Proceedings of the 1963 annual regional planning conference.

Waukesha, Wisconsin: Southeastern Wisconsin Regional Planning Commission, 1963

PROCEEDINGS OF THE 1963 3RD ANNUAL REGIONAL PLANNING CONFERENCE

Graduate Research Center
Dept. of Urban & Regional Planning
The University of Wisconsin-Madison

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

916 North East Avenue - Waukesha, Wisconsin

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INTRODUCTION

The 1963 Regional Planning Conference was the third annual region wide meeting sponsored by the Southeastern Wisconsin Regional Planning Commission since its establishment in 1960. The Conference was held at the Red Carpet Inn in Milwaukee, Wisconsin, on November 20, 1963.

The conference was attended by about 300 persons from within and outside the Region. Those attending included public officials from many units of local government, conservation technicians, planners, educators and interested citizens from all walks of life.

The purpose of the conference was to present the status of natural resources planning, conservation and management in the Southeastern Wisconsin Region, discuss present natural resource problems faced by the Region and review progress being made by the Regional Planning Commission under its work program and under the programs of other cooperating governmental agencies to alleviate these problems. A comprehensive progress report on the Regional Land Use-Transportation Study was also presented at the conference.

Since the fall of 1962 a number of important projects relating to the field of natural resources planning have been completed or commenced by the Commission. Among projects completed have been: aerial photography and base mapping of the entire Region, a comprehensive inventory of the natural resources of the Region, and the development by the Root River Watershed Committee of a comprehensive watershed planning program prospectus. Resource studies currently underway as part of the Commission's Land Use-Transportation Study include a soil capability survey of the entire Region, a preliminary park and open space inventory and a water quality survey.

The annual Regional Planning Conference sponsored by the Commission has three purposes: to provide a forum for the presentation and discussion of the Commission's planning program; to promote an active interest and participation by public officials and citizens in this work; and to create an awareness of the many area-wide problems growing out of large - scale regional urbanization which can only be resolved properly within a regional context.

It is our hope that these proceedings of the conference will stimulate further thought and action in relation to the natural resource problems of the Region.

The Factorama session participants (L to R):

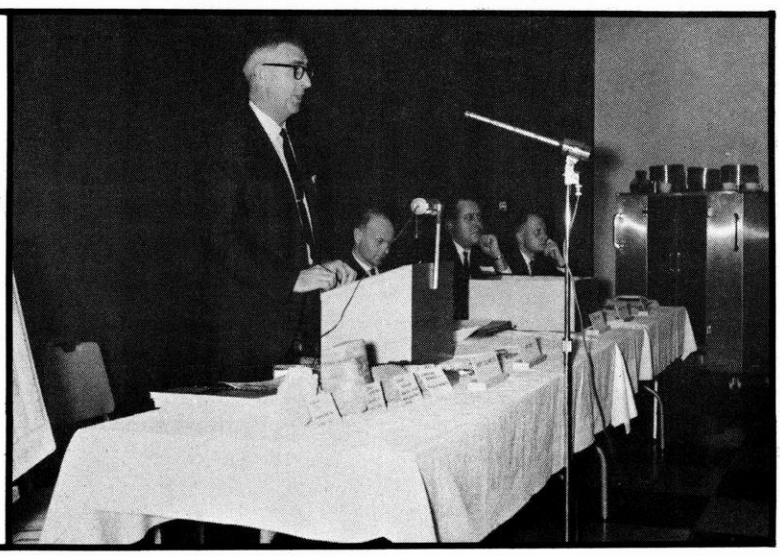
Leo Tiefenthaler
Robert C. Wylie
James F. Egan, Session Chairman
George T. Wilson
Walter Rowland

The workshop session on "Flood Plains, Wetlands, Recreation and Lakes, Problems in Resources Planning" participants (L to R):

Phil Sander
John Sheaffer
Lyle Link, Moderator
C.W. Threinen

The workshop session on "The Regional Soil Survey and Urban Planning" participants (L to R):

Minnott Silliman, Jr.
John Quay
Clarence E. Voras
Kurt W. Bauer

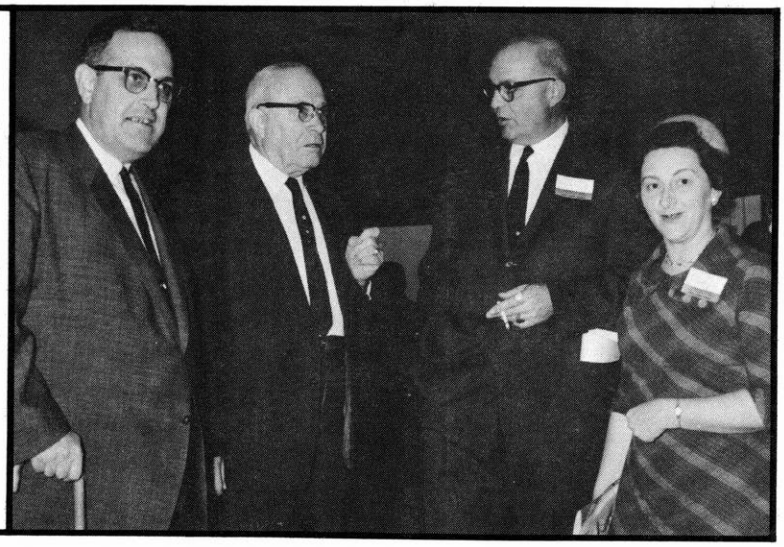


The workshop session on "Park and Open Space" participants (L to R):

Howard Gregg
Cy Kabat
Fortney Larson, Moderator
John R. Zillmer

Waukesha County Representatives in attendance at the 1963 Regional Planning Conference (L to R):

William Rogan, County Agent
Laurel W. Hause, County Board Chairman
Fortney Larson, County Supervisor and SEWRPC Commissioner
Helen Kenney, County Supervisor



Ladies in attendance at the 1963 Regional Planning Conference included (L to R):

Mrs. Kyncl, Kenosha
Mrs. Ramona F. Borshoff, Shorewood
Miss Ruth Hine, Wisconsin Conservation Dept., Madison

WELCOME ADDRESS

by GEORGE C. BERTEAU, Chairman

Southeastern Wisconsin Regional
Planning Commission
Waukesha, Wisconsin

Ladies and Gentlemen:

On behalf of the Commissioners and Staff of the Southeastern Wisconsin Regional Planning Commission, I want to welcome you to this Third Annual Regional Planning Conference. As originally conceived, your annual regional planning conference is designed to report progress to date, devoting a given conference to a specific and significant topic. This year's conference is a continuation of this original concept. The theme of our first conference in December of 1961 was "Fitting Thought And Action To Regional Problems." Last year the significant topic covered was "Your Part In Regional Planning--Transportation." This year our theme is "Your Part In Regional Planning--Natural Resources."

Our program will continue in this room through the luncheon address by United States Senator, and former Governor of our State, Gaylord Nelson. This afternoon, after the luncheon address, we shall divide this area into two units and using an additional room downstairs simultaneously run three workshops. They are: Flood Plains, Wetlands, Lakes, Problems In Resource Planning; The Regional Soil Survey and Urban Planning; and Park and Open Space. Regional Planning Commissioners, Lyle Link, Ray Blank and Fortney Larson will serve as the moderators for these workshops. At the conclusion of my opening welcome remarks, Mr. Kurt Bauer, our Executive Director, will provide us with a detailed progress report covering this year's activities of the Commission.

Eleven months ago we started our major Land Use-Transportation Study. Since transportation facilities often dictate and determine land use, and since certain land use requires specific transportation services, these two, land use and transportation systems, are inextricably woven. I am happy to report today that our Land Use-Transportation Study is on time and within strict budget limitations. With respect to the Central Office Operations, budget control through November 1 of this year, covering some 22 major expense items, shows that we will finish the first year of this study with a several thousand dollar surplus.

In spite of President Kennedy's efforts through the physical fitness program to get America back on its feet, we are still essentially an automobile orientated people. The United States Bureau

of Public Roads forecasts that car population now at 66 million will reach 86 million by 1972. Beyond this dramatic increase in car population, with its impact on highway requirements, the U. S. Bureau of Public Roads also forecasts that the number of vehicles will increase even faster than our population. While population increases 39 percent, automobile ownership and registration will increase 64 percent, and the total motor vehicle mileage will increase by 85 percent.

Now, not only do we have an increasing population, an ever increasing automobile population, but compounding the problem is the fact that a recent study suggests that, of the 70 million projected population increase from 1960 to 1980 in the United States, that 50 million of this 70 million increase will be in the suburbs, 113 million in 1960 but 183 million people in 1980 or 70 million population projection increase, and 50 million of this 70 million is slated for the suburbs. The Rand Corporation Study even forecasts that employment in the suburbs will exceed that in the central cities by 1975. This study further indicates that as of now 65 percent are employed in the central cities, 35 percent in the suburbs; but that by 1975 using the more conservative estimate, 53 percent will be employed in the suburbs and 40 percent in the central cities. This, of course, excludes the New York area.

In the light of this data, it is reassuring that the civic leaders, citizens, and taxpayers of our Region have been so tolerant, understanding and wholly cooperative in our modest efforts to provide for the Region's orderly growth. We have the tools at hand to prepare for our growth, and preserve and conserve our natural resources. We should not abdicate our own responsibilities. It must be recognized that there are appropriate planning roles at various levels of government. Abdication at a given level or confusion as to these planning roles can lead to disastrous misunderstandings.

