10.00	300.00
Usery Mountain	3,324.24	25.00	3,000.00
Estrella Mountain	16,467.91	0.00	8,000.00
Lake Pleasant	14,357.17	300.00	4,000.00
McDowell Mountain	20,941.73	0.00	16,000.00
White Tanks	<u>26,337.75</u>	<u>3.00</u>	<u>12,000.00</u>
Totals	110,417.33	3,808.61	50,306.64

developed for recreational use. This is certainly not a very good problem to have because of the cost of development and financial limitations.

The gross area of large and regional parks can sometimes be a poor criteria for determining the adequacy of park land to meet population needs. What really counts is effective acres - those that can be user-oriented. For this reason, jurisdictions were requested to furnish estimates of the total acres in each facility that are "potentially developable". This inventory revealed that 50,307 acres, or less than one-half of the total area in the system might yield to user-oriented development. This means that 60,111 acres (54%), because of the physical nature of the land, will remain as open space reserve and wilderness areas. Fortunately, nevertheless, the potentially developed areas still provide 52.24 acres per 1,000 present population.

Special Facilities

Golf Courses: For most types of open space areas, public facilities only have been included in this study. Since golf courses provide a most desirable kind of open space in Maricopa County, all golf courses, regardless of ownership, are included in the statistical analyses. In addition, it should be observed that private golf clubs provide recreational facilities for certain persons that do not then make demands on more public-type facilities.

Table E in the Appendix is an alphabetical listing of the golf courses in the County and the list includes certain factual data as furnished by the Arizona Golf Association. Table 9 is a summary of data contained in Table E. The classification of facilities is that of the Association and the exact definition of the type facility may well vary from course to course.

Of the total of 49 golf courses in Maricopa County, 17 consist of 9 holes and 32 consist of 18 holes. The total of 5,191 acres for 729 holes, reveals an average of 7.12 acres per hole. On an 18-hole course basis, the average size of present golfing facilities is 128 acres which is 32 acres less, or 80 percent under, the desired standard of 160 acres. Although course sizes may not meet recommendations, the provision of 5.39 acres per 1,000 present population is nearly double the desired standard of 3.00 acres per 1,000 persons.

TABLE 9

SUMMARY OF INVENTORY OF GOLF COURSES
IN MARICOPA COUNTY

<u>Type Facility</u>	<u>Number of Areas</u>	<u>Total Number Holes</u>	<u>Total Acres</u>	<u>Average In Size Acres (18 Hole Basis)</u>
Municipal & County	5	81	664 ⁽¹⁾	148
Public	14	153	812	96
Semi-Public	5	90	732	146
Resort	9	153	1,137	134
Semi-Private	9	135	988	132
Private	<u>7</u>	<u>117</u>	<u>858</u>	<u>132</u>
Totals	49	729	5,191	128

Note: (1) Total acres for this facility includes an estimated 160 acres for the County's Casey Abbott Park and Golf Course. For statistical purposes, this acreage is included under regional parks.

It is apparent that golf courses provide a very important share of total open space, especially in the urbanized areas. Plate 14 shows the general location of golf courses in the central portion of Maricopa County. Again, reference should be made to Plate A in the Appendix for a comparison of the location of courses and population densities.

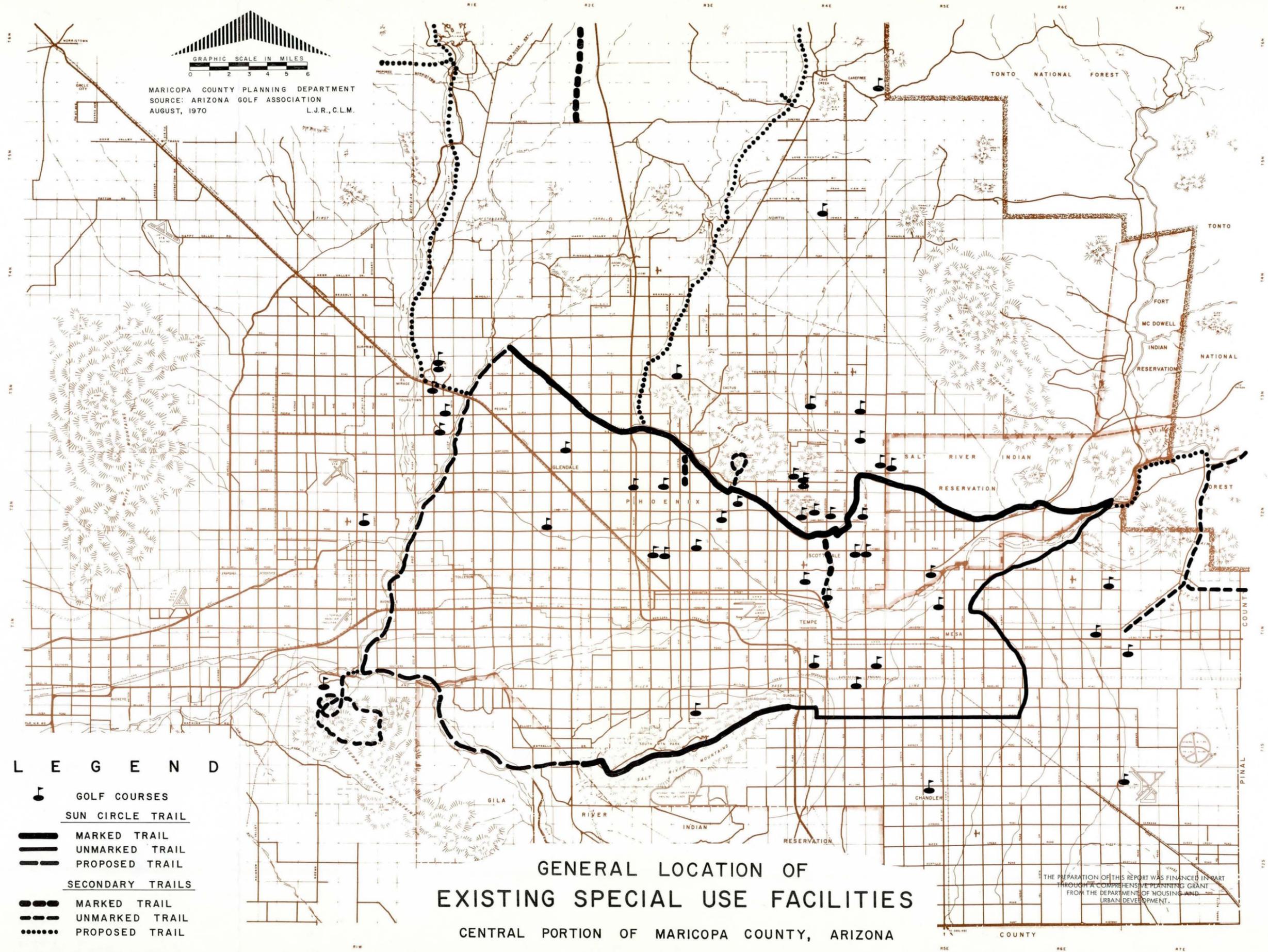
Hiking and Riding Trails: As pointed out in Chapter II, a comprehensive study on trails was made in 1964 by the Maricopa County Hiking and Riding Trails Committee. (104) As a result of this study, a system of trails covering approximately 700 lineal miles was proposed and established. A hiking and riding trails plan similar to the Maricopa County plan has been adopted by the City of Phoenix.

Initially, the concept of a trail system was built around the Sun Circle Trail - a 110-mile loop "thrown like Pecos Bill's lariat around the Valley of the Sun" (See Plate 14). At the present time, approximately 65 miles of the Sun Circle Trail have been marked by attractive signs and this work is a continuing function of the Committee in cooperation with the County Parks and Recreation Department. More than half of this trail utilizes the banks of the modern canal system by virtue of an agreement with the Salt River Project.

Radiating from the Sun Circle Trail "like spokes from the hub of a wheel" are proposed primary and secondary trails which are designed to form connecting links with many city and county parks thereby complimenting the trails system within these parks.

Because of the differences in topography and other physical characteristics, the width of the rights-of-way for the trails varies considerably. Hence, a determination of total acreage in the existing or proposed system is virtually impossible. To obtain a recommended standard of 25 miles of trail per 50,000 persons there would need to be 481 miles of developed trails at this time. The proposed total system of 700 miles is more than adequate, but the developed and marked portion of 65 miles is far from this recommended standard.

A basic deterrent in the development of the County's trail system is a lack of specific state enabling legislation for the acquisition of rights-of-way.



Inventory of Federal and State Land

Plate 15, "Public Lands", shows the general location of federal and state lands, and major parks. The majority of public lands shown on the plate are open and undeveloped. Overall, the public lands shown - exclusive of major parks that were tabulated in the preceding section - account for 73% of the County or 6,735 square miles.

A detailed breakdown of these land is as follows:

Total Land Area in Maricopa County: 5,904,640 Acres

<u>Controlling Agency</u>	<u>Acres</u>	<u>Percent of County</u>
<u>Federal</u>	3,731,520	63
Bureau of Land Management	1,999,657	34
Department of Defense	795,000	13
Tonto National Forest	671,427	11
Indian Reservations	265,436	5
<u>State Land Department</u>	601,849	10
TOTAL	4,333,369	73

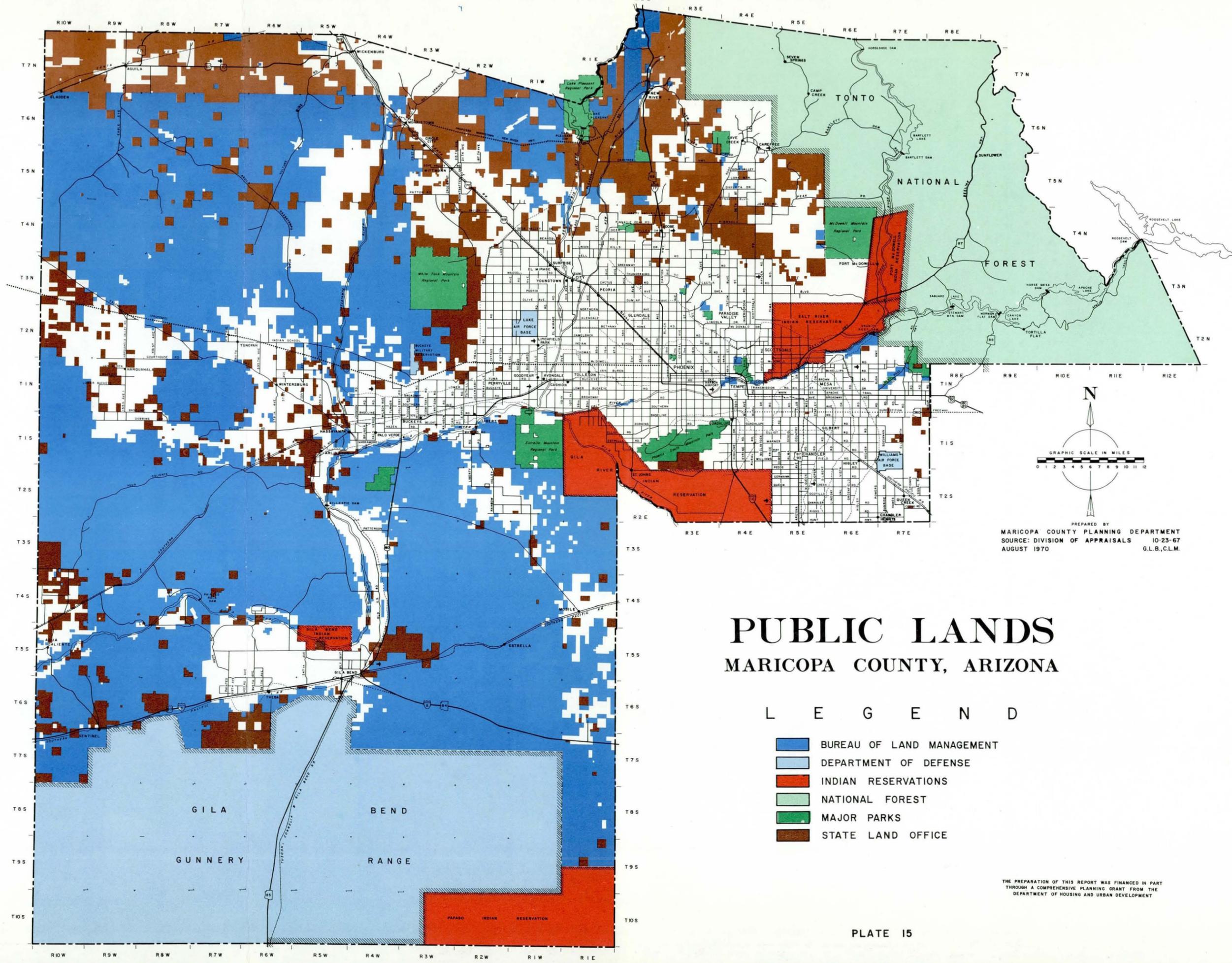
Bureau of Land Management (BLM)

Secretary of the Interior, Walter J. Hickel, recently wrote an introduction to an Interior Department booklet that is especially appropriate to this study. The introduction is quoted, in part, as follows:

"America is fortunate in having a wealth of resources that can serve us well. Hand in hand with preservation go wise management and wise development and use.

"This is balanced conservation. In the words of the noted zoologist, Aldo Leopold: 'Conservation is a state of harmony between man and land'.

"That must be the hallmark of the New Conservation of America in the last third of this crucial Twentieth Century, as it is the by-word of America's Department of Natural Resources - Your Department of the Interior." (122)



N

GRAPHIC SCALE IN MILES
0 1 2 3 4 5 6 7 8 9 10 11 12

PREPARED BY
MARICOPA COUNTY PLANNING DEPARTMENT
SOURCE: DIVISION OF APPRAISALS 10-23-67
AUGUST 1970 G.L.B.,C.L.M.

PUBLIC LANDS

MARICOPA COUNTY, ARIZONA

L E G E N D

- BUREAU OF LAND MANAGEMENT
- DEPARTMENT OF DEFENSE
- INDIAN RESERVATIONS
- NATIONAL FOREST
- MAJOR PARKS
- STATE LAND OFFICE

THE PREPARATION OF THIS REPORT WAS FINANCED IN PART THROUGH A COMPREHENSIVE PLANNING GRANT FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Multiple Use Management: Overall, the BLM is responsible for the conservation, management, and development of almost two million acres of land in the County.

As a result of the Federal Classification and Multiple Use Act of 1964, the BLM has been classifying land for disposal or multiple use management. The authorizations and requirements of this Act shall expire on December 31, 1970. This Act was restricted in time pending the recommendations of the Public Land Law Review Commission. Please refer to Chapter VII for more detail on the Commission's recommendations.

Specifically, lands may be disposed of because they are:

1. Required for the orderly growth and development of a community.
2. Chiefly valuable for residential, commercial, agricultural (exclusive of lands chiefly valuable for grazing and raising forage crops), industrial, or public uses or development.

Specifically, lands retained will be administered under multiple use principles. Those principles call for management of the lands and resources in "the combination that will best meet the present and future needs of the American people." This combination is to be achieved by judicious use, and harmonious and coordinated management over large enough areas to provide periodic adjustment, without impairment of the productivity of the land, with consideration of the relative values of the various resources. There is no requirement that the best combination of uses must necessarily give the greatest dollar return or the greatest unit output.

More specifically, multiple use management encompasses the preparation and implementation of management plans affecting the following resource activities:

1. Outdoor recreation
2. Wilderness preservation
3. Fish and wildlife development
4. Watershed protection

5. Domestic livestock grazing
6. Timber or mineral production
7. Industrial development
8. Preservation of public values that would be lost if the land passed from Federal ownership, e.g., archaeological sites and scenic areas.

The procedural system used by the BLM to form multiple use management plans is all-inclusive. It involves a step-by-step analytical approach to the problem. At a minimum, the following essential factors are considered: what resources are available, what are the resources producing, what programs are possible, what does the community need and think, what is best for each resource, what conflicts exist and how can they be resolved.⁽¹⁴⁷⁾ The principal objectives of this system are: to encourage healthy and long-term community growth, to meet rapidly increasing recreational needs, and to preserve environmental values.

In perspective, the concept of multiple use management has proven to be very successful, and it is closely coordinated with the activities of local governments. Just recently, a local newspaper featured the following headline: "Hearing Set on Reclassifying Lands". The article summarized the proposal, and it is quoted verbatim in Table F of the Appendix to give readers of this report more insight into the process.

Also, it should be noted that at a later point in time, land needed for specific purposes can be reclassified and disposed of under appropriate laws and regulations. In conjunction with this discussion, it is important to realize that the BLM continues to serve land needs for local government. To assure orderly growth of towns and communities, the BLM requires that such development must be preceded by the adoption of zoning ordinances by the local government involved.