We in this Region have been most fortunate that through the State Highway Commission of Wisconsin, the county boards of the seven counties within this Region, the U. S. Bureau of Public Roads, and the Housing and Home Finance Agency, both at the Chicago regional level and at the national level, that we have been afforded a full and unimpeded opportunity to shape this growth according to the needs and judgments of those who live within the Region. Through a Technical Coordinating Advisory Committee that has served so well to date, through a Citizens Advisory Committee to be formed at an appropriate time in our study to evaluate and recommend regional and transportation policies, and through an Intergovernmental Coordinating Committee which will determine basic nontechnical policies involved in the conduct of the study and its resultant plans and programs, we have a firm foundation upon which the Commission and its entire staff can serve you.

Sometime today I hope that you will take the opportunity of viewing the exhibits which show you through seeing, perhaps better than I can say, the things I have been trying to say this morning.

Together we have welded a going organization. Generally, it has completed the collection of much needed basic data. The processing and synthesis of this data now lies ahead. The easy part of our job lies behind us. The development of land use plans and transportation plans for so large and heterogeneous a Region as ours will require the same skills, cooperation, patience, and forebearance that you used in making this great Region what it is today.

Thank you very much.

REGIONAL PLANNING IN SOUTHEASTERN WISCONSIN

A PROGRESS REPORT

by K. W. BAUER, Executive Director
Southeastern Wisconsin Regional Planning Commission

I. INTRODUCTION

My assignment is to present a progress report on the regional planning program in Southeastern Wisconsin, a report which must because of time limitations be incomplete. In order to provide a background for this progress report, I would like to briefly restate the basic concepts underlying the regional planning program in Southeastern Wisconsin. The Southeastern Wisconsin Regional Planning Commission, serving the Counties of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington and Waukesha, was created to provide areawide planning and research services to one of the nation's large urbanizing regions. Regional planning, as conceived by the Commission, exists to solve areawide development problems, problems which transcend county boundary lines. As such, regional planning has three principal functions:

A. The conduct of areawide research; that is, the collection, analyses and dissemination of basic planning data on a uniform areawide basis so that, in light of such data, public officials and private citizens throughout the Region can better make decisions concerning development.

B. The preparation of comprehensive plans for the physical development of the Region, these plans being limited, however, to those functional elements having regional significance.

C. To provide a center for the coordination of the planning and plan implementation activities of the various levels and units of government operating within the Region.

An understanding of the concept of regional planning as represented by these functions is essential to any appreciation of the Commission's work program and of progress on that program over the last calendar year.

II. COMPLETION OF THE P-6 STUDIES

The initial work program of the Commission included six basic regional planning studies initiated in July 1961, and scheduled for completion in July 1963. These six studies were

supported in part by a Federal urban planning grant, HHFA Project No. Wis. P-6(G) and, therefore, became known as the "P-6 Projects." It can be reported that these six projects were completed this year within the time schedules and budgets originally provided. A brief description of these projects may be warranted here:

A. Statistical Program and Data Processing Study

Effective regional planning is dependent upon the collection and interpretation of historic and current statistical data covering a complex variety of physical and social factors. A well defined and continuing program for collecting and processing basic planning data is, therefore, needed for adequate comprehension of complex regional relationships and evaluation of alternative development plans.

The objective of the Statistical Program and Data Processing Study was to develop the basic framework of an information system for regional planning. The framework used in the development of this information system is a series of mathematical simulation models of the Region. These models serve to define requirements for future data collection and analysis programs, establishing a logical and detailed set of data requirements consistent with the application involved. In addition to providing a framework for data collection, processing and analysis, the models provide a means to quantitatively test the feasibility of alternative plans. Four kinds of models were conceptualized in this study:

1. Regional activity model (economic activity and population growth)

2. Spatial activity model (land use)

3. Transportation model

4. Water system model

All of the models except the water system model are being further developed and applied in the Commission's regional land use-transportation study presently underway. Regional planning data requirements are defined by the constants needed to implement the models and data collection is proceeding accordingly.

B. Base Mapping Program

Base maps are essential to any planning program. The primary objective of the regional base mapping program was to provide a means of recording in a permanently useful form a great deal of information about the natural and man-made features of the Region. A secondary objective of the base mapping program was to provide a means by which information collected in the various planning studies to be undertaken by the Commission could be related to the geographic area from which it was taken; that is, to permit geographic identification of all planning data by machine methods.

The program resulted in the preparation of a unique and highly versatile series of regional base maps. The base map series include regional and county maps in a choice of scales ranging from 1:24000 (1 inch equals 2000 feet) to 1:500000 (approximately 1 inch equals 8 miles) and a choice of sizes ranging from 7 by 9 foot county wall maps to 8-1/2 by 11 inch regional hand maps.

All of the maps were compiled on the Wisconsin State Plane Coordinate System Grid. This grid not only serves as a true map projection, the grid coordinates being mathematically convertible to latitude and longitude, it also provides a primary system of geographic identification, being well adapted to machine processing methods, and when linked to the U. S. Public Land Survey System, adaptable to analyses by geographic areal units of almost any degree of coarseness or refinement.

Various base and overlay sheet combinations permit the ready preparation of maps for studies concerning natural resources, population, economic activity, land use, public utilities, and transportation. The various map sheets can be combined by simple mosaic processes to depict in its entirety any natural or rational planning area such as a watershed, special purpose district, or group of communities within the Region. The base maps provide the first true maps which accurately portray all of the counties within the Region at a uniform scale and upon which distances and areas can be accurately measured.

The base maps represent a permanent capital investment. In addition to being essential for any regional planning efforts, the maps are a valuable tool for state, county, and local planning and engineering work and are already being used by the State Department of Resource Development, the State Highway Commission of Wisconsin, and several private utilities. The base maps are being heavily utilized in the Commission's regional land use-transportation study,

in watershed planning efforts and in community assistance work as well as having been utilized in the P-6 studies themselves.

C. Economic Base and Structure Study

This study was intended to provide the basis for an understanding of the Region's economic base and structure. Such understanding is essential not only to the preparation of practical long-range plans for the physical development of the Region, but to any planning or development program which might attempt to strengthen the economy of the Region.

The study included the collection of primary economic data through field interviews held with management officials of 129 leading regional industries and an analysis of firms within the Region and of their economic climate, as well as of state and national industry groups with which the individual regional firms are identified.

The study presents regional employment forecasts and total population forecasts based upon such regional employment forecasts for the years 1965, 1970, 1975, 1980, 1985. It provides data on and analyses of such important economic indicators as labor force, disposable income, retail sales, wage rates, value added by selected manufacturers, and agricultural activity. Results of the economic study will be used directly in the Commission's regional land use-transportation study presently underway, as well as in any subsequent planning programs.

D. Population Study

This study provides information on three basic aspects of the Region's population; namely, population size, composition and spatial distribution. Since the economic study examined many of the economic factors which influence these three aspects of the Region's population, the population study was limited to an examination of purely demographic influences. More specifically, this included an analysis of birth rates, death rates, net migration rates, gross density patterns, educational attainment, marital status, family size, age and sex composition, race and nativity, as well as sheer population size. The population data are presented in both a current and historic frame of reference for a variety of statistical areal units.

1. For the Region as a whole

2. For each of the seven counties within the Region

3. For each of the three urbanized areas within the Region, and

4. On a limited basis, for each of the minor civil divisions within the Region.

A population projection by age and sex is included for the Region as a whole to 1965, 1970, 1975, 1985, and for each of the seven counties to 1970 and 1980. It should be noted that the future population levels derived from the results of the economic study are considerably lower than those derived from the population study. This difference does not represent any inconsistency in results, but indicates that the population within the Region is presently growing faster than the economy's ability to provide employment opportunities for this population growth. The results of this study are useful to county and local, as well as regional planning efforts, since the regional and county population projections provided can serve as a basis for local projections made by the ratio method.

E. Natural Resources and Environmental Problems Study

Regional planning must concern itself with the problems of adjusting urban growth and development to the underlying natural resource base. Such concern is essential if land is to be preserved to meet the park and open space requirements of the Region's growing population; if pollution of the Region's streams, lakes, ground water and air is to be controlled; and if severe environmental problems due to flooding, soil erosion, stream siltation, ecological imbalance and destruction of fish and wildlife habitat avoided. Specific data concerning the natural resource base and its capability to sustain increasing urbanization is, therefore, essential to sound regional planning.

This study was intended to begin to provide such data by inventorying, organizing, evaluating, and interpreting all available studies and data relating to the natural resource base. Topics covered in the study include historic resource patterns, climate and weather, geography, mineral and nonmetal resources, forests, soils, air, surface and ground water, flooding, fish and wildlife, and recreation and open space.

Some of the data assembled in the study have never been published elsewhere, others originally served only single problem needs. All of the data reorganized and summarized so as to be of utility for comprehensive planning purposes.

The study outlines needs and problems requiring additional research and recommends a number of specific resource planning and action programs based upon the study data and its analysis. Recommended programs include regional surface and ground water studies, a regional operational soil survey and interpretation, a detailed regional park and open space inventory, and comprehensive watershed planning programs for each of the major watersheds within the Region. Some of these recommended studies are being carried out as an integral part of the Commission's regional land use-transportation study presently underway. Others will require the formulation of new joint interagency programs, while still others will require future action by the Commission and the local units of government concerned.