Another direct benefit of the application of the concept of multiple use management follows: after careful examination the BLM is classifying lands with recreation potential, and it is in the process of withdrawing the most valuable recreation lands from incompatible types of use.⁽⁸³⁾ Please refer to Chapter VI for more data.

In summary, the vast majority of the BLM lands in the County are administered under the concept of multiple use management. It is anticipated that these lands will retain that classification for an indefinite period of time.

Federal Recreation and Public Purposes Act (R&PP) 1954, As Amended: As a result of this legislation, the County has been able to obtain its extensive park system. To date, the County has purchased 4,503 acres, and leased 68,247 acres under this act. Briefly, the purpose of this legislation is to permit states, their political subdivisions, and non-profit associations to purchase or lease public domain lands. Political subdivisions of a State and nonprofit organizations may purchase not more than 640 acres a year for recreation purposes, and an additional 640 acres for other public purposes. These land must be within the political boundaries of the agency or within the area of jurisdiction of the organization or, in the case of municipalities, they must lie within convenient access to the municipality and within the same State. The act sets no limitation on the amount of land that may be leased. In 1961, the Secretary of the Interior established the purchase price for public agencies at \$2.50 an acre and the lease rental at \$0.25 an acre per year. (84)

Department of Defense

The four military reservations in Maricopa County comprise approximately 1,250 square miles, with the Gila Bend Gunnery Range accounting for 1,200 square miles of the total. There are no known plans to classify these Federal lands as surplus.

Tonto National Forest

In Arizona there are seven national forests. The Tonto National Forest is the largest, and embraces 2,900,000 acres of rugged country from the saguaro cactus-studded desert to the cool pine-clad mountains underneath the Mogollon Rim. Almost 700,000 acres of the Tonto National Forest is situated within Maricopa County. It is for this reason that the Tonto Forest are popularly known as "Phoenix's Mountain Playground".

The Forest has been administered since 1960 under the concept of "Multiple Use Management". As a result, the water, recreation, wildlife, range, and timber resources of the Forest are so used to provide maximum benefits for the public.

Lakes: The magnet that draws thousands of visitors to the Forest is WATER. There is a total of six lakes, with 241 miles of shoreline. The total capacity of the lakes is approximately 2,100,000 acre feet, with Roosevelt Lake having a capacity of almost 1,400,000 acre feet.⁽¹¹⁴⁾ The names of the dams and the lakes (with prime location) formed by the storage reservoirs behind them are:

(1) On the Salt River -

- a. Theodore Roosevelt Dam and Lake (in Gila County)
- b. Horse Mesa Dam on Apache Lake (in Maricopa County)
- c. Mormon Flat Dam on Canyon Lake (in Maricopa County)
- d. Stewart Mountain Dam on Saguaro Lake (in Maricopa County)

(2) On the Verde River -

- a. Horseshoe Dam and Lake (in both Maricopa and Yavapai Counties)
- b. Barlett Dam and Lake (in Maricopa County)

Historically, it is of interest to note that the Roosevelt Dam was dedicated in 1911 and that it was the pioneer effort in multi-purpose construction, e.g. flood control, water storage and conservation for irrigation, power, and recreational usage.

Recreational Opportunities: Each year increasing numbers of people are experiencing the varied recreational opportunities available in the forest, e.g. auto sightseeing, picnicking, camping, boating, swimming, water skiing, fishing, hunting, hiking and many other activities. For just the Maricopa County portion of the Forest, it was estimated that in 1969 there were approximately 1,000,000 visitor-days use; in turn, this represents half the use of the entire Forest. Note: A visitor-day use means one person visited the Forest for 12 hours, or 12 persons visited it for one hour, or any combination in-between. For maximum enjoyment, the Forest Service is striving to keep pace with demand by adding camps and picnic grounds and other desired facilities. Long-range plans for the complete

development of the full recreation potential of the Forest have been prepared and will be carried out as rapidly as funds become available. Also, the Forest Service authorizes commercial resort establishments to meet the needs of that sector of the public.

Many useful, informative details relative to the aforementioned facilities and activities are contained in a map "Major Public Park and Recreational Facilities - Central Portion of Maricopa County", that may be updated and published in the Fall of 1970 by the Maricopa County Planning Department.

Complementing the above recreational facilities are several special features. To illustrate: for those persons who desire to see, on foot or mounted, a sample of truly undeveloped territory there is the Superstition Wilderness area. This area is only about 40 miles east of downtown Phoenix, and it is the closest wilderness to any major city in the continental United States. For those persons who desire to see, via vehicle, rugged mountainous terrain there is the famous "Apache Trail", and for those persons who desire to see prehistoric Indian ruins, there is the "Tonto National Monument".

Indian Reservations

There are five Indian Reservations within Maricopa County, although technically one of them, the Gila Bend, is administratively under the control of the Papago Indian Reservation. The status of these reservations is unique in that they were established through separate U.S. Government treaties with the various Indian tribes. Consequently, the Federal government holds this property in trust for the Indian tribes and because of this trust, the Federal government through the Bureau of Indian Affairs assists the people residing on the reservations and their tribal councils to help conserve and protect their interests. To date, however, only limited urban and agricultural development has taken place on the Indian reservations. To aid in urban development, Indian lands (whether tribally or individually owned) located on the Salt and Gila River Indian Reservations may be leased by the Indian owners, with the approval of the U.S. Secretary of the Interior, to private developers for periods up to 99 years. It is expected in the immediate future that the Fort McDowell Indian Reservation will be able to pursue a similar policy.

Various economic and planning studies have been prepared or are proposed to be undertaken for the three reservations closest to the Phoenix Urban Area to determine the potential for recreational and other types of urban development on the reservations. This trend is a positive one because there is a realization that it is not sound to continue planning -- around the Indian Reservations.

State Land Department

The responsibilities of this key state agency have a measurable impact on open space goals and policies for the County.⁽⁸³⁾ This is evident when one realizes that the State Land Department is trustee for 10% of County land. Briefly, this Department administers all laws pertaining to state controlled land, and further, administers all laws relating to the control, supervision, distribution and appropriation of the State's waters.

More specifically, the Department has the responsibility of classifying for use, appraisal and survey for resources, leasing, and conservation of the natural resources of all state land. Most State land that is leased is used for grazing. Since the Department is guided by law to obtain a maximum dollar return on the sale and lease of state lands, other state agencies and political subdivisions generally have not been able to secure such land for open space purposes.

Summary

The majority of Federal and State lands in Maricopa County should continue to remain under governmental control to preserve the land for posterity. The vast majority of these lands, which are shown graphically on Plate 15, are beyond present and future areas needed for urbanization as envisioned by the General Land Use Plan shown in Chapter III of the Comprehensive Plan proposed by the County Planning Department.

Open Space Facilities in Maricopa County and Environs

The previous discussion of the supply of public open space has concentrated primarily on local and regional facilities within the Central Portion of Maricopa County. It should be noted, however, that the previously-described inventories accounted for facilities existing in all other County communities.

Supplemental to the above facilities are those facilities located conveniently within a 100-mile radius of downtown Phoenix. Even though the greater majority of these attractions are not physically situated within the County, they are important to consider as they represent a unique open space land bank. Plate 16, "Open Space Facilities in Maricopa County and Environs", shows schematically the location of these other selected points of interest. Shown too for informational purposes are tourist targets located just beyond the 100-mile radius, and arrows pointing to famous recreational areas such as Grand Canyon National Park. In addition, to avoid ambiguity, all boundary lines referred to in this section are shown clearly. Finally, for textual discussion purposes, Plate 16 is treated accordingly:

1. Open space facilities within Maricopa County, but outside of its central portion; and,
2. Open space facilities outside of Maricopa County, but within the 100-mile radius.

Open Space Facilities Within Maricopa County

Facilities within the County, but outside of its central portion are:

1. Buckeye Hills Recreation Area. This mostly undeveloped park is a unit of the County's extensive park system.
2. Painted Rocks State Historic Park. This park features an interesting collection of prehistoric, Indian carved rocks (petroglyphs).

OPEN SPACE FACILITIES in MARICOPA COUNTY and ENVIRONS

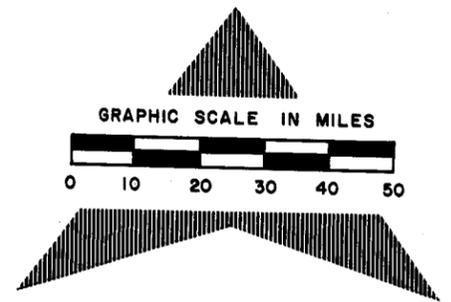
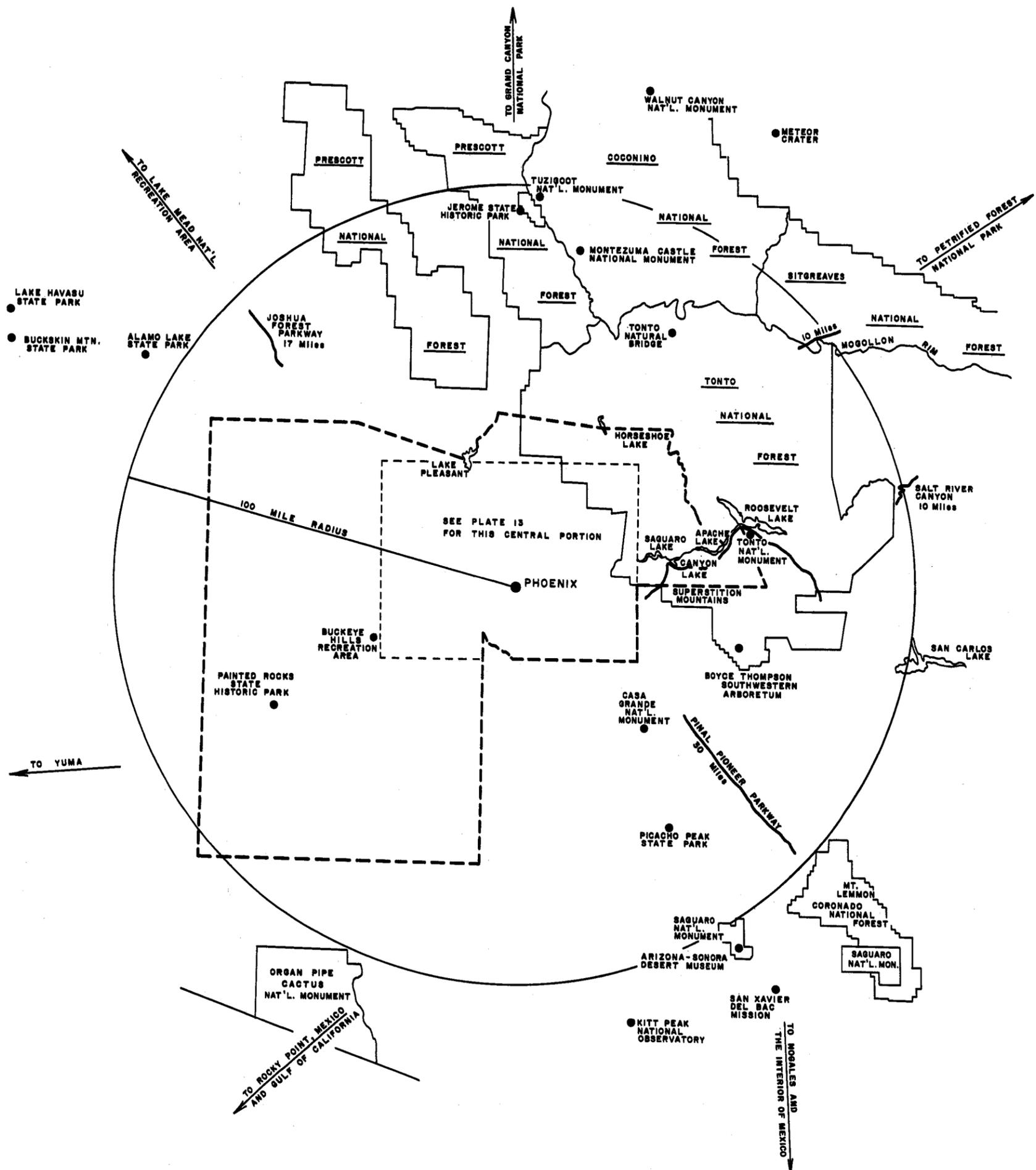


PLATE 16

3. Tonto National Forest. The portion of the Forest situated within Maricopa County contains a variety of recreational possibilities: The Saguaro, Canyon, and Apache Lakes on the Salt River; Horseshoe Lake on the Verde River; a part of the Apache Trail; and, a part of the Superstition Wilderness area.

Details concerning these recreational opportunities, and others, were reviewed in the preceding section (i.e. Inventory of Federal and State Land).

Open Space Facilities Outside Maricopa County

Facilities outside the County, but within the 100-mile radius are:

1. National Forests. There are portions of four forests: Tonto, Prescott, Coconino and Sitgreaves. All-named forests are extremely popular as a result of the multitude of outdoor recreational opportunities present.
2. Lakes. There are four large developed lakes offering many water-oriented recreational activities: Roosevelt, Horseshoe, Pleasant and San Carlos.
3. Scenic Roads. There are five exceptionally scenic roads: the Joshua Forest Parkway passing through a forest of Joshua trees that are really branched tree-like yuccas; the Mogollon Rim, road traversing highly scenic, Ponderosa Pine country; the Salt River Canyon highway, weaving its way through a spectacular gorge area; the oft-mentioned famous Apache Trail; and the Pinal Pioneer Parkway, which presents a panorama typical of Sonoran Desert growth.
4. Indian Ruins. There are four National Monuments with well-preserved, prehistoric Indian ruins: Casa Grande Ruins, Tonto, Montezuma Castle and Tuzigoot.
5. State Parks. There are two state parks: Jerome State Historic Park that features the town's mining history; and, Picacho Peak State Park, appropriately named after one of the state's most notable landmarks and site of the only Civil War battle in Arizona.

Summary

Slogans can be maudlin on occasion, but when one says "Amazing Arizona" -- one can accept the slogan literally. The diversity of scenic attractions readily accessible to County residents is an asset that is incalculable.

CHAPTER V
FUTURE OPEN SPACE REQUIREMENTS

Basis for Analysis

In the preceding chapters of this report, it has been pointed out that there are a number of interrelated factors that must be considered in the analysis of the adequacy of open space facilities. Factors such as site size, accessibility, location, and the nature of the functions and opportunities to be provided must all have their proper consideration. There is a basic statistical relationship between present and future open space needs and the number of persons to be served. This implies, of course, that special consideration must be given to the analysis of the numbers of persons of various age groups who may use a particular facility. From the regional viewpoint, however, it is only practical to relate open space needs to present and estimated future total population.

Requirements for Parks and Recreational Open Space
by the Year 1990

Table 10 shows a summary of the relationship between locally recommended standards, existing acres, and deficiencies or excesses of open space land based upon the present population in Maricopa County. Further, assuming a 1990 population of 2,000,000 persons, locally recommended standards have been used to project future requirements and total deficiencies (or excesses). For the general location of future facility needs, reference should be to Plate B in the Appendix - 1990 Population Densities.

As previously demonstrated, 4,310 (6.73 square miles) additional acres are needed at the present time to satisfy recommended standards for urban-type (neighbor-

TABLE 10

EXISTING AND FUTURE PARK AND RECREATIONAL
OPEN SPACE REQUIREMENTS BY THE YEAR 1990

Type Facility	Recommended Acres/1,000 Population (Table 2)	Existing Acres			Recommended Future Acres	
		Present Totals	Present Needs ^{1/}	Deficiency or Excess	Total Acres Required ^{2/}	Total Deficiency or Excess
Neighborhood	2.68	484	2,581	2,097	5,360	4,876
Community	2.49	1,131	2,398	1,267	4,980	3,849
Large Parks	2.00	980	1,926	946	4,000	3,020
		<u>(810)^{3/}</u>		<u>(1,116)^{3/}</u>		<u>(3,190)^{3/}</u>
SUB-TOTAL	7.17	2,595	6,905	4,310	14,340	11,745
		<u>(2,425)^{3/}</u>		<u>(4,480)^{3/}</u>		<u>(11,915)^{3/}</u>
Regional Parks	25.00	110,417	24,075	+86,342	50,000	+60,417
		<u>(50,307)^{3/}</u>		<u>(+26,232)^{3/}</u>		<u>(+307)^{3/}</u>
Golf Courses	3.00	5,191	2,889	+2,302	6,000	809

Notes: ^{1/} Based upon 1970 County population of 963,132 persons
(Preliminary Report, U.S. Bureau of Census)

^{2/} Based upon 1990 County population estimate of 2,000,000 persons
(See Chapter III)

^{3/} Figures in parentheses are based upon total potentially developable acres

hood, community and large) park and recreational facilities. Including existing needs, 11,745 (18.35 square miles) additional acres will be required in Maricopa County by the year 1990. This may seem to be a tremendous requirement. However, if this total requirement were assumed to be needed in the MAG - VATTS area alone (See Plate 2), only 1.53 percent of the total 1,200 square-mile area would be required for these additional facilities.

A logical separation of data has been made in Table 10. So far, the discussion of present and future requirements has been in terms of deficiencies and needs. When the subject of regional parks is considered, however, a reversal of approach is necessary. In Chapter I, reference was made to a report entitled "A Study of Recreation and Parks in Phoenix and Maricopa County, Arizona" prepared by the National Recreation Association in 1958. Recommendations from this report were used in the acquisition of lands now part of the regional park system. It is certainly a compliment to elected officials and commissioners as well as planning staffs that researched ideas and recommendations were followed and implemented.

Based upon the desirable standard of 25 acres of regional open space land per 1,000 population, there would still be an excess of 60,417 acres of total land by the year 1990. It should be pointed out, however, that of developable land, there would be an excess of only 307 acres by 1990.

Future Open Space Requirements for Special Facilities

Golf Courses

Table 10 indicates that, by including both private and public golf courses in the present inventory, the future requirement of 809 additional acres is a minimal problem. It should be pointed out, nevertheless, that there are only five courses in the area that are strictly municipal in nature. Plans must be made for more municipal courses throughout

the regional area and located so as to be accessible to future population concentrations (See Plate B in the Appendix).

Hiking and Riding Trails

Since hiking and riding trails have not been inventoried in terms of acreage, data on these facilities has not been included in Table 10. As pointed out in Chapter IV, there are 700 lineal miles of trails presently proposed in Maricopa County, although only 65 miles are presently developed. On the basis of the recommended standard of 25 miles of trails per 50,000 population, a total of 1,000 miles would be needed by 1990.

As previously stated, problems of right-of-way acquisition and trail facility development still need considerable study. The incorporation of trails within a greater variety of multiple-use corridors appears to be a necessity.

Future Requirements for Schools

Future requirements for schools must be based on many more factors than just projected population growth. As pointed out in Chapter IV, however, there is a general relationship between recommended school standards and total population. It was determined that under present minimum standards there should be 5.68 acres of total school land per 1,000 population. This indicates that there should be 5,470 acres in present school property - a present shortage of 1,450 acres. Assuming the same standard for future needs and a projected population of 2,000,000 persons, approximately 11,360 acres would be required by 1990. This is a total existing and future shortage of 7,340 acres or 11.47 square miles of land. However, the precise amount of land needed for future school sites would require detailed studies and preparation of plans for a system of schools needed to serve each school district and such studies are beyond the scope of this report.

CHAPTER VI

RECOMMENDATIONS FOR THE DEVELOPMENT OF A REGIONAL OPEN SPACE PROGRAM

Basis for Goals and Objectives

It must be obvious, at least up to this point, that no mention has been made of goals and objectives for regional open space. To form a plan, goals and objectives are a necessity. But how can goals and objectives be defined until a hard look has been taken at existing problems and the possibility that these problems may be compounded into the future? It is hoped that the preceding chapters of this report have presented an analysis of these problems in such a way that goals and objectives can be determined and a program developed.

This report has been subtitled "An Evaluation of Recreational Land Use and Environmental Resources Conservation". Within this context, the regional open space system in Maricopa County should reflect the following outstanding assets:

1. A physical setting that provides diversity, uniqueness and unusual opportunities for visual amenities.
2. An availability of land, especially in the areas of projected future urban growth.
3. A natural system of open land corridors provided by the surface water drainage system and the irrigation system.
4. Climatic conditions that facilitate year-around outdoor recreational participation.
5. Agricultural lands that support a variety of farm crops, orchards, vineyards and commercial flower gardens.

6. A population with heterogeneous cultural and historical background.

Considering the above, it is suggested that the following specific goals, not necessarily in this order, be used for future open space planning:

1. Provision for varied and sufficient recreational opportunities for all segments of the population.
2. Conservation and management of all the region's natural resources, aimed at maintaining ecological balance.
3. Improvement of access to areas of natural beauty and the development of a system of multi-use open space corridors connecting recreational areas.
4. Preservation of historical and cultural areas and landmarks.
5. Scenic improvement and enhancement of the present environment to prevent further deterioration.

Review of Local Open Space Planning in Maricopa County

Plans for New Communities

Complementing the efforts of local governments are the efforts of the planned communities of Sun City, Carefree, Litchfield Park and the newly initiated Fountain Hills. All of their comprehensive plans have recognized the inherent advantages in properly providing for open space needs.

In addition, it should be noted that the consultants retained to prepare comprehensive plans for the Salt River and Fort McDowell Indian Reservations have pointedly emphasized the importance of including appropriate open space recommendations, e.g., as relative to the Central Arizona Project.

Local Plan Highlights (Selected)

It is beyond the scope of this study to contain a detailed textual analysis of each prepared local open space plan. For those persons interested in reviewing a local plan, however, please refer to the bibliography in the Appendix. Said

local plan, however, please refer to the bibliography in the Appendix. Said bibliography contains a major subject heading on 'Local Plans' that is all-inclusive.

Selected highlights obtained from local open space plans possessing regional significance, include:

(1) Various plans recommend that neighborhood parks be developed in conjunction with elementary schools, and that community parks adjoin junior high and high schools.

(2) The Glendale plan indicates that currently available open space will meet only 15% of the 1985 demand.

(3) The Mesa plan recommends that the City undertake a carefully phased program of implementing the "Canal Parks Project". Also, it calls for using one-half of a school site for public recreational space. Too, it is recommended that developers be requested to provide recreational space.

(4) The Phoenix plan calls for doubling the amount of land for recreation by 1990. It emphasizes that planning must occur now if present and future needs are to be met. To illustrate: "The critical shortage is in adequate space near users." Also, the report urges that priority be placed on providing facilities to older areas not adequately served by parks now, and for establishing park sites in developing areas. In summary, this plan required five years to prepare and it contains a host of other sound recommendations.

(5) The Scottsdale plan suggests there be a system of community parks to serve as more intensive recreational areas. Also suggested is a development concept for Indian Bend Wash. Further, the plan calls for the identification of other recreational uses such as golf courses, lagoon parks and hiking and riding trails.

(6) The Tempe plan recommends the development of a balanced park system to meet diverse needs. To illustrate: it calls for a system of neighborhood, district, community and citywide parks.

(7) The County's Northern Paradise Valley plan proposes that the land between the existing Paradise Valley Park and the proposed Central Arizona Project Aqueduct be used as an aquatic park.

Recommendations for Development of Local Urban Facilities

It has been mentioned repeatedly that local urban facilities are the problem and responsibility of respective jurisdictions. Within the framework of a regional government, however, there must be a concern for the total open space system. Therefore, some recommendations for future action in local urban areas are made.

Small Spaces

As previously noted, there is a very minimal development of mini-parks throughout the County. Since recent ideas have broadened the scope of mini-park use, it is recommended that a regional study group be formed to exchange ideas on municipal acquisition of small spaces and to promote the formation of citizens' groups to develop and maintain them.

There is also a need for a regional citizens' group to prepare a program for the promotion of more small parks and open spaces in commercial areas. Consideration should also be given to the drafting of proposed enabling legislation to require small open spaces in all types of new development.

Neighborhood-Community Facilities

In terms of recommended standards, neighborhood and community facilities within Maricopa County are highly inadequate, but actions to remedy this situation are constantly being undertaken. For example, only recently, the city of Avondale announced the purchase of a 4½-acre site for the development of its first public park. Also, Mesa recently received federal funds of over \$100,000 (to be matched by the city) to construct and develop two parks, one 18 acres and the other 34 acres in size.

Other applications for Federal assistance for local open space developments which are not in conflict with regional and area planning programs have been given favorable consideration by the MAG Regional Council. There must be continuous effort toward speeding up and expanding the planning and programming for local facilities.

The greatest future accomplishment that can be made at the neighborhood-community level is the implementation of true park-school plans and developments. Although many plans recommend this concept, very little has actually been accomplished. From the school inventories, it was noted that the few cases of schools and parks situated in close proximity to each other was the result more of accident than of design. As has been pointed out, however, nearly all municipalities have some type of recreational program using both park and school equipment and grounds. In the recent "1970-1971 Activities and Facilities Guide", available from the Phoenix Parks and Recreation Department, there is a listing of 120 schools, 42 parks and 20 city swimming pools offering supervised recreational activities in the city.

Recently, publicity was given to the plan for design of the new Trevor G. Browne High School around the park-school concept. Through the joint efforts of the Phoenix Union High School District and the City of Phoenix Parks and Recreation Department, the beginning phase of this effort has been accomplished. Although other plans of this type may have been made within the County, the implementation of the park-school concept so far made by this group is most encouraging.

In the June, 1970 issue of "The American County", the National Association of Counties announced an Achievement Award to Baltimore County, Maryland for their new areawide recreational program. The basic policy, established in 1949, was "to provide recreation direction only where wanted and where people show a willingness and desire to help themselves.." Through a cooperative working arrangement between departments of recreation and education, and local citizens' groups, an outstanding system of joint use of schools and recreation sites was developed.

It is recommended that within the framework of MAG, that a Task Force be organized to take advantage of the knowledge acquired from programs such as discussed

above. From a review of all information available, advice and recommendations should be made for a regional park-school multi-use program.

Large and Regional Parks

It has been demonstrated that, especially within the urbanized area of Maricopa County, there is a present as well as future need for more large parks designed for intensive use. In a following section of this chapter, recommendations are made for the development of a number of large parks which will demonstrably add to useful open space as well as providing diversity and interest to the present park and recreational systems.

Although acquisition of land for regional parks and open space reservations is not an immediate problem, development, due to the limitations of costs and financing, is a matter of concern. Plans for development, however, are not lacking. Nearly all of the regional parks are located in mountainous areas of generally the same geological origin. Within the County system, however, each park plan⁽²⁵⁾ is oriented toward a somewhat different historical or natural theme.

The only County park that is currently water-oriented is Lake Pleasant. Since local residents as well as visitors have demonstrated their intense interest in all types of water activities, much of the development program to date has been directed toward this area. There has also been a concentration of development in the Estrella Mountain area, most of which is in the adjacent Casey Abbott Park. Since this mountain area is rich in historical lore covering three major periods (the Indians, the trappers, and the settlers), future development will be directed toward this theme.

The White Tank Regional Park, located west of the Phoenix metropolitan area, is the largest park in the County system. Although it is planned that this area should remain essentially a wilderness, archeological remains are more extensive than in any other regional park. An interpretive program involving archeologists and students is contemplated.

To the north, both Cave Creek Park and Thunderbird Park are of geological significance. Historically, the Cave Creek area is known for many futile attempts to develop fortunes in mining, although it has been reported that possibly \$250,000 worth of gold was removed from the area, mostly prior to 1900. Although a relatively small area, Thunderbird Park exhibits a wide and interesting range of geologic phenomena, and a variety of rock types of several ages are represented. The geologic theme suggested for Thunderbird Park offers a unique opportunity for the development of an ecological laboratory easily accessible to all the urban population. An interpretative program should be developed through cooperation of professional geologists, college and university geology departments, and local rock and mineral societies.

Usery Mountain Park, east of the urbanized portion of Maricopa County, is on the border of the Mountain Region as described in the section on Geology in Chapter III. Since physical conditions are somewhat different from those found in Thunderbird Park, a geologic theme has also been suggested for at least a part of the Usery Mountain area.

McDowell Mountain Regional park is located northeast of the metropolitan area and is the second largest park in the County system. As discussed in Chapter III, Fort McDowell, the only fort ever in existence in Maricopa County, has had special historical significance in the settlement and development of the Salt River Valley. The remains of the fort itself are situated on the Fort McDowell Indian Reservation approximately one and one-half miles southeast of the park boundary. Nevertheless, it has been recommended that this area contain the major historical center for all of the Parks and for Maricopa County.

The cattle industry acquired a foothold in the McDowell country shortly after the establishment of the Fort in 1865. The area within the park is the best example of desert cattle range close to the Phoenix urban area. For this reason, Desert Cattle Ranching will be the predominant theme in the planning and development of this Park.⁽³⁰⁾ A working ranch is proposed including buildings, corrals and open range. Although not included in the report, it is recommended that consideration be given to also including a

large outdoor rodeo arena that would rival those of Cheyenne, Pendleton and Calgary. The predominance of horse owners, the interest in hiking and riding trails, and the mild winter season should make such a development a very popular one.

General Open Space Land Utilization

Plate 17, "Future Major Parks, Recreation and Open Space Land Areas", shows graphically the present and projected pattern of open space land utilization expected by the year 1990. The specific categories shown on Plate 17 are: 1) urban, 2) agricultural, 3) major park or recreation area, 4) desert, 5) mountain, 6) airport, 7) waterway and flood control structure, 8) expressway, freeway and parkway, 9) hiking and riding trail, and 10) scenic road. The foregoing generalized open space land categories are tabulated in Table 11 as follows:

TABLE 11
FUTURE OPEN SPACE LAND USES - 1990

<u>Open Space Category</u>	<u>Area in Square Miles</u>	<u>% of Total County Area</u>
Urbanized	620	6.72
Agriculture	680	7.37
Major Public Open Spaces	1,372	14.87
Desert or Mountains	6,554	71.04
Total County Area	9,226	100.00

The following sub-sections contain discussions of open space land areas. In each case, the text will be linked to Plate 17 in a meaningful way. The overall intent is to highlight existing conditions, indicate trends or needs, and to make recommendations that will enable Maricopa County to have a diversified pattern of open space land areas -- for 1990 to serve two million users.

Urbanized Area

It is vital to show the proposed area of urbanization because the overwhelming majority of the population in Maricopa County will reside here. Their recreational needs are the prime needs.

The amount of area occupied by urbanized areas in Maricopa County is expected to increase from 160 square miles in 1964 to 620 square miles in 1990. Most of the urban growth is projected in the Phoenix Urban Area, which is estimated to increase from 151 square miles in 1964 to 570 square miles in 1990.

By 1990, the Phoenix Urban Area may be solidly developed along the Black Canyon Highway (Interstate 17) to Deer Valley Airport, and northeast and east to approximately the proposed location of the Indian Bend Freeway. Urbanized development along or near the Apache Trail Highway will probably consolidate. Also, urbanization will occur on the eastern portion of the Salt River Indian Reservation, and at Fountain Hills just north of the reservation and west of proposed Lake Orme. The southeast expansion may extend eventually to Chandler and Gilbert. Expansion in other directions will probably extend south to South Mountain Park, west along the proposed location of the Papago West (Interstate 10) Freeway to Litchfield Park, and northwest along Grande Avenue to the town of Surprise.

Other urbanized areas in Maricopa County, such as Gilbert, Chandler, Buckeye, Gila Bend and Wickenburg will probably continue their outward expansion with development occurring first along or near major thoroughfares and then in the areas between these thoroughfares. By 1990, the Cave Creek-Carefree area and the rural communities of New River, Aguila, and Harquahala may become urbanized areas. The amount of area occupied by these urbanized areas in 1990 is expected to be approximately 50 square miles.

Whether urbanization actually occurs as envisioned on Plate 17, is dependent upon a number of basic factors. Some of these factors are sociological, others are economic; but each must be considered within the framework of physical patterns already established and the limitations these patterns exert upon the use of the land itself.

The urbanized areas in Maricopa County, particularly the Phoenix Urban Area, contain a sufficient supply of vacant or undeveloped land in a variety of sizes and locations suitable for every urban purpose. There is no evidence that supply or availability of land will limit development within the urbanized areas. Availability and locations suitable for a specific purpose such as local parks, however, will continue to influence land use patterns.

There are a number of factors which influence the suitability of land for urban development. Among these are topography and other natural features, existence of drainage and flood control problem areas, and the availability of public utilities.

Topographical features which render a particular piece of land unsuitable for the development of low or medium price homesites may constitute a valuable asset to expensive residences. The urbanized areas contain a certain amount of land with topography that is unsuitable for any type of intensive urban use. These areas may have great potential value to surrounding residences when included in a public reserve, which may or may not include intensive recreation uses.

In terms of open space goals, the City of Phoenix is pursuing the point mentioned in the preceding paragraph. In 1966, Phoenix adopted a resolution providing for the protection and preservation of open space and wilderness areas within the "Phoenix Mountains" area (as shown on Plate 17). Further, in 1969 "A General Open Space Plan for the Phoenix Mountains" was included in the City's "Park and Recreation Plan". Briefly, this plan has as its objective the preservation of the open character of the Phoenix Mountains and making it the second wilderness park in the City.⁽⁶⁰⁾ In the summer of 1970 a consultant was retained to prepare a report on specific recommendations needed to accomplish stated objectives. It is the recommendation of this report that interested agencies and persons cooperate fully to conserve this naturally scenic area. A corollary to this recommendation is that mountain-scapes warrant protection and preservation.