F. Public Utilities Study

Urban development today is highly dependent upon the utility facilities which serve the individual land uses with power, light, heat, water, and sewerage. How well the Region can sustain urban development will depend to a considerable extent upon the location and capacities of these facilities. Moreover, certain of these utility facilities are closely linked to the surface and ground water of the Region and, therefore, may affect the overall quality of the regional environment. A basic inventory of existing utility facilities is, therefore, essential to regional planning.

This study was intended to provide such a physical inventory of the various utility systems serving the Region, collect the data on their existing and probable future service areas and on their capacity to absorb new urban growth and development.

Results of this study will be used directly in the Commission's regional land use-transportation study and will be useful to the Commission in future watershed planning, community assistance, and in industrial development programs. Results of this study should also be useful to utility agencies; state, county and local planners and engineers; local economic development agencies, and private land developers.

The six basic regional planning studies accomplished under Project No. Wis. P-6 were designed as and comprise an integral part of the ongoing regional planning program for Southeastern Wisconsin. Reliable basic planning data collected on a uniform, areawide basis is absolutely essential to the formulation of workable regional development plans. Such data were almost non-existent at the time of the creation of the Commission. The P-6 studies were, therefore, all directed to basic data collection. These studies represent a valuable investment of public funds, and all have utility at the state, county, and local as well as at the regional level. As noted, the results of these studies are providing extremely valuable inputs to the Commission's regional land use-transportation study presently underway, to ongoing resource and watershed planning efforts, and to the Commission's community assistance program.

The results of each of these six studies are described in a separate published planning report.[1] These reports have been distributed to all of the member local units of government within the Region and to selected federal and state agencies, industries and private citizens. In addition, a great deal of unpublished but extremely valuable planning data was accumulated in the form of maps, charts, diagrams, and tables as a part of the work on each of these six initial studies and this data is available at the cost of reproduction.

II. REGIONAL LAND USE-TRANSPORTATION STUDY

The SEWRPC choose the transportation problem as the object of its first major planning effort, and a 3-1/2 year regional

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[1] Planning Report No. 1 - "Regional Planning Systems Study," 73 pages; text, figures and tables.

Planning Report No. 2 - "Regional Base Mapping Program," 24 pages; text and maps.

Planning Report No. 3 - "The Economy of Southeastern Wisconsin," 162 pages; text, maps, figures and tables.

Planning Report No. 4 - "The Population of Southeastern Wisconsin," 100 pages; text, maps, figures and tables.

Planning Report No. 5 - "Natural Resources of Southeastern Wisconsin." 173 pages; text, maps, figures and tables.

Planning Report No. 6 - "Public Utilities of Southeastern Wisconsin," 86 pages; text, maps and tables.

land use-transportation study was begun in January 1963. The ultimate objective of this study is to produce two of the key elements of a comprehensive development plan for the Region: a land use plan and a transportation plan. In addition to providing for the collection of the data necessary to an analysis of the Region's transportation problems in great depth, thereby permitting the sound planning, design, construction, operation and maintenance of highway and transit facilities throughout the Region, the study will also provide much valuable information needed for solving drainage and flood control, sewerage and water supply, land and water use, and other resource related problems.

The study is comprised of six major phases: collection of basic data; compilation and processing of basic data; analysis; forecast; plan synthesis, testing, and evaluation; and plan selection and adoption. (See Figure 1.) The first year of the study has been devoted entirely to the first two phases: collection of basic data; compilation and processing of basic data. Because of its particular interest to state and local units of government, some of the work accomplished to date warrants brief description.

Base mapping, completed under the Commission's P-6 program, was supplemented in 1963 by up-to-date aerial photography of the entire Region. This work, accomplished under contract, provides aerial photographic coverage of the entire Region at two scales: (1) low altitude photography at a negative scale of 1 inch equals 2,000 feet with ratioed enlargements available at a scale of 1 inch equals 400 feet; (2) high altitude photography at a negative scale of 1 inch equals 6,000 feet with ratioed and rectified enlargements available at a scale of 1 inch equals 2,000 feet. Each large scale photograph (1 inch equals 400 feet) covers four U. S. Public Land Survey sections and is centered over the common section corner. Ozalid prints may be purchased from the Commission at the nominal cost of 10 cents a square mile. Each small scale photograph (1 inch equals 2000 feet) covers an entire township, is centered over that township, and prints may be purchased from the Commission at the nominal cost of $6.00 for 36 square miles. The aerial photography provides the Commission with photo maps suitable for use as field sheets in the conduct of such inventories as soils, park and open space, and land use. The aerial photographs have widespread utility to state and local units of government, public utilities, and private investors and a high demand has been demonstrated for the photographs. This demand is encouraging, for multiple use of the data collected for regional planning purposes assures the most effective utilization of the public investment.

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

LAND USE - TRANSPORTATION STUDY

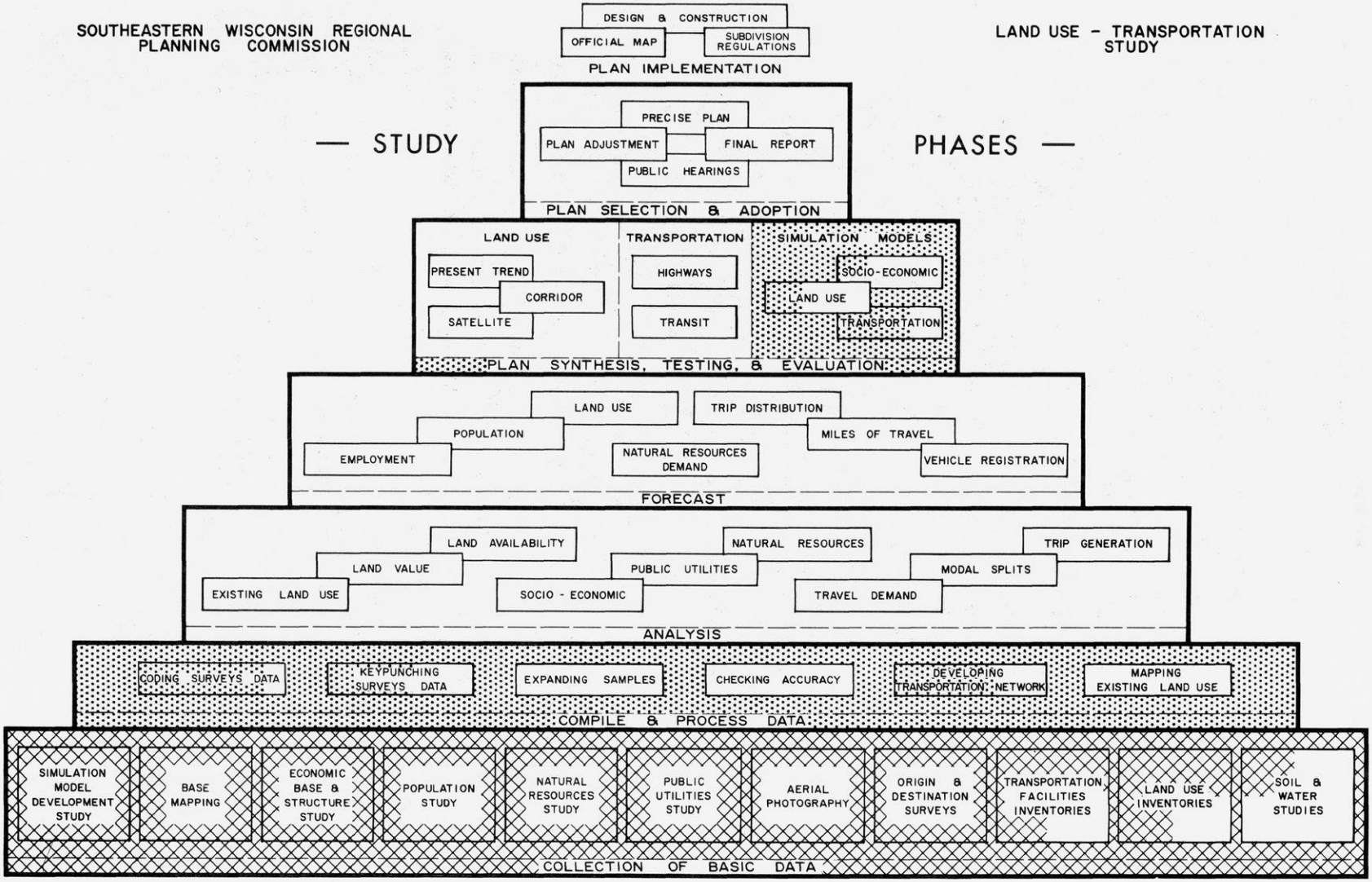

FIGURE 1

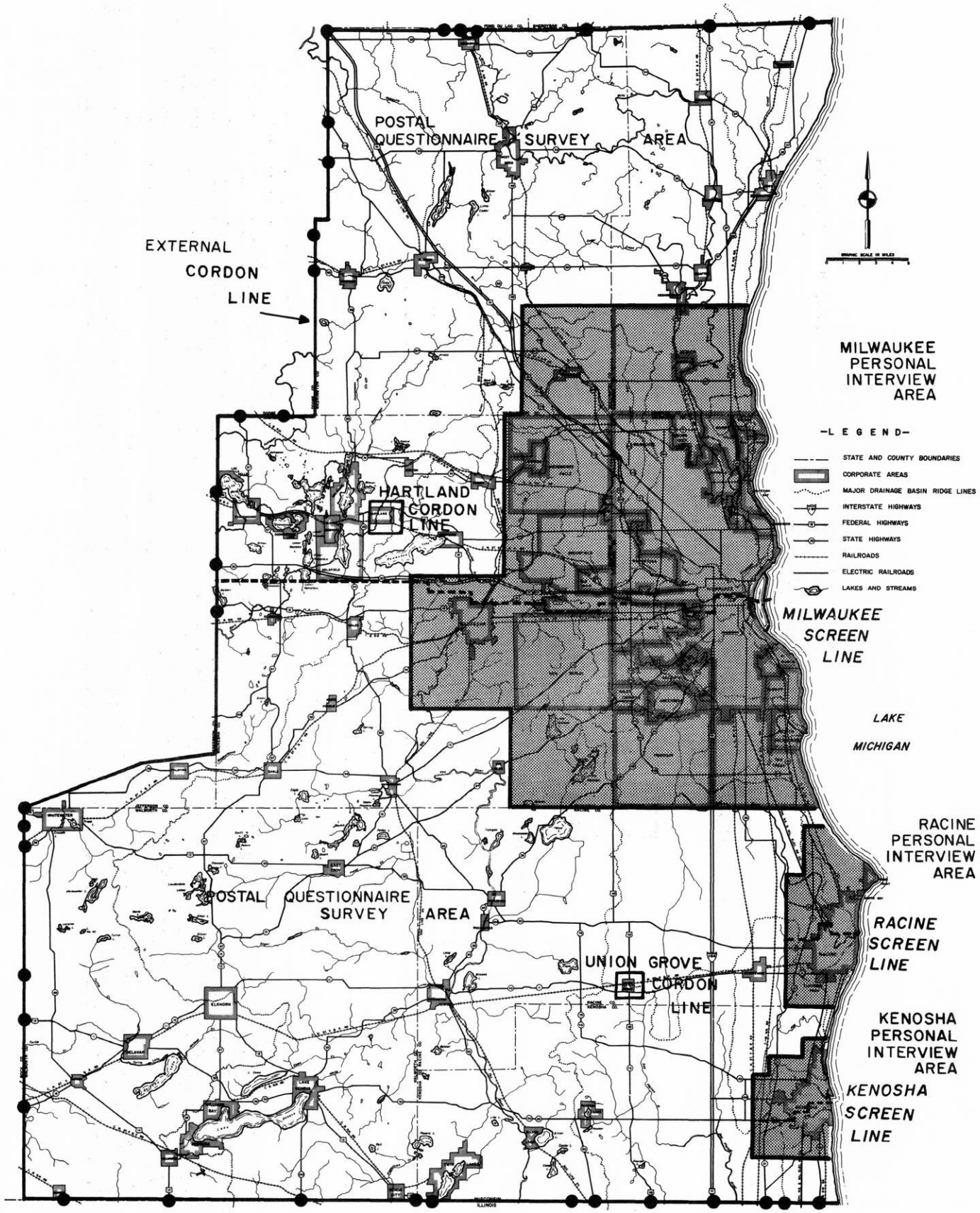
POSTAL QUESTIONNAIRE SURVEY AREA
EXTERNAL CORDON LINE
HARTLAND CORDON LINE
MILWAUKEE PERSONAL INTERVIEW AREA
MILWAUKEE SCREEN LINE
LAKE MICHIGAN
RACINE PERSONAL INTERVIEW AREA
RACINE SCREEN LINE
POSTAL QUESTIONNAIRE SURVEY AREA
UNION GROVE CORDON LINE
KENOSHA PERSONAL INTERVIEW AREA
KENOSHA SCREEN LINE
-LEGEND-
STATE AND COUNTY BOUNDARIES
CORPORATE AREAS
MAJOR DRAINAGE BASIN RIDGE LINES
INTERSTATE HIGHWAYS
FEDERAL HIGHWAYS
STATE HIGHWAYS
RAILROADS
ELECTRIC RAILROADS
LAKES AND STREAMS

FIGURE 2

The data collection phase of the land use inventory, which includes the identification, delineation and measurement of all existing land uses within the Region, has been completed. This required the adoption of a land use classification system having 61 categories, suitable for regional land use and transportation planning, compatible with existing land use classification systems in use within the Region and suitable for local planning at least at the county level. Particularly helpful in this work were data provided by the previously completed land use inventories of the Cities of Milwaukee, Racine and Kenosha.

The origin and destination studies necessary to determine existing travel habits and patterns within the Region, and the singularly most expensive and most complex of the required inventories, has also been completed. In order to obtain a compete picture of the travel patterns within the Region, it was necessary to conduct three basic types of travel surveys. Some of the travel pattern data could only be collected by drawing a cordon line around the entire Region and for a time halting all motorists as they crossed this cordon line at 32 external interview stations. Data about the trips in which the motorists were engaged was then collected by roadside interview. This external cordon line study yielded information on all trips which had either their origin or destination or both outside of the Region but did not yield any information on trips with both origin and destination within the Region. Information on these internal trips was gathered by means of home interview surveys in the Milwaukee, Racine, and Kenosha urbanized areas and by means of a postal questionnaire survey in the remainder of the Region. (See Figure 2.) In addition to these three surveys, special travel pattern surveys were required to collect information on truck, taxi and other fleet movements.

In addition to the necessary trip information data, the home interview survey collected unique information on household history. This included historic information over a thirteen year period on the place of residence, place of work, income level, family size, educational attainment, and race of each family interviewed. While the information ordinarily collected in origin-destination studies provides a picture of all the travel within the study area on an average day, the household history data will provide a picture of the long-term migration within the Region and is essential to the implementation of the regional land use model. An attitudinal survey requesting information on travel and housing preferences was also conducted on a sub-sample basis.

The origin and destination surveys involved over 111,000 personal interviews, 18,000 in the home; 74,000 at the roadside; 4,000 with truck and taxi fleet owners, and 15,000 by postal questionnaire. The travel survey alone collected over 2 million individual pieces of information.

Also begun this year was a regional soil survey. This survey is being conducted for the Commission by the Soil Conservation Service of the U. S. Department of Agriculture under a cooperative agreement and has as its objective the completion of a detailed operational soil survey for the entire Region. The work will require the conversion of approximately 720,000 acres of existing soil surveys and the completion of new soil surveys for approximately one million acres not previously mapped. This is the first time in the United States, and perhaps anywhere in the world that a detailed operational soil sewerage has been carried out on an areawide bases over an area as large as our Region.

The soil survey work includes the identification of the boundaries of all soil mapping units on aerial photographs, the provision through field and laboratory analyses of quantitative information on the agricultural and non-agricultural plant material, wildlife, water management, and engineering properties of each soil mapping unit type and the interpretation of this quantitative data for planning and engineering purposes. This will include the provision of suitability ratings for potential residential, industrial, transportational, recreational, and agricultural landuses; and adaptability ratings for septic tank disposal fields, building foundations, trafficability, surface stabilization, road and railway subgrade, road base backfill, source of sand or gravel, source of topsoil, and surface water reservoir embankments and linings. To date, approximately 250,000 acres have been mapped and 32,000 acres converted and the work is progressing on schedule. Final reports will be published by county, but advance prints of soils maps and interpretive data will be made available as the work progresses for use in the land use-transportation study, and by state and local units of government and private citizens.

A surface water quality study to provide definitive knowledge on water quality for planning land and water development on a regional scale has also been initiated. Specific objectives of this study are to determine the effect on water quality of the principal sources of pollution in the Region's major watersheds, to determine the effect of water quality on various water uses and concommitant effects on land use patterns, and to predict future water quality under alternative regional land use plans. The survey will cover ten watersheds and twenty-six streams, and will involve field sampling, laboratory analysis, the recommendation of quality standards for various water uses, and classification of channel reaches based upon the existing areas of pollution and the recommended water quality standards.

Also undertaken this year was a regional park and open space inventory which included the identification and delineation of

all existing and potential major park and open space sites within the Region and the classification of these sites with respect to their location, physical characteristics, proposed use and future recreational demand as possible state parks, forests, and conservation areas, wayside parks and scenic easements, and county parks. This work represents a joint interagency effort of the Wisconsin Conservation Commission, the Wisconsin Department of Resource Development, and the SEWRPC.

Work was also begun this year on the coding of the survey data, on the key punching of the coded data onto IBM cards, and on the development of the transportation network, including both existing highway and mass transit facilities.

The massive nature of the data collection operations involved in the land use-transportation study required the retention of a large staff of temporary employees and because of the high rate of expenditure involved constituted a critical phase of the study. All of the work has been scheduled with the assistance of a critical path diagram and to date is progressing on schedule and within the budgetary limitations.