Another major area situated within the urbanized area awaiting improved open space usage is the Salt River flood plain. This matter is discussed later in this section under its own heading "Rio Salado Project".

Inherent in this discussion on urbanization is the firm recommendation that there is a continuing need to provide well-developed local-type park and recreational facilities covering the spectrum from mini-to-large parks. It is axiomatic that all park systems must be capable of meeting the needs of concentrations of people.

Agriculture

Within the central portion of Maricopa County there has been a constant absorption of agricultural land by urban development. Rising land value near the Phoenix Urban Area has contributed to the continuing use and development of agricultural land in the western portion of Maricopa County. More acreage will probably be developed for agriculture in western Maricopa County as agricultural land is converted to urban use in the Phoenix Urban Area. However, land presently used for agriculture in Maricopa County is expected to decline from an estimated 860 square miles in 1964 to approximately 680 square miles in 1990 as a result of expansion of urban development over lands presently used predominantly for agriculture.

The future expansion of the Phoenix Urban Area will result in further retirement of agricultural land in central Maricopa County. The continuing development of agricultural land in western Maricopa County will probably concentrate around the community of Aguila, in the Tonopah area, in Arlington Valley, in Rainbow Valley southeast of Buckeye, in Citrus Valley northwest of Gila Bend, around the community of Theba, and on the Palomas Plain north of Agua Caliente. The intensity of agricultural development in these areas will directly relate to the quantity and quality of water available for irrigation.

Although the future trend in the amount of land used for agriculture in Maricopa County is almost certain to decline, the rate of decline will depend upon the availability and cost of water, the price of farm products, technological changes, and urban pressures upon land resources now utilized for agriculture. The transfer of agricultural activities to western Maricopa County may for a time slow the decline in the

total County acreage, but water costs are likely to limit the extent to which increased agricultural acreage in western Maricopa County can offset the amount of land that will probably be taken out of agricultural production in the Phoenix Urban Area. Even with the declining acreage, however, agriculture will continue as an important source of income for Maricopa County.

The retention of agricultural lands is extremely important when viewed in the context of open space land goals and needs. One of the objectives in reserving open space in or near urbanized areas is to give space and form to urban development in order to create a healthier, more livable, and more attractive urban environment. It follows that it is in order to recommend the formulation of policies to encourage a diversity of agricultural pursuits. Chapter VII contains more information relating to said recommendation.

Desert or Mountainous Areas

The amount of area considered desert or mountainous in Maricopa County is expected to decrease to 6,554 square miles in 1990 as a result of urban expansion.

The desert or mountainous areas in 1990 will still include considerable quantities of land physically suited for urban or agricultural development. Some future development can be expected to occur in these areas. The location of this development would be influenced by topographical conditions, geology and soil conditions, and water resources.

Also, many of these are suitable for future parks and recreational facilities. Illustrative of this point are the BLM administered lands for which studies have been made to identify, evaluate, and develop those areas of high recreational and wildlife value.⁽⁸⁴⁾ In Maricopa County, as shown on Plate 17, there are seven such areas:

1. Harquahala Mountains
2. Big Horn Mountains
3. Wickenburg Mountains
4. Hieroglyphic Mountains
5. Saddle Mountain
6. Painted Rock Hills
7. Maricopa Mountains

These areas range in size from approximately 20,000 acres to almost 200,000 acres. In the near future if funds are available the BLM proposes to construct campgrounds, with trailer and tent spaces, and picnic tables, at selected spots in the Harquahala and Wickenburg areas.

It is recommended that the BLM develop along stated lines all seven named areas as funds permit. In this way, the western portion of Maricopa County will have a number of areas to attract outdoorsmen.

Another possible area for a regional park is in the vicinity of Santan Mountain in Pinal County. This area is located just south of Chandler Heights, which is situated in the southeastern corner of Maricopa County. Inasmuch as this park could serve residents of two counties, it is recommended that the Arizona State Parks Board consider this proposal further. The potential value of this area can be summarized as follows: the terrain is rich in desert growth with extensive stands of saguaro, and it is unusual in geological formations with extreme variations in elevation thus providing opportunities for lookout points.

Airports

As of August 1970, there were 35 airports in Maricopa County. Of this number, nine are listed in the 1968 "National Airport Plan".⁽¹⁵⁰⁾ This plan sets forth the general requirements of the national system for airport development. The need for such airport development is affirmed by the continuous growth and demands for air transportation and its significant contribution to the nation's economic progress. Airport

development is of major importance in Maricopa County, which is an area with unexcelled flying weather.

Table 12 includes the nine airports in Maricopa County listed in the 1968 "National Airport Plan". The general location for all of these airports is shown on Plate 17. Also, Plate 17 shows the general location of Carefree and Deer Valley Airports and Goodyear Auxiliary Airfield on the Gila River Indian Reservation.

TABLE 12
AIRPORT FACILITIES

<u>Airport Type</u>	<u>Area</u>	<u>Airport Name</u>	<u>Recommended Runway (Feet)</u>
B2	Buckeye	Municipal	3,600
GU	Chandler	Municipal	4,400
B2	Gila Bend	Municipal	3,600
GU	Litchfield Park	Private	4,300
GU	Mesa	Falcon Field	4,400
TR	Phoenix	Sky Harbor Municipal	10,000
GU	Phoenix	Phoenix-Litchfield Municipal Airport	4,500
GU	Scottsdale	Municipal	4,800
B2	Wickenburg	Municipal	4,300

B2 - Basic utility airport, or one that can accommodate 95 percent of the aircraft types in the general aviation fleet except for transport type aircraft and some twin-engine aircraft over 8,000 pounds in weight.

GU - General utility airport, or one that can accommodate all the aircraft types in the general aviation fleet except for transport type aircraft.

TR - Air carrier airport, or one that can accommodate all types of aircraft in the general aviation and air carrier fleets.

In terms of open space land goals, airport environmental planning is essential. One of the more serious airport environmental problems is the compatible use of land and airspace. Action to combat these problems is occurring on two fronts.

Nationally, as relative to the development of transportation facilities, the Department of Transportation Act of 1966 declared as a matter of national policy that: "...special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." The Secretary of Transportation is authorized to carry out this policy by withholding approval of any program or project requiring the use of such land unless there is no feasible alternative to such use, or unless the program includes all possible planning to minimize harm to the aforementioned open space lands.

As a result of the above-quoted law, Federal inter-departmental cooperation has been enhanced. For example, the Department of Housing and Urban Development (HUD) stipulates that airport system planning shall be an integral part of the comprehensive planning program for a metropolitan area. Further, HUD provides financial aid for this planning function via its "701" program. Too, HUD administers its Open Space Land program to develop compatible environments for airports.

The use of land adjacent to or in the immediate vicinity of airports is recommended to be compatible with normal airport operations. To illustrate: these buffer zones can be used for open space land uses such as parks, golf courses, agriculture, or commercial and industrial uses.

From the regional point of view, there is a need for a comprehensive airport plan for a system of airports providing for the separation of scheduled, non-scheduled, and private flying activities in Maricopa County.

Military Installations

The future size and function of military installations are not clear. Presumably the nation will have to maintain a very substantial defense posture for some decades as an important part of its foreign policy. However, it does not necessarily follow that

the size and function of military installations will change merely because there is change in the nation's overall military posture. The size and function of military installations will change only if the nation's overall military posture requires it. For purposes of this report, it is assumed that military installations in Maricopa County will maintain their current size and function.

In terms of open space land goals, it should be remembered that conditions can change dramatically and Federal lands may be deemed surplus. To illustrate:

The Surplus Property Act of 1944 states:

"Certain Federal surplus real property may be acquired by State and local governments through the General Services Administration for public park and recreational purposes at 50 percent of fair market value, based on its highest and best use, and for historic monument or wildlife conservation uses without monetary consideration."(146)

In the interval, the "Hohokam Resource Conservation and Development Project" organization has spearheaded a drive to accomplish two recreational aims:⁽¹³³⁾

1. State 85 View Point. Negotiation is underway with appropriate Federal Departments for the Arizona State Highway Department to acquire sufficient land for a rest stop along Highway 85 (between Gila Bend and the Maricopa-Pima County line). This rest stop would have routine facilities; however, it would be unique in that it would permit tourists to observe planes at gunnery practice.

2. Crater Range Park. This proposed park would be located in a very scenic area in the midst of the Crater Range mountains, just north of the Maricopa-Pima County line. It is anticipated that camping facilities would be provided thus allowing tourists to remain for an extended period of time. In this manner, they would enjoy leisurely a very interesting portion of the Sonoran desert. At this time, negotiations are underway involving representatives from all levels of government. It is hoped that this park will become a unit of the State parks system.

It is recommended that MAG support these proposals to enhance recreational opportunities in the western portion of Maricopa County.

Indian Reservations

The Salt River, Fort McDowell and Gila River Indian Reservations are the only Indian reservations in Maricopa County which appear to have foreseeable potential for extensive private development. Future decisions relating to the location of the proposed Orme Dam will influence the type and extent of development of lands in the eastern portion of the Salt River Indian Reservation and on the Fort McDowell Indian Reservation. The Salt River Indian Reservation, because of its location in relation to the Phoenix Urban Area, can be expected to develop earlier and more rapidly than the somewhat more remote Fort McDowell and Gila River Indian Reservations.

The extent to which development actually occurs on the Indian reservations will depend in large part upon decisions made by the Indians and their Tribal Councils. The Department of Interior and Bureau of Indian Affairs are encouraging the Indians to utilize the development potential of their lands, and long-term leasing legislation will help to make these lands more attractive for private development.

In a recent report for the Salt River Indian Reservation, the consultant stated: "Taking the broad, overall view of the Salt River Community, the entire 75 square mile area should be considered as potentially one great park, with all development being treated in a park-like manner. At this moment, the entire reservation is a beautiful open space ... with a great variety of desert and mountainous landscapes."⁽⁷⁷⁾

In terms of open space land goals, it is recommended that the Indian Reservations be developed accordingly. In addition, any areas of historical interest should be preserved. To illustrate: there is "Snaketown" on the Gila River Indian Reservation, and "Historic Fortaleza" on the Gila Bend Indian Reservation.

Expressways, Freeways and Parkways

The Phoenix Urban Area adopted a "Major Street and Highway Plan" based upon recommendations made by a consulting firm in a 1960 study. Since that time there have been modifications to the plan; some of the modifications were adopted and some are still under review. Plate 17 shows graphically those principal highways that have regional significance.

In terms of open space land goals, the enactment of the Federal "National Environmental Policy Act of 1969" will result in a dynamic impact on future highway construction in Maricopa County. Briefly, the Act specifies that all federal agencies shall utilize a systematic, interdisciplinary, coordinated approach in planning and in decision-making which may have an impact on man's environment. ⁽¹⁴¹⁾

In February 1970 the Federal Highway Administrator released a publication that illustrated the progress and potentials for the joint development of highway corridors. ⁽¹⁴⁹⁾ Under this concept, non-highway activities such as housing, parking, recreation, and others, are located in airspace above or below the highway or on land adjacent to it. Examples of accomplishments, include: development of mini-parks, development of recreational facilities, relocation of school and playground over the highway, and specialized landscape planting on highway right-of-way. More specifically, and closer to home, this concept has been incorporated into the planning for the proposed Papago Freeway. To illustrate: "An outstanding feature of the architectural design is a high crossing - about one hundred feet - over Central Avenue together with separation of the eastbound and westbound lanes by more than a city block. This will be a graceful structure spanning a 'Central Park' and will be a focal point of great interest along the freeway route." ⁽¹³¹⁾

In view of the fact that most of the principal highways shown on Plate 17 still have to be constructed, it is recommended strongly that all provisions of the "National Environmental Policy Act of 1969" be adhered to stringently. The net result will be a

principal highway network that is needed, aesthetic in design, and amenable to multiple use. It should be noted, however, the attainment of the desired objective calls for full cooperation at all levels of government.

Other recommendations herein submitted pertain to "Highway Beautification". In 1965 roadside beautification became a national policy. The laws adopted and the grant programs established, at the Federal level, are still meaningful. It is now the responsibility of the State and local governments to control billboards and junkyards along interstate and primary highways. All existing legislation and policies should be reviewed periodically to be certain that beautiful scenic vistas are not marred and scarred senselessly. In fact, the principal highways are gateways to and through an urban area; therefore, it is highly desirable to make them scenic too.

Also, by a combination of tigher law enforcement, and civic cooperation, the problem of "littering highways" could be reduced substantially. It is sad to see the "Desert Foothills Scenic Drive" become a receptacle for the litter of the thoughtless. Destruction of the attractive plant material signs along this route poses a constant problem of repair and maintenance for the citizens who have voluntarily provided and installed these identification signs.

Waterways

The principal waterways in Maricopa County are shown on Plate 17. For purposes of this report, the term "waterways" includes rivers, creeks, washes, lakes, canals, flood control channels and an aqueduct. Singly, or in combination, the waterways contitute a unique open space asset. In fact, a glance at Plate 17 shows dramatically the influence exerted by the waterways in establishing a pattern of open space land utilization. Waterways are nature's boundaries and they form a system of corridors that many planners consider the most desirable form of open space and recreational land use. The following discussion contains recommendations to enhance the conservation or development of waterways for open space needs.

Flood Plains

Flood plains are defined as the relatively flat area or low lands adjoining the channel of a river, stream or watercourse, or other body of standing water, which has been or may be covered by flood water. In Maricopa County, the flood plain areas are subject to periodic flooding.

The flood plains have been subjected to diverse uses, but not always wisely. Now is the propitious time to conserve, and develop appropriately, this natural resource. It is recommended that a sound program be developed for management of the flood plains.

In August 1970 the Flood Control District of Maricopa County received a draft report relative to the above recommendation. The report was prepared by James E. Goddard who is a nationally recognized authority on the subject. In his report he recommended the enactment of legislation to provide for a statewide program of flood plain regulations and other actions as part of a flood plain management program for the State of Arizona. The preamble of the proposed act summarizes its purposes, and is quoted accordingly:⁽¹³²⁾

"AN ACT to empower the State of Arizona and to encourage and assist local political subdivisions to establish along watercourses, streams, and lakes appropriate regulations as an integral part of flood plain management to minimize flood damages and reduce the height and violence of floods insofar as such are caused by obstructions restricting the capacity of the floodways; to prevent unwise encroachment and building development within flood plain areas; to protect the life and property of citizens who have unwisely settled in such areas; to provide regulations toward enhancement of property values of abutting flood plain lands, to protect public health and to reduce the financial burden imposed on the community, its governmental units and its citizens if such land is subject to flooding; to prescribe the procedures for establishment of regulations and amendments thereof; and to provide for the enforcement of the regulations."

It is evident that State enabling legislation is needed urgently. In turn, the local jurisdictions must prepare, adopt and enforce flood plain regulations. Concerted, prompt action could result in the multiple use of flood plain lands to preserve open space, satisfy the needs of urban development and contribute to community values.⁽¹⁴²⁾

Specifically, in open space terms, flood plain lands could be used as follows: for a natural greenbelt (e.g. the Hassayampa River especially in the vicinity of Wickenburg), for hiking, riding and nature trails (e.g. the Agua Fria River), for recreation (e.g. the Salt River), for wildlife areas (the Gila River), and for agriculture (e.g. Centennial Wash).

Rio Salado Project

For several years this project was no more than an expression of hope. Recently, the Valley Forward Association accepted the role of catalytic agent to obtain plans and measures for the implementation of this project.

What is the Rio Salado Project? It can best be summarized by submitting verbatim the "Background Statement" on the project that was released by Mr. James E. Patrick, President of Valley Forward Association. The quoted statement is as follows:

"The Salt River (Rio Salado) is normally a dry stream bed cutting through the cities of Phoenix and Tempe, and bordering the Salt River Indian Reservation and the City of Mesa. Following periods of excessive rainfall, or snow melt in its watershed, the Rio Salado floods thousands of acres of rural and urban land. The U.S. Army Corps of Engineers, and the Bureau of Reclamation, are both planning projects that, together, will control flooding between the proposed Orme Dam site, east of the Phoenix metropolitan area, and the Town of Buckeye, west of Phoenix, Arizona, a distance of forty miles. About sixty-five percent of the proposed forty-mile project area is urban in character.

"With the river confined to its bed and the threat of flooding removed, the adjacent property should be redeveloped to optimize the potential for low-cost housing, recreation and other public and private uses. The proposed project would incorporate small lakes or lagoons as a part of the flood control system. Housing would be enhanced by the openness of recreational and park-like areas. The possibility of locating new employers in this area to provide jobs for residents would be explored for its economic and environmental impact.

"Along the river's ill-defined banks are substandard, as well as good, housing areas, industries, an airport, a golf course, a sewage plant, a freeway, a regional park and a major university. A considerable amount of the property is occupied by low-income families of Mexican and Negro

origin. Much of the urban area adjacent to the Rio Salado is blighted due to substandard housing, inadequate or non-existing public utilities and unpaved streets. The dry river bed serves as a barrier -- socially, economically, physically and aesthetically. Although the project includes other than blighted areas, the overall lack of improvement for the entire length of the Rio Salado is noteworthy.