Its completion on time and within budgetary limitations was possible only because of the high quality of the professional staff responsible for this work and the dedication and devotion to duty of the many temporary employees engaged in this critically important task. Some understanding of the complexity of the work and the administrative problems involved can perhaps be communicated by pointing out that the data collection phase required the preparation of seven detailed procedural manuals used to train personnel and supervise the work, and of over 75 special detailed data collection forms. The devotion of the field interview staff and the cooperation of the citizens of the Region resulted in one of the lowest refusal rates of any major transportation study conducted to date - 1.6 percent, and an unusually high rate of useable returns on the postal questionnaire surveys - 17 percent. Staff personnel and monthly expenditures peaked in June of 1963, the staff standing at 242 persons at that time all but 13 of which were recruited from within the Region. This has since been reduced by over 157 persons; and as coding is completed, further reductions in personnel will be made until a core staff of approximately 40 persons remains for the duration of the study.

The year ahead will be spent in analysis and in the preparation of forecasts so that the Commission's next annual regional planning conference may be devoted entirely to a presentation of the findings of the study and a preliminary presentation of alternative regional land use-transportation plans.

The 1962 Federal Aid Highway Act requires urbanized areas having central cities of 50,000 or over population must by July 1965 have underway a continuing, areawide, comprehensive and cooperative transportation planning program, in order to continue to qualify for federal highway aids. This provision of the federal law affects 40 counties, cities, villages and towns within the Region. The State Highway Commission of Wisconsin has this year notified all of the affected communities within the Region that the regional land use-transportation study will meet the requirements of the 1962 Federal Aid Highway Act.

VII. COMMUNITY ASSISTANCE

Four local planning manuals or guides are presently being prepared under the Commission's community assistance program. The purpose of these manuals is to provide communities and counties throughout the Region with information helpful in the preparation and implementation of local plans and to assist local public officials within the Region in carrying out their day-to-day planning function. All will include model ordinances. These four guides are: Land Development Guide, Official Mapping Guide, Zoning Guide, and Organization of Local Planning Agencies, including an inventory of local planning activity within the Region. The first of these manuals has just been received from the printer and is presently in the process of bing mailed to participating local units of government.

The Commission under an interim community assistance policy has on request furnished functional guidance and advice on planning and community development matters to various communities within the Region. The Commission's community assistance division has also been responsible for the distribution of aerial photographs, base maps and the P-6 Planning Reports to the local units of government and to private agencies and for the presentation of the Commission's program to various citizen groups throughout the Region.

VIII. WATERSHED PLANNING

The Commission's regional planning program embodies a recognition of watershed problems, and the Commission has to date formed two watershed committees: the Root River Watershed Committee and the Fox River Watershed Committee. The creation of these committees recognizes the need to consider watersheds as rational resource planning units if workable solutions are to be found to such related resource problems as land and water use, drainage and flood control, water quality and stream pollution, water supply, and recreation and public open space reservation. This is so because storm water drainage and

flood control facilities must form a single integrated system over an entire watershed capable of carrying both present runoff loads generated by existing land use patterns within the watershed and future runoff loads that may be generated by changing land use patterns within the watershed. Moreover, water cannot presently be legally diverted from one watershed to another, a factor of considerable importance to the seven-county Region which is split by a subcontinental divide. Engineering designs of water related structures and facilities must, therefore, be based upon the watershed as a planning unit. The topographically related physical problems of a watershed tend to create a strong community of interests among the residents of the watershed, and citizen action groups can be formed to solve water related problems. It must, however, be recognized that in an urbanizing Region such as Southeastern Wisconsin, it is also necessary to correlate individual watershed planning programs within a broader planning framework, as the Commission's work program does. (See Figure 3 for watershed configuration within Region).

Membership on the local watershed committees is representative of local technical and elected officials possessing broad experience in the various facets of watershed planning and land use development.

One of these, the Root River Watershed Committee, formed at the specific request of the City of Racine, has recommended a comprehensive watershed planning program for the Root River Watershed. This program is set forth in the Commission's publication entitled "Root River Watershed Planning Program Prospectus," published in March of 1963. The Prospectus outlines a comprehensive watershed planning program to resolve the critical problems of flooding, pollution, park and open space reservation, and land use development in relationship to the stream channel and its flood plains and floodways presently existing within that watershed. The four counties concerned have agreed to carry out the recommended planning program and provide the local funds necessary for its execution. An application for a Federal planning grant to assist in carrying out the program has been filed with the HHFA by the Regional Planning Commission. It is hoped that the actual watershed planning work can get underway in January 1964.

The Fox River Watershed Committee has completed its organizational tasks and is preparing to study the problems of the Illinois Fox River Basin and to recommend an action program for their resolution.

IX. LOCAL PARTICIPATION

It should be noted that the regional planning program in Southeastern Wisconsin proposes full participation by state and federal agencies, counties and local municipalities in the regional planning work through an elaborate committee structure and through an assignment of staff by such agencies as the U. S. Bureau of Public Roads, the State Highway Commission of Wisconsin, the Wisconsin Conservation Commission, and the County and City of Milwaukee. The committees provided in this structure are of two basic types. The first type is represented by technical advisory and coordinating committees created to deal with functional aspects of the Commission's work. To date, two such committees have been formed: Technical Advisory Committee on Natural Resources and Environmental Design and the Technical Coordinating and Advisory Committee on Land Use and Transportation Planning. The former committee includes representation from all of the agencies having active resource related planning, conservation and management programs underway in the Region, including the U. S. Corps of Engineers, the U. S. Geological Survey, the U. S. Soil Conservation Service, the State Geological Survey, the Wisconsin Department of Resource Development, the Wisconsin Conservation Department, the State Highway Commission, the Public Service Commission, the State Board of Health, the county park and planning commissions, and the Metropolitan Sewerage Commission of Milwaukee County. The latter Committee includes planning technicians, city, traffic and highway engineers, agricultural agents, conservationists, and technicians from public utilities, railroads, and transit companies.

The second basic type of committee is represented by intergovernmental coordinating and advisory committees. These include the two watershed committees already formed and an Intergovernmental Coordinating Committee yet to be formed as a part of the land use-transportation planning study. This latter committee will have a major role in reviewing all regional plan proposals and alternatives and in the selection of the final plans.

Through this committee structure, the regional planning program provides a unique opportunity for the cooperative adoption and joint implementation of regional land use, transportation, drainage and flood control, and related community facilities plans by the state, county, and local agencies concerned. If this opportunity is to bear fruit it must, however, be seized by the state, county, and local agencies concerned. Interagency cooperation must be a two-way street. The Commission can do no more than make the organizational structure available for such intergovernmental participation and provide the staff

to assist in its implementation. It is incumbent upon the representatives of the state, county, and local units of government to make this cooperative planning meaningful by actively participating in the work of the Commission through the advisory committees.

X. CONCLUSION

Someone else has said that historically the concern of local units of government about such far-reaching, areawide problems as transportation, drainage and flood control, water and air pollution, sewerage and water supply, land and water use, and park and open space reservation has been tempered by their distaste for any metropolitan government that might be created to solve such problems. In the Southeastern Wisconsin Regional Planning Commission, the citizens of Southeastern Wisconsin have an instrument tailored to their needs and preferences, an official body whose function it is to attack areawide problems through the preparation of advisory plans. By participating in the planning and plan implementation process on a voluntary, cooperative basis, the local units of government can find the necessary solutions to the pressing problems of areawide development.

The regional planning program in Southeastern Wisconsin has to date moved quite rapidly and the Commission believes that particularly good progress toward the preparation of a framework of regional plans has been achieved in the past year. The Commission must, however, have continuing support of the local units of government within the Region if it is to assist them in solving their common problems while retaining their own identities. Quite simply, the Regional Planning Commission is your agency, representing an investment in your future; and it can only succeed insofar as you, as citizens and public officials, actively and constructively participate in its work.

WATERSHED PLANNING, AN APPROACH TOWARD BETTER LIVING

by W. J. KLEIN, Vice President
Director of Marketing Services &
Public Relations Division
Allis-Chalmers Manufacturing Company
Milwaukee, Wisconsin

May I compliment all of the members of the Regional Planning Commission and all who are giving so much of their time and energy to explore ways and means to conserve and manage our vital resources in order that generations to come may live better.

I wonder how many of us fully realize the far reaching effects of your planning and the contributions your recommendations can have in future watershed programs.

The challenge before us, it seems to me, is to preserve the best and most valuable parts of our heritage while gearing our government-City, County, State and Federal to present day needs.

How are we going to plan to fulfill future responsibilities? Conservation is not just for today. Conservation is for tomorrow and all the tomorrows to come.

Watershed planning involves the entire Resource Conservation Program and, watersheds do not have County or State boundary lines. Your deliberations and recommendations will be equally important to each of the seven counties and all the rural and urban communities within them.

Within a generation or two I can visualize this seven county area as a metropolitan complex extending from Port Washington to South Chicago and beyond. And, I am sure that all will agree that, this is a picture of things to come. We cannot buck the future, therefore, we must become a part of it. And, to become a part of the future we must plan for it. Actually, your planning here will, in effect, shape the kind of metropolitan complex I have just described.

The challenge to all who are here is a great one. But, by sound planning you will be performing a great public service contributing much to the future, orderly growth of this vast area, my hope is that your planning will become action patterns for the future.

Today, there are urban residential, industrial and commercial developments sprawling over an ever-larger area of rolling countryside throughout our nation and is going on now within the area

of these seven counties. The problems of proper zoning, land use and water control is an immediate reality and affects increasingly larger numbers of people.

All of us will agree that our rapid population growth, our metropolitan complexes, the scientific and technological advances, plus increased leisure time and mobility of people, all will continue to have dramatic effects on the relationship between people and our remaining natural resources.

Believe me, the job ahead is a challenging and exciting task. All future recommendations must be based on fundamental experiences related to sound soil-testing, water, forests, grass and wildlife management. Soil-testing is all important in solving drainage, sediment and pollution problems.

Water storage within a watershed must be adequate to support triple the population in this seven county area. The late Senator Kerr of Oklahoma referring to the report of the select committee on National Water Resources, which the United States Senate created in 1959 and which included a number of the most able men in the Senate, said, "I was privileged to serve as chairman and as such, take great interest in what is probably the most extensive study of water resources and problems ever made."

The committee was repeatedly told that any inquiry into the nation's potential water supply necessarily required an appraisal of conservation programs affecting all of our natural resources. I hope that if you have not had a chance to study this report, you will.

The committee found that the nation's water supply, in relation to demands, is shrinking rapidly. Withdrawals now are about 300 billion gallons daily. Based on medium projections of the population increase by 1980, demands on the nation's water resources will almost double. And, they will triple by the year 2000.

If, as the committee hoped, the nation's growth rate would be greater than the medium estimates, these increased demands for water will come upon us much faster.

The committee assumed that the nation's economy will continue to grow at the rate achieved in the past and that there will be relatively little change in the present methods of water use and water waste.

Let's take a look at water waste and water destruction and what can be done about the development of watersheds.

Allis-Chalmers' Film - "Water, It's Many Voices"

This film is available to any group or organization, free of charge by writing to Allis-Chalmers Manufacturing Company, P. O. Box 512, Milwaukee 1, Wisconsin.

We know that our watershed program with its streams, dams and lakes can help to create beauty when none now exists. It can create an adequate water supply for boating, fishing, water skiing, swimming as well as for industry. And, important as industry is, there is more to life than the production of goods. Most important of all is the art of good living.

Therefore, in planning our watersheds, our cities and suburbs, in developing commerce, in improving agricultural techniques and in building our highways we must remember that each individual life must have meaning if our society is to endure.

Mr. Maurice Goddard, Secretary of Pennsylvania's Department of Forests and Waters in a recent speech in Chicago said, "This is your priceless treasure, this beauty. Save it where it has not been despoiled. Place it in public trust if need be. You will not be locking it up. The myth that public ownership of scenic areas automatically makes that land unproductive is nonsense. In every case such development, where it is warranted, is economically productive far beyond the agricultural or commercial potential of the area. But, saving our natural beauty will not be enough in this age. Our affluent citizen demands much more."

Then he hurled a challenge to all who are concerned with conservation. "In some cases," he said, "you must create beauty and recreation where none now exists. This is particularly true around the cities where every day urban sprawl swallows up more and more land."

When we consider the problems that confront us, all waiting to be solved - and solve them we must - it is refreshing to know that we have people in this country of ours, working within the structure of organizations, such as this Regional Planning Commission, who in their dedication recognize the problems and needs and most important of all, are doing something about it.

General Omar Bradley who has always been an ardent supporter of conservation said, "Year after year our scenic treasures are being plundered by what we call an advancing civilization. If we are not careful we shall leave our children a legacy of billion dollar roads leading nowhere except to other congested places like those they left behind. We are building for ourselves an asphalt and cement treadmill."

We must find solutions to these national problems such as unsupervised urban sprawl, understanding and agreements on water management, stream pollution, waste disposal, zoning and many more related problems.

Answers must be found in the law and in the structure of government. If need be, watershed planning must include reservoir capacity to meet the requirements of the people in the entire community - for agriculture, for industry and for recreation. We must visualize the whole job. We must recognize that watersheds must fulfill the needs of all the people who live there.

I was happy to read President Kennedy's statement on soil and water conservation. He said, "This is no time to permit our national conservation effort to become listless routine. We need, above all, to revive the zeal for resource conservation that fired the spirit of the pioneers who created the conservation laws and programs. We need to have more imaginative and creative thinking, more long range planning and more decisive and responsible action in the entire area of public resource conservation."

It was my privilege to go to Europe a couple of years ago and I had the opportunity to drive by car and bus through large sections of Italy. Here one could plainly see acres of land that were completely barren. Just beyond this was the metropolitan area with narrow streets, and great numbers of people concentrated in these congested areas.

One quickly got the feeling that past generations did not have growth plans for the years ahead. Let us not make that mistake here.

Marion Monk, President of the National Association of Conservation Districts in a speech in New Orleans six weeks ago said, "As a nation we face the clear probability of sharply increased demands on the use of our natural resources. To meet these demands in time, and within the boundaries of economic sense, we need sound planning and an orderly program of resource development. We are moving into a period in our history when we must do a much better job of management. Large areas of land and large volumes of water will have to do more. This means an increasing commitment to multiple use. It means an increasing emphasis on quality of land, water and timber in contrast to quantity. With limited supplies of resources and increasing pressures on what we have, it is inevitable that some hard choices will have to be made. We are not going to have all we need, for all purposes, in every place. Alternatives will have to be weighed and priorities established. We cannot go on forever allowing highway systems, airports, housing and similar developments to gobble up, unchallenged, millions of acres of rich, level, agricultural land. We don't have so much of Class I lands that we can continually push agriculture back to the steeper less productive ground without paying a penalty.

In this seven county area of Wisconsin we have, without a doubt, the greatest natural resource in our state - our Class I land. Next, is the shoreline of Lake Michigan. What are we planning to do with it?

The decision to build Bong Air Base, too close to O'Hare Field certainly points up the importance of Federal, State, Regional, Military and Civilian planners to get together and carefully consider the whole problem before careless or hasty action takes place.

In a recent newscast I heard of tentative plans for the removal of the Northwestern Depot to make room for a multi-story hotel. This is common practice, and as shoreline property becomes available, we put up hotels, large office and apartment buildings. Miami Beach is a good example of this.

Right now the beautiful Island of Oahu is getting the same treatment. Fabulous Waikiki Beach is being closed into the water's edge with brick and concrete, where are the planners? Are real estate brokers and contractors considering the stake future generations have in such an important recreational area?

I am not an engineer or a planner. Neither am I a land developer but, as an individual interested in our future, I should like to express a personal view. With proper planning could these hotel and apartment buildings be placed so they will be a mile or two from the shoreline? Imagine if you will that this were done. We could then have dam reservoirs, lakes, golf courses, parks and recreational areas with bridle trails, tennis and badminton courts, baseball diamonds, even camp sites in wooded areas. All would be placed between the complex of buildings and the lakeshore.

Here, people could spend leisure time and weekends or annual vacations making use of the facilities available to them including the lake shoreline itself.

There would be many who could take advantage of this and many wouldn't have to travel hundreds of miles to vacation areas. It would mean less holiday traffic, less highway accidents, and more time to enjoy the great outdoors close to home.

And, with our exploding population it would relieve the congestion that is likely to develop in other wonderful vacation areas of our State.

None of you need to agree with me but I hope I have sparked some thinking in the minds of our planners that this resource should not be abandoned to progress today at the expense of good living tomorrow.

Several years ago the United States Navy held some exercises on Lake Michigan. While sailing from Chicago to Milwaukee a group on deck looked at the Chicago skyline and one officer remarked how impressive the vast skyscraper skyline looked.

When they approached the Milwaukee Harbor most of the group was on deck again. This time the comment was, "What a refreshing comparison to see all that verdant green along the shoreline with buildings set back away from it.

I know which in my personal opinion looks better and which one I like better. But, it is up to the planners, the experts, to decide what is best-not just for us-but for the generations who will come after us. I hope that future generations will regard us as having been resourceful and far-thinking instead of damning us for our shortsightedness.

The increasing demands and pressures on our natural resources will grow. To meet the pressing demands in time and within the boundary of economic sense, tells us we need sound planning and an orderly program of resource development. We need it now. We must prevent another Bong Base fiasco.

It is refreshing, therefore, to talk to a group of citizens who recognize the need for watershed planning and thru planning conferences such as this can bring about recommendations to get all facets of Resource Conservation Committees and Commissions to work together, where planning, zoning and conservation see the problem as a joint responsibility. Where drainage problems are taken into consideration as well as sewage disposal. Water management, sewage disposal, drainage problems and soil surveys are all a part of complete watershed programs. All must have a part in the master plan.

We need to develop complete plans for each area. Thru proper soil surveys we will find where water reservoirs should be, where we should be building our roads, our airports, our shopping centers and our residential and industrial areas. Then and only then can we make our zoning laws to best serve all of the people in the area. All is a part of watershed planning and is the right approach to better living.

Our future greatness will depend to a great degree on how well we conserve and preserve our vital natural resources. Your working together, your regional planning can provide the answer.

In behalf of those who will share the future, may it be great, because you were dedicated, you were far-sighted and you built wisely for them.

THE WISCONSIN RIVER VALLEY

by ROBERT C. WYLIE, Vice President and General Manager
Wisconsin Valley Improvement Company
Wausau, Wisconsin

It is a privilege to appear here this morning before such a large group of citizens concerned with the future welfare of their area. I am always pleased to speak to such a group, particularly if they are interested in resource planning and especially in water resource development planning which, I am sure, you are.