"It was with this background in mind that the Fifth-Year Design Studio of the College of Architecture at Arizona State University accepted the challenge of combining flood control with environmental design to convert the Rio Salado from a scar to a major asset of the metropolitan area. Initial studies were made in 1966, with subsequent studies in 1968 and 1969. The work of the College of Architecture does much to establish the potential for community benefit that will derive from a completed Rio Salado project. It is the purpose of the Valley Forward Association to explore all development possibilities that might enhance the Phoenix urban environment."(153)

The recommendation on the Rio Salado Project can be summarized tersely: Aid the Project for it Aids Maricopa County. To elaborate, however, this multi-purpose project is truly grand in scale and could provide the Phoenix Urban Area with a recreational potential - featuring water-oriented facilities - that would be enjoyed and lauded by all. In fact, the local Cities of Mesa and Tempe have already recommended in their comprehensive plans that large parks be so located.

BLM Green Belt Lands

The BLM has designated as a green belt area (under the concept of multiple-use management) the public lands that lie along the Gila River Valley from the confluence of the Salt and Gila Rivers to Mohawk (in Yuma County). They are the remaining public lands in the bed of the Gila River, on the adjacent flood plain, and in access corridors thereto. The major public values involved are nesting areas for doves, public recreation, historical importance, and flood and erosion control. The significance of this prudent action is noted in the text of a U.S. Corps of Engineers report: "A green-belt that is preserved on the flood plain can provide aesthetic enhancement of the area and can serve as a natural watercourse for storm waters."(142)

It is recommended that minimum type recreational facilities be provided at key sports. e.g. campgrounds with tables, restrooms, good drinking water, and fireplaces. In this way, this natural resource area will be enjoyed and not despoiled.

Arizona Game and Fish Department

This department has already pursued a policy of using the flood plains mostly along the Gila River - as recommended by the BLM - for wildlife areas as shown on Plate 17. The following table contains pertinent data:

TABLE 13
ARIZONA GAME AND FISH DEPARTMENT LAND RESOURCES⁽⁸⁴⁾

<u>Name</u>	<u>Land Status</u>	<u>Total Acreage</u> <u>Land -- Water</u>	
Arlington Wildlife Area	Deed/Lease	430	50
Base & Meridian Wildlife Area	Lease	123	20
Gila River Wildlife Area	BLM Withdrawal or Agreement	6,896	
Paradise Valley	Lease	40	
Robbins Butte Wildlife Area	Deed	300	20
Painted Rock Wildlife Area	Lease	5,426	150
TOTAL		13,215	240

With the exception of general roads and parking facilities at most areas administered by the Game and Fish Department, only the Painted Rock Wildlife Area has some recreational development. It is recommended that minimum type facilities be provided at all areas as suggested previously for BLM administered lands. Further, it is recommended that a portion of the Painted Rock area be developed more intensively for park purposes. Too, further consideration should be given to the establishment of wildlife areas on the Centennial Wash (north branch), and on New River and Sand Tank Wash.

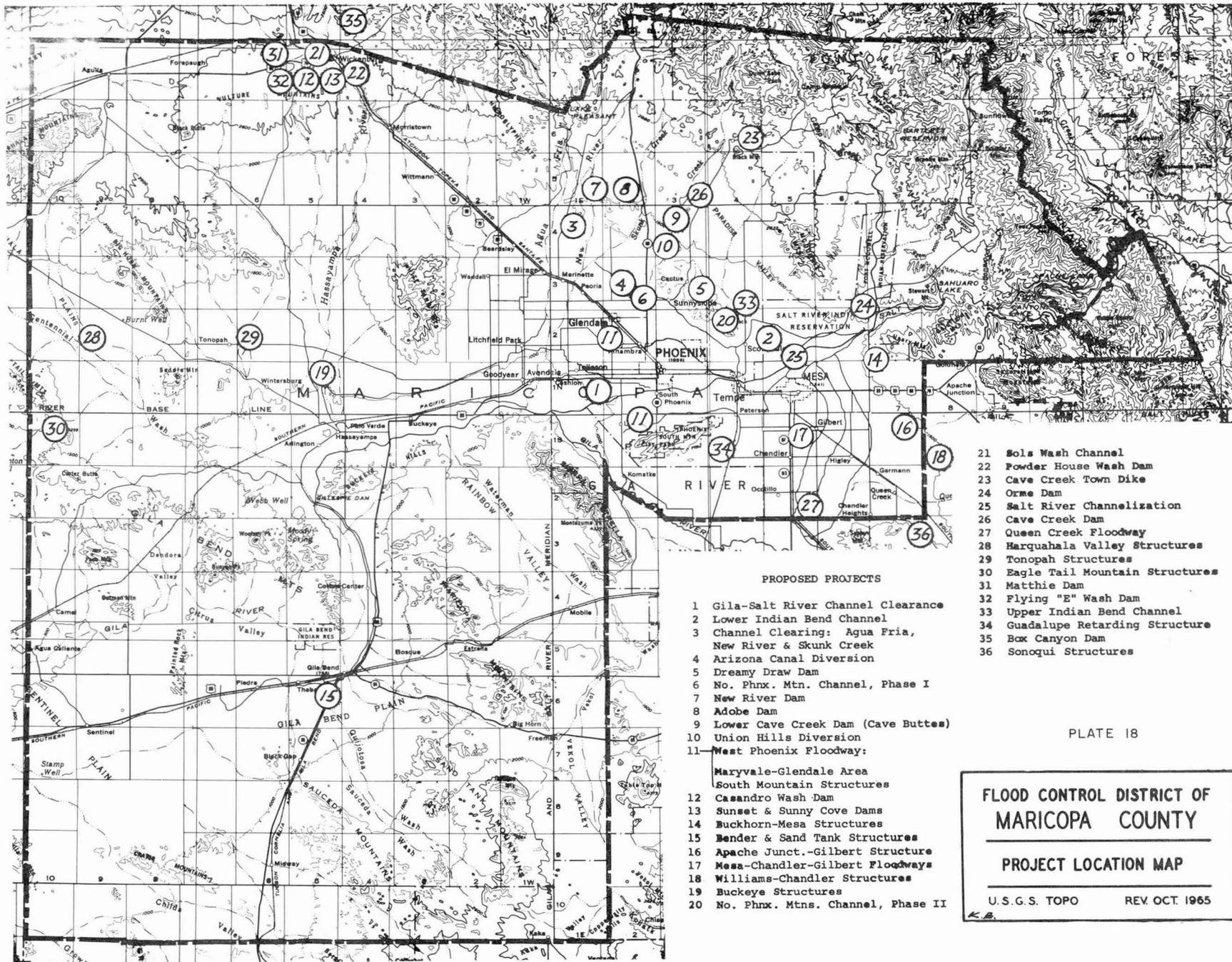
Flood Control District of Maricopa County

Maricopa County has a comprehensive flood control program, and it is administered by the Flood Control District. It concerns drainage areas within or adjacent to the County, major flood control problems, recommended solutions to prevent or minimize flood damage, and cost estimates of structural measures required. Although flood control is the primary objective of this program, consideration has been given erosion control, recreation, irrigation, water storage and ground water recharge. It is important to note that the major flood problem areas are located in or near the urbanized areas.

Flood damage can be reduced through corrective and preventive measures. Corrective measures are primarily the construction of dams and channel improvements. Preventive measures are primarily flood plain management methods, such as zoning ordinances that would preserve or establish floodways and thus provide safety for life and property.

High priority should be given plans for corrective flood control measures. Steps should be taken to preserve adequate floodways as indicated by various detailed studies undertaken by the U.S. Corps of Engineers for Maricopa County. To date, six studies have been published, and they are listed in the bibliography under item numbers 118 and 119. Target date for the completion of the remaining four studies is June 30, 1972. The areas still under study are the Hassayampa River, Sand Tank Wash, Centennial Wash and Waterman Wash.

In 1963 the Board of Directors of the Flood Control District of Maricopa County adopted its "Comprehensive Flood Control Program Report". Plate 18, "Flood Control District of Maricopa County - Project Location Map" shows schematically the generalized location of the 36 proposed projects. Since this plate was last revised in October 1965, project numbers 16 and 18 have been completed. The projects are diversified: either separately or in combination they call for the construction of 12 dams, 13 levees



- 21 Sols Wash Channel
 22 Powder House Wash Dam
 23 Cave Creek Town Dike
 24 Orme Dam
 25 Salt River Channelization
 26 Cave Creek Dam
 27 Queen Creek Floodway
 28 Harquahala Valley Structures
 29 Tonopah Structures
 30 Eagle Tail Mountain Structures
 31 Matthie Dam
 32 Flying "E" Wash Dam
 33 Upper Indian Bend Channel
 34 Guadalupe Retarding Structure
 35 Box Canyon Dam
 36 Sonoqui Structures

PROPOSED PROJECTS

- 1 Gila-Salt River Channel Clearance
- 2 Lower Indian Bend Channel
- 3 Channel Clearing: Agua Fria, New River & Skunk Creek
- 4 Arizona Canal Diversion
- 5 Dreamy Draw Dam
- 6 No. Phnx. Mtn. Channel, Phase I
- 7 New River Dam
- 8 Adobe Dam
- 9 Lower Cave Creek Dam (Cave Buttes)
- 10 Union Hills Diversion
- 11 West Phoenix Floodway:
 - Maryvale-Glendale Area
 - South Mountain Structures
- 12 Casandro Wash Dam
- 13 Sunset & Sunny Cove Dams
- 14 Buckhorn-Mesa Structures
- 15 Bender & Sand Tank Structures
- 16 Apache Junct.-Gilbert Structure
- 17 Mesa-Chandler-Gilbert Floodways
- 18 Williams-Chandler Structures
- 19 Buckeye Structures
- 20 No. Phnx. Mtns. Channel, Phase II

PLATE 18

**FLOOD CONTROL DISTRICT OF
 MARICOPA COUNTY**

PROJECT LOCATION MAP

U. S. G. S. TOPO REV. OCT. 1965

and flood-detention basins, and 11 channel improvements. It should be noted that some of these projects are U.S. Corps of Engineer projects, and others relate to the Soil Conservation Service.

In terms of open space land utilization, there are potentially many excellent opportunities. These opportunities merit inspection as a result of the "National Environmental Policy Act of 1969". The U.S. Corps of Engineers now prepares an environmental study for any water-resource development project that it may undertake. In short, an environmental study is an assessment of the impact of structural and non-structural alternative plans of improvement upon the environment, with a view to recommending the best plan to satisfy the greatest needs. In Maricopa County, there are several flood control structures that could serve as the nucleus for intensively developed aquatic parks; for example, Adobe, Cave Buttes and New River Dams. Also, the flood-detention basins, which generally do not have permanent pools, may have recreational prospects, e.g. hiking trails, golf courses and other similar open uses. Finally, the land area situated adjacent to a flood-detention basin is ideally suitable for open space use. To phrase it differently, such land is not suitable for urbanization.

It is recommended that serious consideration be given to the development of water-oriented parks behind flood structures. Also, consideration should be given to the development of limited facilities in the general area of flood-detention basins. In both cases, a key criterion is the establishment of facilities in those areas that currently are not served satisfactorily.

Central Arizona Project (CAP)

The general location of the proposed Central Arizona Project is shown on Plate 17. At this juncture, it is impossible to submit detailed data on many aspects of the project because solutions to a host of perplexing problems have yet to be developed or accepted.

Recently, the U.S. Department of the Interior issued a folder on the project that contains a variety of interesting, generalized data.⁽¹⁴⁸⁾ For example, Orme Dam and Reservoir and the aqueduct are covered accordingly:

"Orme Dam, an earthfill structure, will be located about 25 miles northeast of Phoenix, near the confluence of the Salt and Verde Rivers. The multi-purpose storage reservoir will be operated with the present Salt River Project storage system, as well as the Colorado River Aqueduct system, and will provide terminal regulatory capacity for the Granite Reef Aqueduct, flood control capacity to meet the requirements of the Phoenix metropolitan area, sediment control, and additional conservation capacity. Orme Reservoir will also provide an excellent outdoor recreational facility for Phoenix metropolitan area residents. Recreational development of the entire reservoir, including Indian lands and Federally-owned lands adjacent to the reservoir, will be in accordance with the coordinated master plan approved by the Secretary of the Interior.

"An intake channel and high-lift pumping plant located on the south shoreline of the Bill Williams River arm of Lake Havasu, some 2½ miles upstream from Parker Dam, will divert Colorado River water for Project uses. The pumping plant will lift water over 800 feet from the lake to the inlet portal of the 6½-mile-long Buckskin Mountains Tunnel. The Granite Reef Aqueduct will carry water from the tunnel about 190 miles to Orme Dam. The concrete-lined aqueduct will have a maximum capacity of 3,000 cubic feet per second. In addition to the initial pumping plant at Lake Havasu, the Aqueduct will require four relift pumping stations located at the Bouse Hills, Little Harquahala Mountains, Belmont Mountains and near the Hassayampa River. To deliver water from the Colorado River to Orme Dam will require a total pump lift of about 1,200 feet."

In particular, Orme Lake will be closer to downtown Phoenix than any of the other lakes on the Salt River. The aquatic recreational opportunities are outstanding. Also, dependent on the amount of Colorado River water received annually, and in combination with allocations of the water, it may be possible to develop aquatic parks at points near the alignment of the aqueduct. For example, the Maricopa County Planning Department's Plan for Northern Paradise Valley⁽³⁴⁾ shows a large area adjoining the Cave Creek Reservoir that has potential for future park and recreation use.

In terms of open space, it is recommended that all governmental subdivisions be given the opportunity to be involved directly in the planning and decision-making stages since CAP will affect all residents of Maricopa County.

Canal Parks

It is beyond the scope of this report to cover the subject of canal parks in detail. Plate 17 shows the 200 mile system of canals within the Phoenix Urban Area.

Note: The canals are not drawn to scale.

In 1964, the Maricopa County Parks and Recreation Commission endorsed a report entitled "Canal Parks - Guidelines for Their Planning and Development". The purpose of the report was as follows:

"To provide a general, comprehensive plan composed of statements and graphic material to serve as guidelines for the physical development of a canal park program in Maricopa County, to the end that it fits within the recreational needs of an ever-expanding population - a plan from which we can achieve something aesthetically pleasing, that conserves natural beauties, is financially sound and flexible enough to allow for change and expansion - a plan that can serve as a reference guide to those wishing to join this canal park project."(40)

Said plan recommended that the park oases could be spaced at intervals of 2.5 to 5 miles as dependent on localized conditions. Uses of the parks could include picnicking, boating, fishing, and several other related activities. It was emphasized in the report that such a system of canal parks would not only be unique, but it would serve a utilitarian purpose in fulfilling partially the recreational needs of countless numbers of residents and visitors.

It is recommended that the report be re-evaluated by the Maricopa County Parks and Recreation Commission, and updated if warranted. In fact, the City of Tempe has already recommended in its open space plans the development of canal parks.

Major Parks and Recreation Areas

Major existing and proposed parks and recreation areas are shown on Plate 17. A glance at the plate reveals that Maricopa County will be served splendidly from a spatial viewpoint.

This discussion is limited primarily to factors not covered previously. Accordingly, recommendations contained herein are directed to the Arizona State Government, Maricopa County, and its municipalities.

Arizona State Government

It is recommended that the Arizona State Parks Board continue to establish additional state parks in Maricopa County. Previous sections of this chapter have referred to this matter. One other possibility, as shown on Plate 17, is the acquisition of the Gatlin Ruins site near Gila Bend. This site could become a historical park containing interesting illustrative material on the culture of the Hohokams.

It is recommended that MAG support the Arizona State Parks Board in repealing the following operational limitation if the Board desires such support: "The State Parks Board has a legal restriction that it may not establish a park over 160 acres without special authorizing legislation."⁽⁸³⁾ This acreage limitation is unrealistic when one realizes that the Board could under the Federal Recreation and Public Purposes Act petition the BLM to patent as much as 6,400 acres of land annually for State park purposes.

It is recommended that MAG cooperate with the Arizona State Parks Board on preserving historic sites in Maricopa County. Just this summer the Board submitted its interim plan for preserving historic sites (an inventory of archeological, historical and cultural places) to qualify for Federal funds. By January 1, 1972, the Board must submit its five-year comprehensive State Historic Preservation Plan. Continued local cooperation is essential and will be beneficial.

It is recommended that MAG cooperate fully with the State Land Commissioner in his efforts to revamp state land management practices so that State standards will either equal or surpass Federal standards. By following said course of action, local political subdivisions may be able to acquire needed lands for open space purposes.

Local Political Subdivisions

It is recommended that Maricopa County give consideration to the acquisition of certain land for park purposes if CAP water is adequate. A series of aquatic oriented parks would be a recreational asset.