I have been following with some interest the activities of the Southeastern Wisconsin Regional Planning Commission through articles in the newspaper, various copies of reports prepared by the Commission staff and a personal acquaintance with several members of the staff. Up to this point in the life of the Planning Commission, they are to be commended for their thoroughness and attention to detail in collecting, assembling, interpreting, and publishing a great wealth of information on all facets of your area which lend themselves to future planning. Inventorying the physical resources, whether man-made or natural, of an area this size is a tedious job but is an absolute necessity before engaging in further work. From personal experience I know it is difficult to ignore the tendency to immediately begin solving small, local, single problems without viewing them in the perspective of their true value or overall effect on the area as a whole. Inventory studies are a great help in creating a base for perspective views and leading the way for sound projects that will be an integral part of a well thought-out plan.

When the inventories are completed, the next logical step is to prepare recommendations as guide lines for the action program that should follow. These recommendations will probably refer to industrial development, municipal planning in transportation, communication and commercial development, water and land usages and zoning, recreational facilities, and many other related items. It is important that the resulting recommendations and action projects be based on economic facts, supported by favorable answers to the questions: Why do we need this? Do we really want it? Will it be an effective, permanent part of our total program? If natural resources are involved, is the project designed to make wise use of them through perpetuation and utilization of the resource, or is the development being based on emotional appeal, or cyclical trends the future of which no one can predict?

Any sound resource development project can be justified on economic grounds and one should not have to resort to assigning an impractical life expectancy to the project, or tack on unrealistic,

incalculable, secondary benefits to make it appear sound. This has become the case in too many instances where purely social objectives or political convenience were to be served.

After the inventories and recommendations have been completed comes the task of implementation. All the studies, and reports of studies, are of no real value unless the lessons they have taught are put to good use through action programs necessary to accomplish the desired aims. This is where your real sincerity and interest in doing something for the area can be measured and put to the test. These projects will demand an understanding of their true objectives by the entire community and will ask for sacrifices of time, money and physical facilities. You have already invested substantial sums of money to create and support this Planning Commission. This indicates a willingness on the part of local people and communities to help themselves. However, the sums already expended are probably quite small compared to the sums that will be needed in the future to put the recommendations of the report into practice.

You will probably find that many of your problems are local in nature and their effects are only felt locally with very little interest in them evidenced by anyone outside the area. If this is the case, then it seems reasonable to suggest that the cost of solving these problems should be borne locally; however, if the problems can be correctly classified as being statewide or nationwide in scope, then everyone should take an interest in them and help solve them.

I noted in newspaper accounts recently that your Commission researchers have defined two of your major problems as water control and use, and the need for parks, open-spaces and recreational facilities. Since my experience has been in the water resource field, I would like to confine my remaining remarks to that area. My suggested solutions to some of the decisions you will face are based on my knowledge of existing water resource developments elsewhere in the state.

As you begin to develop your water resources for flood control, pollution abatement, agricultural use, recreational facilities, and industrial processing, you will find a great variance of opinion on how it should be done, and who is responsible for doing it. Water is one of the least understood of our major natural resources, probably because the interdependence of water uses makes it impracticable or undesirable to extend conventional property rights to this field. The functioning of our existing system of water law is evidence that, from the first, water has, to a large extent, been considered to be a common resource in law and, therefore, a proper field for government control. Unfortunately, this has been construed by many to mean that the state and federal governments should actively participate in water development projects. The concern

here is that if private enterprise and local communities play a continually decreasing role in the development of our water supplies, the public agencies will dominate the field and not be subjected to those checks of competition which penalize inefficiency and restrain uneconomic practices.

Some major fallacies which have developed in the water resource field and with which I do not agree are:

1. That only state and federal governments can amass the capital necessary to develop large water resource projects.

2. That the public interest will only be served if governmental agencies, or large governments do the job, especially if some social objective is to be achieved which is outside the scope of market calculations.

3. There is something wrong with development of our water resources, or other resources with the profit motive in mind.

I would like to give my answer to these ideas in essay form, by relating how the major river of this state has been developed, to the benefit of all, by private enterprise under state regulation.

The largest river in our state - the Wisconsin River - begins its journey in Lac Vieux Desert on the Wisconsin-Michigan border line and completes its travels 430 river miles downstream when it flows into the Mississippi. During its travels it gathers the run-off water from 12,280 sq. miles of Wisconsin farm and forest land, or about 22% of our state's area. Any attempt to control the river is complicated by the fact that it flows through a variety of communities, land-use areas and industrial activities, and its tributaries originate in many types of soil conditions and vegetative cover. These all have their special problems that do not answer to a common solution.

Early in Wisconsin history the river served as a means of transportation, but its unpredictable, boisterous nature did little to encourage permanent river-bank industry, which prefers dependable, uniform flows instead of seasonal flooding and drought conditions. This was a time for the planners to do their work, to inventory their needs and schedule their projects for the future. These planners, the businessmen who were investing heavily in new papermills and hydro-electric plants, were willing to accept the responsibility of providing both the physical and financial means to tame the Wisconsin River.

First, however, it was necessary to convince the state, through its legislature, that a publicly-owned resource could be managed

by private interests for the betterment of all. The idea of private industry regulating and developing a large river was unheard of. And yet, these papermills and utilities had a dream and conviction that it could be done with due regard for the rights of people of the state in their waters, and with the imagination and ingenuity that necessity can bring. In 1907, after agreeing to all the safeguards suggested by the state, these businessmen were granted a charter to form the Wisconsin Valley Improvement Company. This Company was assigned the task of developing a reservoir system to store excess water, when available, and to release it in times of low flow. In this way flooding could be averted and uniform stream flows could be provided throughout all seasons of the year. All of this was to be accomplished with funds provided by the river industries but under the watchful eye of the Forestry Board, which has now evolved into the Public Service Commission.

The effort to control the river's flow began with the purchase of many old logging dams located at the outlet of natural lakes which were the sources of some of the Wisconsin's large tributaries. These dams and their subsequent replacements were to be the bulwark against floods caused by melting snow in the spring and heavy rains in the fall. It soon became evident that additional reservoirs were needed to store excess seasonal flows from other parts of the drainage area for use during reoccurring dry spells. The Improvement Company, backed by the river mills, expanded it storage capacity by building new reservoirs and now operates a total of twenty-one reservoirs on the Wisconsin River and its tributaries. Sixteen of these reservoirs were originally natural lakes and the other five are completely man-made.

The twenty-one reservoirs have a surface area of almost 67,000 acres, and a storage capacity of 17,440,000,000 cu. ft. (400,000 acre-ft.). This total amount of water is stored and released at least once in each reservoir year, and often times more than once. To aid in making the best use possible of our available water and provide adequate data for efficient operation, we have entered into cooperative agreements within existing programs of the U. S. Geological Survey, Soil Conservation Service and U. S. Weather Bureau. Under these agreements stream gaging stations and weather data installations are provided throughout the reservoir system.

The effectiveness of the reservoirs and their operation is evidenced by one of the principal stream gaging stations on the Wisconsin. The records show that the reservoir system is capable of decreasing flood flows as much as 50% during the spring and fall by holding excess water in upstream storage. At other times of the year, during dry spells, the reservoirs can more than double the low natural flows by releasing that stored water on a planned schedule.

This is truly water conservation in its finest sense - destructive flooding is prevented, low flows are made usable, siltation and pollution are minimized, local groundwater tables are restored, and recreational opportunities are provided. All of this is done as an adjunct to providing water for production of vital power and industrial processing. It may seem obvious now that this was the right thing to do, and the right way to do it, but 56 years ago it required far-sighted industrial corporations to recognize their responsibility and build for the future. Even more important, it took courage to invest the necessary capital for development, and to assume the expensive maintenance and operational costs of the future. These companies made that investment for the future and assumed the financial liability of operating such a system. To date they have invested $2,000,000 in the reservoir system and since most of it was constructed prior to 1940, it would require many times that amount to replace it today. In addition they are paying yearly tolls for its upkeep and operation of over $400,000. These tolls include a yearly payroll of $114,000 and tax payments of $111,000 annually.

The twelve member companies of the Improvement Company, which includes 8 papermills and 4 public utilities, have constructed 26 hydro-electric dams along the river to utilize the river's controlled flow of water. These companies now employ, in the Wisconsin River Valley, over 10,000 people with an annual payroll of over $65,000,000. In addition they pay more than $23,000,000 yearly in taxes.

The efforts these companies have put into a venture such as the Improvement Company is answer enough to anyone who believes that only the public agencies have taken up the challenge of resource development, or that only large governments can provide the capital necessary to build and maintain the facilities needed to control a major river.

Our member companies, as well as other industries in our state, recognize and accept the responsibilities that result from the use of the natural resources of land and water, and they must ever be alert to protect the investment of their stockholders by protecting and preserving, if possible, their source of raw materials for the future. In our area of papermills and the hydro-electric industry, this means that the timber crops and water supplies must be managed to provide not only sustained but ever-increasing yields. Their very existence is dependent upon such management practices. There is no question but that they have accomplished all those things with profit in mind. It has been the incentive they needed upon which to risk their capital. Without that incentive, or that capital, the Wisconsin River could only have been tamed with taxpayers' money, yours and mine, and then without realizing the economic base that these companies provide.