It is recommended that Maricopa County continue to develop the large parks in its system that are not classified as regional parks. The adopted "Maricopa County Regional Park System Plan" stresses development. It should be noted that overall development in the large parks will be more extensive than that in the regional parks. There will be many similar features such as picnic areas, camp sites, and hiking and riding trails. At the same time, the large parks will contain facilities such as play-fields, golf courses, tennis courts and swimming pools.⁽³⁸⁾ In this manner, the desires of potential park visitors will be fulfilled.

It is recommended that full support be given to Maricopa County officials, and to our Congressional delegation - to aid in the passage of HR 10837. In July 1970, the House of Representatives passed this bill, and it is now pending before the Senate. Briefly, this measure would permit Maricopa County to purchase in bulk nearly 70,000 acres of federal land now under lease and within the County's park system. The County Manager's office indicated that in buying all the acreage, the County would ultimately save taxpayers approximately \$100 million, the estimated current market value of the lands.

It is recommended that the municipalities in Maricopa County who have proposed large parks over 100 acres, as shown on Plate 17, be encouraged to acquire and develop

said sites. Details on the sites are contained in the specific plans of concerned municipalities. The bibliography contains a complete listing of plans prepared by municipalities within Maricopa County. Also, in connection with the above recommendation, it should be noted that Phoenix will be taking great strides in this direction. Just recently the electorate endorsed overwhelmingly a \$9,000,000 parks bond issue to be expanded between now and 1980.

Hiking and Riding Trails

Hiking and horseback riding for pleasure are popular recreational activities in Maricopa County. Plate 17 shows schematically the major trail system.

It is recommended that all cooperating agencies and organizations continue their efforts to complete the development of the system. Please refer to Chapters II and IV for previously described inventory data and shortcomings including the need to acquire rights-of-way and marking of the trails.

Also, it is recommended that efforts to incorporate the Sun Circle Trail (the focal point of the system) into a statewide and national system of trails be continued.

Scenic Roads

Although there are numerous scenic roads in Maricopa County only three of them are featured on Plate 17. They include: the world-famous Apache Trail, the very interesting Desert Foothills Scenic Drive, and the proposed Margie's Cove.

It is recommended that MAG cooperate with the Arizona Highway Department to determine specific roads that may be developed similarly to the Desert Foothills Scenic Drive. Also, reference should be made to the Maricopa County Planning Department's report on this scenic highway. ⁽³³⁾

It is recommended that MAG cooperate with the Hohokam Resource Conservation and Development group to make "Margie's Cove" scenic road a reality. The

proposal calls for a 15-mile scenic loop winding through a mountainous region of the Sonoran desert in the southwestern portion of Maricopa County.

In summary, concerted effort is essential to preserve the scenic vistas that constitute our heritage.

CHAPTER VII

OPEN SPACE LAND PLANNING ADMINISTRATION

This chapter contains an open space oriented discussion on selected Federal legislation, existing and proposed state enabling legislation, Federal-aid programs, and methods to acquire and preserve open space lands. It is important to note that usually no one act, program or technique represents the total answer to a particular problem. The answer lies in the prudent selection and application of a variety of approaches for the solution of a given problem. Further, it is not within the scope of this study to cover each item in detail, but rather, to indicate methods of plan implementation.

In order to be successful there must be a plan, adequate legislation, public support, and administrative support. This applies to all phases of public physical planning including but not limited to school, park, and other open space plans.

Federal Legislation

On February 10, 1970, President Nixon issued his "Message on Environment." (136) In this message he outlined a comprehensive 37 point program, embracing 23 major legislative proposals and 14 new measures to be taken by administrative action or Executive Order in 5 major categories:

- Water Pollution Control
- Air Pollution Control
- Solid Waste Management
- Parklands and Public Recreation
- Organizing for Action

The President indicated that his program could be undertaken now, and it would move us forward towards meeting this common goal: "...the rescue of our natural habitat as a place both habitable and hospitable to man." The proposed program is now undergoing consideration by Congress.

Land and Water Conservation Fund Act of 1965

In April 1970 the Nixon Administration proposed a 50% increase in federal spending (from \$200 to \$300 million) for buying and developing new parks and recreational areas via the Land and Water Conservation Fund. It is important to point out that the above fund represents a major portion of available dollars for Maricopa County political subdivisions to acquire and develop parks. It is hoped that Congress approves the President's recommendations.

Previously Outlined Acts

Four other key Federal Acts were previously outlined. Please refer to Chapter IV to review highlights of the Recreation and Public Purposes Act of 1954 and the Classification and Multiple Use Act of 1964. The latter Act expires at the end of this year; however, legislation has been introduced to extend it for an additional 2 years. Also, please refer to Chapter VI for data on the Surplus Property Act of 1944 and the National Environmental Policy Act of 1969. These Acts all exert influence on local open space programs.

The Public Land Law Review Commission Report

In June 1970 the Commission released its eagerly-awaited voluminous report that required 5 years to prepare at a cost of several million dollars. Overall, it included 137 recommendations concerned with virtually all Federal land laws and policies applicable to "one third of the nation's land." More specifically, there are recommendations on the following principal subjects: ⁽¹³⁵⁾ Planning Future Public Land Use, Public Land Policy and the Environment, Timber Resources, Range Resources, Mineral Resources, Water Resources, Fish and Wildlife Resources, Intensive Agriculture, the Outer Continental Shelf, Outdoor Recreation, Occupancy Uses,

Tax Immunity, Land Grants to States, Administrative Procedures, Trespass and Disputed Title, Disposals, Acquisitions, and Exchanges, Federal Legislative Jurisdiction, Organization, Administration, and Budgeting Policy.

This in-depth report is now under review by all concerned parties. It is expected that legislation will be introduced next year to implement portions of the report. Some of the recommendations are controversial; therefore, it is impossible to predict what may occur. For sure, however, the recommendations contained in the report -- if implemented -- would certainly affect open space planning in Maricopa County. It follows that MAG, and other concerned parties, should submit their views to the State's congressional delegation and other interested parties.

State Enabling Legislation

Authority for county planning and zoning is derived from Title II, Chapter 6, Articles 1 and 2 of the Arizona Revised Statutes. Authority for cities and towns to adopt zoning regulations is derived from Title 9, Chapter 4, Article 6. There is not permissive state enabling legislation for planning by cities and towns.

All elements of physical planning, at the county level, would be benefited by improved state enabling legislation that has been proposed, and for which state legislation enactment thereof has been requested over a period of many years.

Proposed new and improved state enabling legislation for county planning was introduced in 1968 and 1970. Proposed legislation listed the elements that should or could be included in a comprehensive county plan. Specifically, in terms of open space it included parks, hiking and riding trails, airports, flood plain zoning and several other related elements of planning. Also, the bills provided for the preparation of subdivision regulations. Unfortunately, the proposed legislation was not enacted by the State; consequently, it is necessary to continue efforts to secure the necessary state enabling legislation.

Flood Plains Management

There is a need for specific enabling legislation for this purpose. Please refer to Chapter VI for data on this subject.

Open Space Land Act - A Proposal

The Advisory Commission on Intergovernmental Relations (ACIR) published a report in 1965 that contained a draft model act entitled "Open Space Land Act".⁽¹²⁸⁾ The ACIR recognized the fact that the draft was silent on several questions of state policy; however, it recommended consideration of the draft to states and their political subdivisions. Local modifications could be incorporated where necessary.

The purpose of the draft legislation is as follows:

"Legislation is suggested to states which would (a) provide for acquisition by the states of interests or rights in real property which could include, among other interests or rights, conservation easements designed to remove from urban development key tracts of land in and around existing and potential metropolitan areas and (b) authorize local units of government to acquire interests or rights in real property within existing metropolitan areas for the purpose of preserving appropriate open areas and spaces within the pattern of metropolitan development.

"The states should equip themselves to take positive action in the form of direct acquisition of land or property rights by the state itself, especially in (a) the emerging and future areas of urban development and (b) those emergency situations within existing metropolitan areas where, for one reason or another, local governments cannot or will not take the necessary action. Also recommended is the enactment of state legislation authorizing (where such authority does not now exist) such action by local governments. Additionally, zoning powers can be employed in a variety of ways to achieve some of the objectives cited above. Envisaged in these proposals is not only outright acquisition of land but also the acquisition of interests less than the fee which will serve the purpose of preserving the openness and undeveloped character of appropriate tracts of land. By the acquisition of easements, development rights and other types of interests in real property less than the fee land can continue to be used for agricultural and other nonurban purposes but protected against subdivision and other types of urban development. This type of direct approach is often more effective and subject to less difficulty than are various tax incentive plans designed to encourage owners of farmland to withhold their land from real estate developers and subdividers."

Please refer to the Appendix for a verbatim copy of the suggested legislation.

In summary, this proposal is submitted herein to demonstrate that appropriate enabling

legislation is needed in the immediate future to secure and preserve desirable and strategic open space lands. Also, conventional methods are not always successful under certain conditions of urbanization; therefore, innovative but sound techniques must be developed. It is recommended that MAG examine this subject further to develop policy recommendations.

Federal Assistance in Outdoor Recreation

The Federal Government has a variety of programs under which the States, their political subdivisions, individuals, groups and associations may qualify for assistance in outdoor recreation.⁽¹⁴⁶⁾ This assistance involves credit, cost-sharing, technical aid, educational services and research. For a comprehensive listing and description of approximately 600 domestic assistance programs and activities (including outdoor recreation) administered by about 50 departments and agencies consult the "Catalog of Federal Assistance".⁽¹³⁸⁾ The purpose of said catalog is to aid potential beneficiaries in identifying types of assistance available, determining eligibility requirements for particular assistance being sought, and to provide guidance on how to apply for specific types of assistance. It should be noted, however, that all programs are subject to change whether it be Congressional or administrative in nature. For this reason, it is recommended that interested parties keep in contact with the Maricopa Association of Governments for the latest information. To illustrate: the Department of Housing and Urban Development just recently published a guide booklet containing the policies and requirements for use by applicants in preparing an application to obtain grant funds for open space lands.⁽¹⁴⁴⁾

A separate report would be required to furnish detailed information on the array of Federal programs that have applicability to open space planning for Maricopa County. Yet, it helps to be familiar with the Federal Departments involved, and their programs, in general terms. Consequently, the following alphabetical listing of selected programs is present for background purposes.⁽¹³⁷⁾

<u>PROGRAM</u>	<u>U.S. AGENCY</u>
1. ADVANCE ACQUISITION OF LAND for public works and facilities	Department of Housing and Urban Development (HUD)
2. ADVANCES FOR PUBLIC WORKS PLANNING interest-free advances in planning essential public facilities	HUD
3. AGRICULTURAL CONSERVATION PROGRAM applicable only on existing crop- producing land	Department of Agricul- ture (DOA)
4. AIRPORT DEVELOPMENT PROGRAM for acquisition and site development	Department of Trans- portation (DOT)
5. CODE ENFORCEMENT PROGRAM for planning, administering, and improvement of the physical environ- ment of specific areas	HUD
6. COMMUNITY RENEWAL PROGRAM for developing study and action programs of community needs	HUD
7. DEMOLITION GRANT PROGRAM funds for areas having structures determined unsound by State or local law	HUD
8. DISPOSAL OF FEDERAL SURPLUS REAL PROPERTY offered for public purposes before placed on open market	General Services Admin- istration
9. FARMERS HOME ADMINISTRATION for development of recreational facilities by small towns	DOA
10. HIGHWAY BEAUTIFICATION for landscaping and scenic improve- ment	DOT

<u>PROGRAM</u>	<u>U.S. AGENCY</u>
11. HISTORICAL PRESERVATION for buildings and sites of historical or architectural significance	HUD
12. LAND AND WATER CONSERVATION FUND PROGRAM for planning, acquiring, and develop- ing recreational areas and facilities	Department of Interior (DOI)
13. MODEL CITIES includes provisions for needed recreational facilities	HUD
14. NEIGHBORHOOD FACILITIES PROGRAM for public facilities which provide social services	HUD
15. OPEN SPACE LAND PROGRAM for acquiring, developing and pre- serving open land	HUD
16. OUTDOOR RECREATION PROGRAM encourages cooperation in planning, acquisition, and development of out- door facilities	DOI
17. REAL PROPERTY FOR PUBLIC PARKS, PUBLIC RECREATIONAL AREAS, AND PUBLIC PURPOSES land available for use or transfer	DOI
18. RECLAMATION PROJECTS funds to be used in construction of irrigation, flood control and recre- ational facilities	DOI
19. RESOURCE CONSERVATION AND DEVELOPMENT PROJECTS to promote conservation and develop- ment of an area	DOA
20. SMALL WATERSHED PROJECTS to help develop water projects for flood control and recreation	DOA

<u>PROGRAM</u>	<u>U.S. AGENCY</u>
21. URBAN BEAUTIFICATION PROGRAM for park development and street improvement	HUD
22. URBAN PLANNING ASSISTANCE PROGRAM this is the 701 program to assist in the preparation of comprehensive plans and programs	HUD
23. URBAN RENEWAL PROJECTS to eliminate and prevent blight through land clearance, enforcement of housing codes, and rehabilitation	HUD
24. WATER RESOURCES DEVELOPMENT PROGRAM for multiple-purpose development of water and related land resources including recreation under specified conditions	Department of Defense

One final observation: a few Federal Departments have provisions for "Demonstration Projects". For example, HUD makes grants of up to 50% of the costs involved in developing new materials, designs and techniques employed in Open Space, Historic Preservation and Urban Beautification Programs.⁽¹⁴⁵⁾ The previously-mentioned "Rio Salado Project" might qualify for grant funds under this provision in addition to qualifying under other specific programs.

Methods Used Elsewhere
to Acquire and Preserve Open Space Lands

There are numerous methods to acquire and preserve open space lands, which methods are discussed briefly in the following sub-sections. Each method has advantages and disadvantages; therefore, it is a case of using the right method at the right time. Fundamentally, however, it is mandatory to have accepted open space goals and policies that permit the formulation of an effective open space program.

Large Lot Zoning

Where applicable, this method may be used to preserve the spacious character of certain residential areas in order to conserve property values. This method also has the beneficial effect of reducing the need for sewers and the amount and extent of various governmental services required in areas of higher population density.

Exclusive Agricultural-Conservation Zoning

This method has been utilized elsewhere, such as in California, in order to protect lands needed for agricultural purposes. However, this type of zoning has never been utilized in Maricopa County.

Flood Plain Zoning

This method limits development to open space uses and construction that would not obstruct the flow of water during periods of inundation. The need for flood plain zoning measures is becoming increasingly recognized by the public as a whole.

Cluster or Density Zoning

This method permits a developer to reduce the land space usually required around each house as long as compensating amounts of open space are provided within the same development. The open space land thus provided is held in common ownership and maintained by a homeowner's association.

Subdivision Regulations

Where a community has an adopted plan for public school and park sites consideration should be given to such plans at the time land is subdivided. Methods used elsewhere include requirements for dedication of land where needed or reservation of such spaces for future acquisition by purchase or condemnation proceedings.

Fee Simple Purchase

From a public relations viewpoint this is generally the most acceptable and commonly used procedure for acquiring park land. However, it often proves to be slow and it may result in certain inequities in the price paid for land.

Condemnation

This method is probably used more frequently for acquiring rights-of-way for streets and highways than for park purposes.

Urban Redevelopment

Where such legislation is available it provides a method for acquiring individually owned parcels for redevelopment in accordance with an adopted plan. It utilizes the powers of eminent domain.

Installment Purchase

A price per acre for an entire tract is agreed to by the landowner and the public authority. Then, the public authority agrees to purchase a stipulated number of acres annually until the entire tract is acquired. In return, the entire tract is removed from the tax rolls when the initial agreement is signed.⁽⁹⁾

Acquisitions of Tax Delinquent Land for Public Purposes

This method has been utilized elsewhere such as in Florida.

Less Than Fee Interest

This method involves the acquisition of conservation or scenic easements, or leasing. The purpose is to preserve selected properties in their natural state or to deter uses that would be inconsistent with open space aims.⁽¹³⁴⁾

Tax Incentives

Two controversial methods are: tax differential and tax deferral schemes. In the former method, a particular class of land is favored with a lower or differential assessment. In the latter method, all taxes on land located within a planned or existing open space site would be deferred as long as it remains in an open type of land use. Note: taxes on improvements are collected. However, if an owner of such a site decides to develop for a non-open space use, then all deferred taxes would have to be paid before building permits would be issued.

Gift

A successful method is the encouragement and acceptance of donations of land. This method has won acceptance because under existing Federal law, taxpayers may be entitled to income tax deductions for contributions to programs designed to conserve the Nation's natural beauty. The donations may consist of outright gifts of land or conservation and scenic easements.

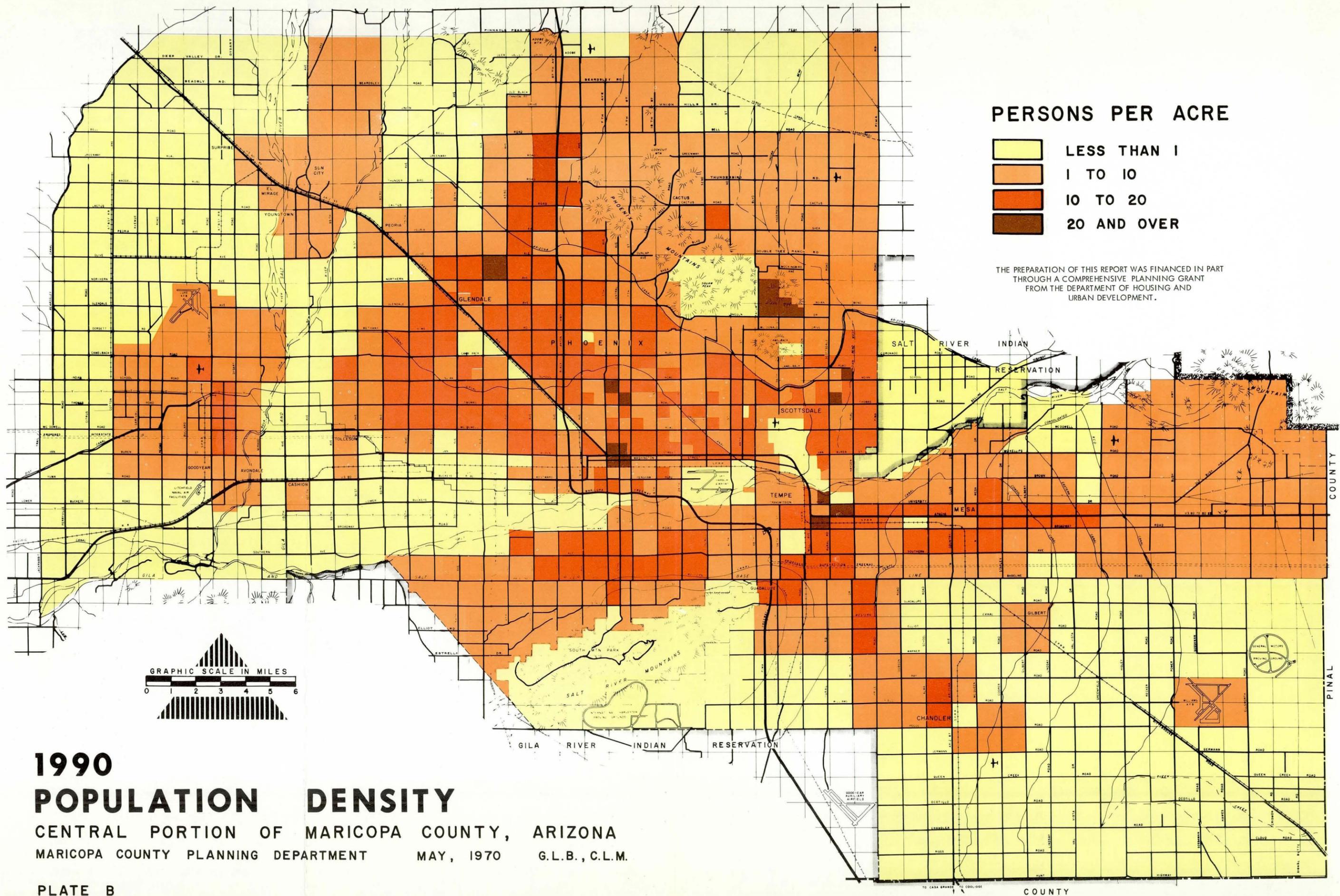
A final note: when local jurisdictions or agencies lack funds, there are private conservation groups that may purchase the land and hold it until the local jurisdiction can purchase it for public park purposes. One such group is the "Nature Conservancy" that has its headquarters in Washington, D.C. Interestingly, this group employs a tactic called "checkerboarding" to stop the bulldozer. This tactic calls for the purchase of scattered but strategic parcels in a desirable open space area, thereby, discouraging anticipated urban development.

Summary

As stated earlier in this section, it is vital to have a sound open space program based on accepted goals and policies. Then, the community as a whole and/or individual jurisdictions will be in the favorable position of determining which method

or combination thereof, is most suitable and acceptable for the acquisition or preservation of open space lands. For example, it might be necessary to purchase necessary right-of-way for hiking and riding trails. Yet, it might be possible to acquire less than fee interest (easements). Or, it may be possible to accept a donation. It is evident that the various methods suggested herein should be subject to more detailed study than limitations of this report permit.

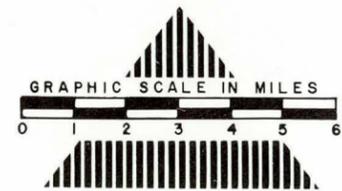
APPENDIX



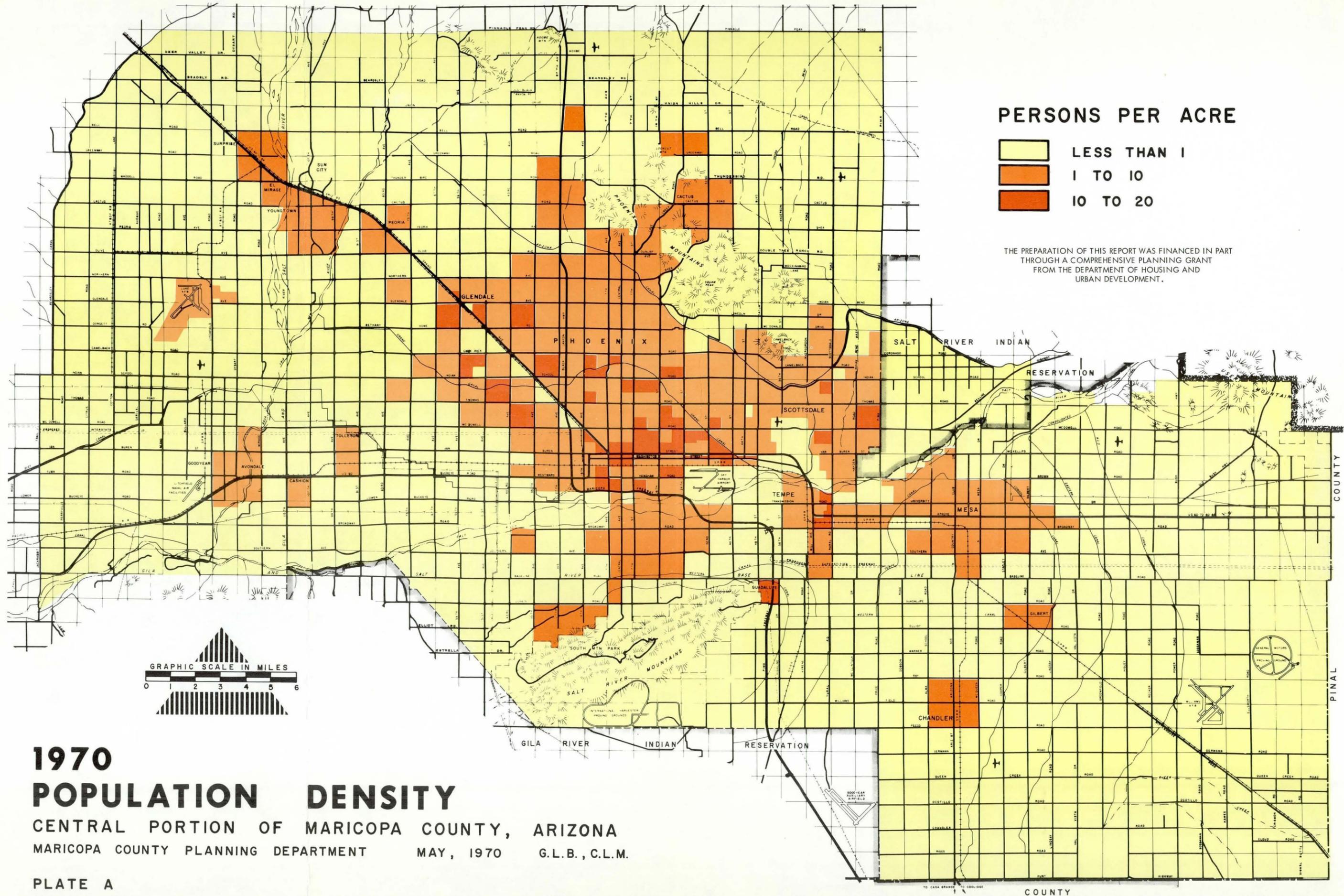
PERSONS PER ACRE

- LESS THAN 1
- 1 TO 10
- 10 TO 20
- 20 AND OVER

THE PREPARATION OF THIS REPORT WAS FINANCED IN PART THROUGH A COMPREHENSIVE PLANNING GRANT FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.



1990 POPULATION DENSITY
 CENTRAL PORTION OF MARICOPA COUNTY, ARIZONA
 MARICOPA COUNTY PLANNING DEPARTMENT MAY, 1970 G.L.B., C.L.M.



PERSONS PER ACRE

- LESS THAN 1
- 1 TO 10
- 10 TO 20

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1970 POPULATION DENSITY
 CENTRAL PORTION OF MARICOPA COUNTY, ARIZONA
 MARICOPA COUNTY PLANNING DEPARTMENT MAY, 1970 G.L.B., C.L.M.
 PLATE A

TABLE A

PLANNING STANDARDS FOR PUBLIC SCHOOLS RECOMMENDED BY LOCAL JURISDICTIONS

	<u>Avondale</u>	<u>Chandler</u>	<u>Glendale</u>	<u>Mesa</u>	<u>Paradise Vly</u>	<u>Phoenix</u>	<u>Scottsdale</u>	<u>Tempe</u>	<u>COUNTY</u>	<u>Averages</u>	<u>Median</u>
<u>Elementary School</u>											
Service Radius in Miles					3/4	1/2	1/2	3/4	3/4		
<u>Enrollment</u>											
Minimum	200	500			400	500		200	350	358	375
Maximum	600	800	1,000		1,000	1,000	1,250	720	900	883	900
Median	400	700	720	680	900	750		525	625	663	690
<u>Site Acres</u>											
Basic	5.00	5.00			10.00	5.00		5.00	10.00	6.67	
Plus 1 ac/100 pupils											
Total				10.00			20.00				
<u>Junior High School</u>											
Service Radius in Miles								1 1/2	1		
<u>Enrollment</u>											
Minimum		600						200	500	433	
Maximum		1,000						720	1,000	993	
Median		800		1,250				525	750	831	
<u>Site Acres</u>											
Basic	10.00	15.00						10.00	20.00	13.75	12.50
Plus 1 ac/100 pupils											
Total				30.00							
<u>High School</u>											
Service Radius in Miles					1 1/2	2			2		
<u>Enrollment</u>											
Minimum	600	1,000			300	1,500		600	1,000	833	800
Maximum	2,000	2,000	2,000		2,500	2,500	2,500	2,200	2,000	2,213	2,100
Median	1,750	1,600		2,500	1,000	2,000		1,900	1,500	1,750	1,750
<u>Site Acres</u>											
Basic	30.00	25.00			30.00	25.00				27.50	27.50
Plus 1 ac/100 pupils											
Total				50.00			50.00				

TABLE B

PLANNING STANDARDS FOR NEIGHBORHOOD AND COMMUNITY FACILITIES
RECOMMENDED BY LOCAL JURISDICTIONS

<u>Neighborhood Playground</u>		<u>Avondale</u>	<u>Chandler</u>	<u>Glendale</u>	<u>Mesa</u>	<u>Phoenix</u>	<u>Scottsdale</u>	<u>Tempe</u>	<u>COUNTY</u>	<u>Averages</u>	<u>Medians</u>
Population	Minimum	3,000			2,000	2,000	3,000	3,000		3,000	4,107
	Maximum	5,000			2,000	9,000	6,000	4,500		5,214	
Site Acres	Minimum	3.00		3.00	5.00	5.00	5.00	5.00	5.00	4.50	5.39
	Maximum	7.00		7.00	5.00	9.25	5.00	7.00	5.00	6.28	
Ac/1000 Pop	Minimum	1.00			2.50	2.50	1.67	1.67	1.25	1.69	1.51
	Maximum	1.40			2.50	1.03	.83	1.56	1.00	1.33	
Service Radius in Mi.		.25-.50		.50		.25-.50	.50-1.00	.25-.50	.25-.50		
<u>Neighborhood Park</u>											
Population	Minimum	4,000				2,000	3,000	3,000	4,000	3,333	4,708
	Maximum	7,000				9,000	6,000	4,500	5,000	6,083	
Site Acres	Minimum	2.50		2.00		5.00	5.00	3.00	5.00	3.93	4.98
	Maximum	5.00	7.00	7.00		9.25	5.00	5.00	5.00	6.03	
Ac/1000 Pop	Minimum	.63				2.50	1.67	1.00	1.25	1.38	1.17
	Maximum	.71				1.03	.83	1.10	1.00	.95	
Service Radius in Mi.		.25-.50	.50	.50		.25-.50	.50-1.00	.25-.50	.25-.50		
<u>Community Playfield</u>											
Population	Minimum	15,000			18,000	16,000	30,000	15,000	20,000	19,143	22,072
	Maximum	20,000			18,000	32,000	50,000	15,000	20,000	25,000	
Site Acres	Minimum	15.00		12.00	20.00	17.50	25.00	10.00	20.00	17.44	25.60
	Maximum	30.00		50.00	40.00	25.00	50.00	15.00	30.00	33.75	
Ac/1000 Pop	Minimum	1.00			1.11	1.09	.83	.67	1.00	.96	1.16
	Maximum	1.50			2.22	.78	1.00	1.00	1.50	1.36	
Service Radius in Mi.		$\frac{1}{2}$ -1 (20 min)		1		1-2	2-4	1-1 $\frac{1}{2}$			
<u>Community Park</u>											
Population	Minimum	15,000			20,000	16,000	30,000	15,000			
	Maximum	20,000			45,000	32,000	50,000	15,000			
Site Acres	Minimum	15.00		12.00	50.00	17.50	25.00	10.00			
	Maximum	50.00		50.00	100.00	25.00	50.00	10.00			
Ac/1000 Pop	Minimum	1.00			2.50	1.09	.83	.67			
	Maximum	2.50			2.22	.78	1.00	.67			
Service Radius in Mi.		1-1.5		City		1-2	2-4	1-1 $\frac{1}{2}$			

TABLE C

Maricopa County Planning and Zoning Department
 111 S. 3rd Ave., Room 300
 Phoenix, Arizona 85003

SCHOOL RECREATIONAL FACILITIES INVENTORY FORM

Name of School _____

District _____ Type _____ Grades _____

Address _____ City/Town _____

Total Size of Site (Acres) _____ Playground or Playfield Area (Acres) _____

1969 Average Daily Attendance _____ Design Pupil Capacity _____

FACILITIES:

<u>Athletic Fields</u>	<u>Number</u>	<u>Lighted</u>	<u>Athletic Courts</u>	<u>Number</u>	<u>Lighted</u>
Baseball	_____	_____	Tennis	_____	_____
Softball	_____	_____	Basketball	_____	_____
Football	_____	_____	Volleyball	_____	_____
Track	_____	_____	Badminton	_____	_____
Soccer	_____	_____	Handball	_____	_____
Open grass area	_____	_____	Open paved area	_____	_____
Other	_____	_____	Other	_____	_____

Swimming Pools - Number: Outdoor _____ Indoor _____ Lighted _____

Recreation Structures:

Stadium _____ Coliseum/Field House _____

Other _____

Does the school adjoin a neighborhood park? Yes _____ No _____

If yes, what is the name of the neighborhood park? _____

What types of facilities are used by the school? _____

What school recreational facilities are available for general public use:

During school year? _____

During summer months? _____

REMARKS: _____

Prepared by _____ Title _____

Phone _____ Date _____

TABLE D

Maricopa County Planning and Zoning Department
 111 S. 3rd Ave., Room 300
 Phoenix, Arizona 85003

PARKS AND RECREATIONAL FACILITIES INVENTORY FORM

1. Name _____ City/Town _____
 Address _____
 2. Type of Facility _____
 3. Total Size of Site In Acres _____ Acres Developed _____
 Remaining Developable Acres _____ Proposed Site Enlargement _____

FACILITIES:

4. Playground Equipment: Yes _____ No _____
- | | | | | |
|----------------------------|---------------|----------------|--|------------------|
| 5. <u>Athletic Fields:</u> | <u>Number</u> | <u>Lighted</u> | 10. <u>Water Activities Permitted:</u> | <u>Yes or No</u> |
| Baseball | _____ | _____ | Row Boats | _____ |
| Softball | _____ | _____ | Motor Boats | _____ |
| Football | _____ | _____ | Skating | _____ |
| Track | _____ | _____ | Fishing | _____ |
| Soccer | _____ | _____ | | |
| Open Grass Area | _____ | _____ | 11. <u>Trails:</u> | <u>Yes or No</u> |
| Other | _____ | _____ | Horseback Riding | _____ |
| | | | Hiking | _____ |
| 6. <u>Athletic Courts:</u> | | | Bicycling | _____ |
| Tennis | _____ | _____ | Nature Walk | _____ |
| Basketball | _____ | _____ | | |
| Volleyball | _____ | _____ | 12. <u>Camping Facilities:</u> | <u>Yes or No</u> |
| Shuffleboard | _____ | _____ | Water | _____ |
| Badminton | _____ | _____ | Electricity | _____ |
| Handball | _____ | _____ | Tents (No. Spaces _____) | _____ |
| Croquet-rogue | _____ | _____ | Trailers (No. Spaces _____) | _____ |
| Horseshoes | _____ | _____ | | |
| Open paved area | _____ | _____ | 13. <u>Picnicking:</u> | <u>Number</u> |
| Other | _____ | _____ | Tables | _____ |
| | | | Fireplaces/Grills | _____ |
| 7. <u>Golf:</u> | | | Ramadas | _____ |
| 9-Holes | _____ | _____ | | |
| 18-Holes | _____ | _____ | 14. <u>Buildings:</u> | <u>Number</u> |
| Driving Range | _____ | _____ | Stadium | _____ |
| | | | Coliseum/Field House | _____ |
| 8. <u>Ranges:</u> | | | Recreation | _____ |
| Firing | _____ | _____ | Shelter House | _____ |
| Skeet | _____ | _____ | Rest Rooms | _____ |
| Archery | _____ | _____ | Museum | _____ |
| | | | Amphitheater/Band Shell | _____ |
| 9. <u>Swimming:</u> | | | Cabins | _____ |
| Pool | _____ | _____ | Bathhouse | _____ |
| Wading Pool | _____ | _____ | Concessions | _____ |
| Beach | _____ | _____ | Other | _____ |

REMARKS: _____

Prepared by _____ Title _____
 Phone _____ Date _____

TABLE E

GOLF COURSES WITHIN MARICOPA COUNTY

<u>Name and Address</u>	<u>City/Town</u>	<u>Type Facility</u>	<u>Number Holes</u>	<u>Size Acres</u>
Apache Wells Country Club 5601 East Hermosa Drive	Mesa	Public	18	160
Arizona Biltmore Golf Course 24 Street & Missouri Avenue	Phoenix	Semi-Public	18	122
Arizona Country Club 5668 East Orange Blossom Lane	Phoenix	Private	18	122
Black Canyon Golf Course 6210 North Black Canyon Highway	Phoenix	Public	9	19
Camelback Inn Golf Course 5402 East Lincoln Drive	Scottsdale	Public	9	10
Camelback Inn Country Club 7843 North Mockingbird Lane	Scottsdale	Resort	18	220
Camelot Country Club 6210 East McKellips Road	Mesa	Public	18	95
Casey Abbott Park & Golf Course 4 Miles southwest of Avondale	County	Public	18	170
Century Country Club 56 Street & Shea Boulevard	Scottsdale	Private	18	123
Chris-Town Golf Course & C.C. 6215 North 15 Avenue	Phoenix	Public	9	33
Coronado Golf Course 76 Street & East Thomas Road	Scottsdale	Public	9	43
Desert Forest Country Club 37207 North Mule Train Road	Carefree	Resort	18	200
Desert Sands Golf Course 7402 East Baseline Road	Mesa	Semi-Public	18	170
Encanto Golf Course 2701 North 15 Avenue	Phoenix	Municipal	18	129
Encanto Nine Golf Course 2300 North 17 Avenue	Phoenix	Municipal	9	29

TABLE E

GOLF COURSES WITHIN MARICOPA COUNTY

<u>Name and Address</u>	<u>City/Town</u>	<u>Type Facility</u>	<u>Number Holes</u>	<u>Size Acres</u>
Evergreen Golf Course East McDowell & Beeline Hwy	Scottsdale	Public	18	92
Glen Lakes Golf Course 5450 West Northern Avenue	Glendale	Semi-Private	9	45
Golden Hills Country Club & Resort 6901 East Broadway	Mesa	Semi-Private	18	120
Goodyear Golf & Country Club (Gold) Litchfield Park (Blue)	Litchfield Park	Resort Resort	18 18	120 100
Indian Bend Country Club 7330 North Pima Road	Scottsdale	Semi-Public	18	200
Ironwood Golf Course West Carefree	Scottsdale	Public	9	29
Maryvale Golf Course 5902 West Indian School Road	Phoenix	Municipal	18	140
Mesa Country Club 660 West Fairway Drive	Mesa	Private	18	123
Moon Valley Country Club Moon Valley Drive	Phoenix	Private	18	170
Mountain Shadows Country Club 5461 East Lincoln Drive	Scottsdale	Resort	18	60
Mountain View Golf Course 7887 East Thomas Road	Scottsdale	Public	9	19
Palm Inn Country Club 5200 East Camelback Road	Phoenix	Resort	9	22
Papago Golf Course 5595 East Moreland	Phoenix	Municipal	18	206
Paradise Valley Country Club 7101 North Tatum Boulevard	Scottsdale	Private	18	147

TABLE E

GOLF COURSES WITHIN MARICOPA COUNTY

<u>Name and Address</u>	<u>City/Town</u>	<u>Type Facility</u>	<u>Number Holes</u>	<u>Size Acres</u>
Phoenix Country Club North 7 Street & Thomas Road	Phoenix	Private	18	98
Roadrunner Golf Resort 7331 North Pima Road	Scottsdale	Resort	18	160
Rolling Hills Golf Course 1415 North Mill Avenue	Tempe	Public	9	36
San Marcos Country Club West Buffalo	Chandler	Resort	18	175
Scottsdale Country Club 7702 East Shea Boulevard	Scottsdale	Semi-Public	18	120
Shalimar Country Club 2012 East Southern Avenue	Tempe	Public	9	43
Sun City Country Club 9433 North 107 Avenue	Sun City	Semi-Private	18	128
Sun City Lakes East Golf Course 10433 Talisman Road	Sun City	Semi-Private	18	59
Sun City Lakes West Golf Course 10433 Talisman Road	Sun City	Semi-Private	18	142
Sun City North Golf Course 12650 North 107 Avenue	Sun City	Semi-Private	18	156
Sun City South Golf Course 103 Avenue and Peoria	Sun City	Semi-Private	18	201
Thunderbird Country Club 701 East Thunderbird Trail	Phoenix	Semi-Public	18	120
Town & Country Golf Course 4646 North 22 Street	Phoenix	Public	9	28

Table E (cont'd)

TABLE E

GOLF COURSES WITHIN MARICOPA COUNTY

<u>Name and Address</u>	<u>City/Town</u>	<u>Type Facility</u>	<u>Number Holes</u>	<u>Size Acres</u>
Valley Country Club 4901 North Invergordon Road	Scottsdale	Resort	18	80
Velda Rose Golf Course 5700 East Main	Mesa	Public	9	35
Villa Monterey Country Club 7979 East Chaparral Road	Scottsdale	Semi-Private	9	92
Wickenburg Country Club Country Club Drive	Wickenburg	Semi-Private	9	45
Williams Air Force Golf Course Williams Air Force Base	Chandler	Private	9	75
TOTALS	(49 Areas)		<u>729</u>	<u>5,031</u>

Source: Arizona Golf Association -- August, 1970

TABLE F

NEWSPAPER ARTICLE ON MULTIPLE USE MANAGEMENT*

Hearing Set On Reclassifying Lands

"A total of 165,115 acres of Arizona public domain lands has been proposed for classification as multiple use management, it was announced by the U.S. Interior Department's Bureau of Land Management.

"The land is north of Phoenix, the majority in the Hieroglyphic and Wickenburg mountains and the rest in the Mayer area near Prescott.

"The lands, primarily desert mountain terrain, are used for livestock grazing, wildlife habitat, mineral prospecting and production, hunting and other recreational purposes.

"Joe T. Fallini, BLM state director, said the proposed multiple use management classification will improve the tenure that grazing operations have on these public lands, help protect wildlife habitat, preserve public hunting and recreation areas and keep the public lands available for mineral exploration and development.

"Fallini also said the proposed classification will segregate the lands from appropriation under the present agricultural and public sale laws which he said have proved to be unworkable on Arizona desert lands.

"A public hearing on the proposed classification will be held at 1:30 p.m. September 15 in the Maricopa County Board of Supervisors Auditorium, 205 West Jefferson.

"Maps and legal descriptions of the lands involved may be studied at the BLM district office, 2929 West Clarendon, or the BLM land office, 3204 Federal Building."

* The article is quoted verbatim from the Phoenix Arizona Republic, page 27, August 21, 1970.

TABLE G

SUGGESTED LEGISLATION*

Title should conform to state requirements. The following is a suggestion:

"An act to provide for the acquisition and designation of real property by the state, counties, and municipalities¹ for use as permanent open-space land."7

(Be it enacted, etc.)

Section 1. Short title. This act shall be known and may be cited as the "Open-Space Land Act."

Section 2. Findings and purposes. The legislature finds that the rapid growth and spread of urban development are creating critical problems of service and finance for the state and local governments; that the present and future rapid population growth in urban areas is creating severe problems of urban and suburban living; that the provision and preservation of permanent open-space land are necessary to help curb urban sprawl, to prevent the spread of urban blight and deterioration, to encourage and assist more economic and desirable urban development, to help provide or preserve necessary park, recreational, historic and scenic areas, and to conserve land and other natural resources; that the acquisition or designation of interests and rights in real property by public bodies to provide or preserve permanent open-space land is essential to the solution of these problems, the accomplishment of these purposes, and the health and welfare of the citizens of the state; and that the exercise of authority to acquire or designate interests and rights in real property to provide or

¹ If any specific public bodies, such as park authorities, or certain districts, are included in the definition of "public body" in section 9(a) and in that manner authorized to carry out the purposes of the bill, appropriate reference to the public bodies should be inserted in the title at this point.

preserve permanent open-space land and the expenditure of public funds for these purposes would be for a public purpose.

Pursuant to these findings, the legislature states that the purposes of this act are to authorize and enable public bodies to provide and preserve permanent open-space land in urban areas in order to assist in the solution of the problems and the attainment of the objectives stated in its findings.

Section 3. Acquisition and preservation of real property for use as permanent open-space land. To carry out the purposes of this act, any public body may (a) acquire by purchase, gift, devise, bequest, condemnation, grant or otherwise title to or any interests or rights in real property that will provide a means for the preservation or provision of permanent open-space land and (b) designate any real property in which it has an interest to be retained and used for the preservation and provision of permanent open-space land. The use of the real property for permanent open-space land shall conform to comprehensive planning being actively carried on for the urban area in which the property is located.

Section 4. Conversions and Conveyances. (a) No open-space land, the title to, or interest or right in which has been acquired under this act or which has been designated as open-space land under the authority of this act shall be converted or diverted from open-space land use unless the conversion or diversion is determined by the public body to be (1) essential to the orderly development and growth of the urban area, and (2) in accordance with the program of comprehensive planning for the urban area in effect at the time of conversion or diversion. Other real property of at least equal fair market value and of as nearly as feasible equivalent usefulness and location for use as permanent open-

space land shall be substituted within a reasonable period not exceeding one year for any real property converted or diverted from open-space land use. The public body shall assure that the property substituted will be subject to the provisions of this act.

(b) A public body may convey or lease any real property it has acquired or which has been designated for the purposes of this act. The conveyance or lease shall be subject to contractual arrangements that will preserve the property as open-space land, unless the property is to be converted or diverted from open-space land use in accordance with the provisions of subsection (a) of this section.

Section 5. Exercise of Eminent Domain. For the purposes of this act, any public body may exercise the power of eminent domain in the manner provided in [] and acts amendatory or supplemental to those provisions. No real property belonging to the United States, the state, or any political subdivision of the state may be acquired without the consent of the respective governing body.

Section 6. General Powers. (a) A public body shall have all the powers necessary or convenient to carry out the purposes and provisions of this act, including the following powers in addition to others granted by this act:

(1) to borrow funds and make expenditures necessary to carry out the purposes of this act;

(2) to advance or accept advances of public funds;

(3) to apply for and accept and utilize grants and any other assistance from the federal government and any other public or private sources, to give such security as may be required and to enter into and carry out contracts or

agreements in connection with the assistance, and to include in any contract for assistance from the federal government such conditions imposed pursuant to federal laws as the public body may deem reasonable and appropriate and which are not inconsistent with the purposes of this act;

(4) to make and execute contracts and other instruments necessary or convenient to the exercise of its powers under this act;

(5) in connection with the real property acquired or designated for the purposes of this act, to provide or to arrange or contract for the provision, construction, maintenance, operation, or repair by any person or agency, public or private, of services, privileges, works, streets, roads, public utilities or other facilities or structures that may be necessary to the provision, preservation, maintenance and management of the property as open-space land;

(6) to insure or provide for the insurance of any real or personal property or operations of the public body against any risks or hazards, including the power to pay premiums on the insurance;

(7) to demolish or dispose of any structures or facilities which may be detrimental to or inconsistent with the use of real property as open-space land; and

(8) to exercise any or all of its functions and powers under this act jointly or cooperatively with public bodies of one or more states, if they are so authorized by state law, and with one or more public bodies of this state, and to enter into agreements for joint or cooperative action.

(b) For the purposes of this act, the state, or a city, town, other municipality, or county may:

(1) appropriate funds;

(2) levy taxes and assessments;

(3) issue and sell its general obligation bonds in the manner and within the limitations prescribed by the applicable laws of the state; and

(4) exercise its powers under this act through a board or commission, or through such office or officers as its governing body by resolution determines, or as the Governor determines in the case of the state.

Section 7. Planning for the Urban Area.² The state, counties, cities, towns, or other municipalities in an urban area, acting jointly or in cooperation, are authorized to perform comprehensive planning for the urban area and to establish and maintain a planning commission for this purpose and related planning activities. Funds may be appropriated and made available for the comprehensive planning, and financial or other assistance from the federal government and any other public or private sources may be accepted and utilized for the planning.

Section 8. Taxation of open-space land. Where an interest in real property less than the fee is held by a public body for the purposes of this act, assessments made on the property for taxation shall reflect any change in the market value of the property which may result from the interest held by the public body. The value of the interest held by the public body shall be exempt from property taxation to the same extent as other property owned by the public body.

Section 9. Definitions. The following terms whenever used or referred to in this act shall have the following meanings unless a different meaning is clearly indicated by the context:

² This section is not necessary if the planning laws of the state provide adequate authority.

(a) "Public body" means

7³

(b) "Urban area" means any area which is urban in character, including surrounding areas which form an economic and socially related region, taking into consideration such factors as present and future population trends and patterns of urban growth, location of transportation facilities and systems, and distribution of industrial, commercial, residential, governmental, institutional and other activities.

(c) "Open-space land" means any land in an urban area which is provided or preserved for (1) park or recreational purposes, (2) conservation of land or other natural resources, (3) historic or scenic purposes, or (4) assisting in the shaping of the character, direction, and timing of community development.

(d) "Comprehensive planning" means planning for development of an urban area and shall include (1) preparation, as a guide for long-range development, of general physical plans with respect to the pattern and intensity of land use and the provision of public facilities, including transportation facilities, together with long-range fiscal plans for such development; (2) programming and financing plans for capital improvements; (3) coordination of all related plans and planned activities at both the intragovernmental and intergovernmental levels; and (4) preparation of regulatory and administrative measures in support of the foregoing.

³ "Public body" can be defined as desired by the proponents of the bill to include any or all of the following: the state, counties, cities, towns, or other municipalities, and any other public bodies they wish to specify, such as park authorities, or other specific authorities or districts. If any specified public body (other than the state or cities, towns or other municipalities) included in the definition has, under another law, taxing powers or other financing powers that could be used for the purposes of open-space land a subsection (c) should be added to section 6 to authorize that public body to use those powers for the purposes of this act.

Section 10. Separability; Act Controlling. Notwithstanding any other evidence of legislative intent, it is hereby declared to be the controlling legislative intent that if any provision of this act or the application thereof to any person or circumstances is held invalid, the remainder of the act and the application of such provision to persons or circumstances other than those as to which it is held invalid, shall not be affected thereby.

Insofar as the provisions of this act are inconsistent with the provisions of any other law, the provisions of this act shall be controlling. The powers conferred by this act shall be in addition and supplemental to the powers conferred by any other law.

* Source: Please refer to Item No. 128 in the "Bibliography".

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BIBLIOGRAPHY

The publications listed in this bibliography are grouped into several major subject headings and are listed alphabetically under the headings. The numbers are consecutive and are not in order as referred to in the text.

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