Throughout all this development the public interest has been served. Through the Improvement Company a major resource has become a useful tool and, at the same time, has paid its own way. The reservoir system and its dependable stream flows have been the basis for the establishment and continuity of the river mills. These mills now operate more than 800,000 acres of industrial forests which are generally open to the public. Thousands of acres of water in storage reservoirs or lakes behind hydro-plants are prime fishing areas. Even now plans are being investigated by the Company and its members to build additional storage reservoirs in order to do a more complete job of river regulation.

This has all been accomplished through a uniquely satisfactory arrangement between industry and the state. Business interests have a stake in natural resources and area planning. If the business climate is not made unbearable for them, they are willing and able to do marvelous things. The local communities and their residents are often underrated for their desire and effort to provide for their own needs. Most people and businesses take great pride in solving their own problems and supporting the solution with their own money - rather than have some one else do it for them with the attendant controls and supervision that are sure to follow.

Where are you going to look for help to solve your development problems? I heartily recommend that you take a close look at what has been done by local people, with local financing, under state jurisdiction in the Wisconsin River Valley.

Thank You.

THE PLACE OF RECREATION IN SOUTHEASTERN WISCONSIN

by GEORGE T. WILSON, Program Supervisor
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Recreation is an important part of the total planning for the southeastern Wisconsin Region. An increasing amount of the Region's available dollars is going for park and recreation services which are categorized by community, public, voluntary, industrial, private, church, institutional, commercial, and outdoor recreation. Expenditures for public parks and recreation in the Region's most populous county alone amount to millions of dollars annually. A southeastern Wisconsin regional population of over one and a half million persons is being augmented at a national average rate of one person every eleven seconds. Waukesha County had an increase of eighty-two percent in its population from 1950 to 1960. Amazing as the population growth throughout the Region may appear, the Milwaukee public recreation division points out in a recent study that the use of its recreation facilities and programs in the past five years has actually exceeded population growth by one and a half times. Add to this growing local demand the present and potential users of regional recreation from the Chicago Metropolitan area of approximately seven million persons, plus visitors and vacationers from other sections of the country, plus an increasing number of foreign visitors, and one can see the complexity of the "recreation problem" faced by the southeastern Region.

What is this thing called recreation? What does it do? Why is it in such demand? Its definitions are myriad as those of education. What it does is not presently measured precisely. The reason it is in such demand is a product of a complex but uniquely American pattern. The term recreation, regardless of definition, nearly always implies the use of leisure time through voluntary, enjoyable activity (passive or active), or association that aids in human development. Through areas, facilities, leadership and programs, recreation seeks to aid in physical, social, mental and spiritual growth of the individual. It seeks, among other things, to meet basic human needs and desires for recognition, acceptance, adventure, service, self-expression, relaxation, and achievement. It also seeks to encourage purposeful living, and strives to keep its roots deeply imbedded in life enrichment and human values. Recreation is often offered as a panacea for juvenile delinquency, for vandalism, or for the cure of economic maladjustment of depressed areas. Still others offer it as a shibboleth and substitute for a life balanced with work, creature comfort chores, and other facets of human living that in their totality mold the mature mind and healthful body dedicated to its Creator. Rousseau, Thoreau and Wisconsin's own Aldo Leopold saw, in what we now call

recreation, how we could through its processes become more perceptive of the universe in which we live. They all recognized its possibilities for life enrichment as part of but not the sum total of living. As we come to understand more about recreation which, incidentally, only recently has developed a recognizable body of knowledge distinct from other disciplines, we shall more effectively solve its problems.

Some of the major developments of "Recreation Americana" that affected the dynamics of present day recreation were puritanism, mechanization and increased leisure, population shifts and growth, changes in educational patterns, urbanization, suburbia, transportation changes, and now automation. It is no little wonder that as we become more sophisticated and sense as we increasingly use I-system roads that will eventually link all the outdoors to cities over fifty thousand population, that simple pleasures, truly meaningful experiences, and the human values we seek often lie very close to nature. This "discovery" is expressed in countless ways, but all have a tremendous impact especially upon the demands for outdoor recreation and particularly for parks on a county, regional, and state level.

The teamwork community recreation effort of public, voluntary, private and commercial agencies might well be to provide facilities, leadership and activities that are easily accessible to those who finance them. Activities ought to be geared to the needs of all interest and age groups. Facilities and programs of the community include tot lots, small neighborhood parks, local pools and beaches, playgrounds and athletic fields, social centers, scouting, boys' clubs, "Y" programs, CYO, movies, bowling and many others. Most community programs in the Region heavily emphasize leadership.

Facilities and services that sometimes cannot be provided by the municipalities or its agencies for community recreation may include buildings serving several communities, pools or beaches serving a wide area, camps, stadiums, large parks, marinas, zoos, arboretums and the like. Such facilities are most frequently associated with park and outdoor recreation, and in some cases are developed on the basis of official and unofficial agreements with local municipalities which often clearly delineate function. In some instances in the southeastern Region municipalities have combined to form area wide park and recreation programs. There has been no discernible movement in the Region to form such districts on a wider metropolitan or district authority basis as has been done elsewhere.

The State of Wisconsin, through its public hunting grounds, lakes, forests and parks, has extensive outdoor recreation areas in the Region and presently is attempting to expand its Kettle Moraine Forest boundaries. The state has developed some use agreements with municipalities and counties and has assisted in acquisition and development of areas by these agencies.

The Outdoor Recreation Review Commission Report made the point that "thousands of acres of recreation areas elsewhere are no substitute for accessible usable areas near population centers." It consequently should be of deep concern to the southeastern Region that the total of state park and forest lands in the entire state of Wisconsin provides only 3.02 percent of such lands in the Region which has 39.8 percent of the state's population. This, too, in view of the fact that one of the state's major scenic and natural areas (Kettle Moraine) is in the Region. Of the county park lands in the Region, one county (Milwaukee) has over 80 percent of the Region's total county owned park land, while two counties (Milwaukee and Waukesha) combined have over 90 percent of the county park lands in public ownership. The Region's problem is not one of acquisition alone but rather one of acquisition, distribution, and development.

The major problems of recreation in the southeastern Region, although complex, are through local, county, state and regional studies generally identifiable. Time limitations do not permit lengthy discussion of them in this paper, but some of the major ones would appear to be:

1. Acquisition and distribution of additional outdoor recreation areas;

2. Development of present areas by the state to help meet urgent regional needs;

3. Increasing the usability of present areas to distribute use loads; i.e., sharing of the distribution load for water recreation through access on additional lakes, cleaning up and raising water level of streams having recreation potential, and decentralizing and adding facilities to avoid overuse;

4. Stimulating private recreation developments as an industry through encouraging changing concepts of local zoning and prohibitive controls upon recreation;

5. Encouraging lending and other financial institutions to provide loans for privately operated recreation pursuits;

6. Seeking answers to problems of insurance as they relate to recreation industry risks and liability under present laws;

7. Assisting outdoor education projects in teaching wise use of the outdoors, and informing the public of needs for fair fee charges;

8. Studying the need for public agencies to apply a more consistent policy of special use fees and the need for public agencies to supplement, but not compete with private development;

9. Seeking out additional revenue possibilities for community, voluntary and private recreation;

10. Developing additional and effective use agreements, leases and easements among local municipalities, counties and the state to speed up development;

11. Delineating recreation function among public agencies at various levels and also among voluntary agencies to avoid duplication of recreation services;

12. Appraising the degree to which local government and the state should share responsibility for auxiliary services that local government usually provides where state or county recreation areas require such services; i.e., police, fire, other special services; and

13. Rethinking through possibilities of boundary reorganization of existing political divisions where extensive acquisitions of recreation lands destroy tax base needed for the local governmental taxing structure.

In closing may I briefly comment upon the need for a sharing of outdoor recreation areas that goes beyond the bounds of provincialism. There is also a need to view the demands for recreation as part of the Region's overall plan for a harmonious relationship of land, people, flora and fauna with the idea that we hold these things in trust from our Creator. Allow me to read to you what the National Congress of American Indians said of this sharing to the people who have settled these United States --

"Need we recite what was in that sharing? Water and green hills. Hardwood leaves flashing the sun. Cove waters startled by waterfowl rising at dawn. Big eyed deer at edge of a glade. Depths of humus in the river bottoms.

"Not an untouched land. Not a misprized land. A million people had their plantings here. They knew the uses of forest and stream. Their commerce knew the farthest traces eastward and westward, north and south. They mined and quarried. They left their monuments in many liveable valleys.

"Not an untouched land, but unspoiled.

"Now, it has seemed to us many times that the land has not been cherished as we cherished it. We have not minded the scars that came inevitably in making room for a greater body of people. We understood the crowding necessity out of which these people were pressed upon us. We saw the forests felled, the waters diverted, the meadows crushed under the weight of cities. We saw the purpose in that. What we could not understand, and have never forgiven, is the carelessness, or

foolishness, which traded beauty for ugliness; which destroyed a forest to leave an emptiness. Which turned a green mountain valley into a slag pile. We have hated to see mud silted streams. We have been sickened by the sight of lands in which the gift of fertility has been killed. . . . . .

"We are a small people now and no longer hold the keys to these shores of promise, but we have never left off honoring the land. As our fathers know, we honor the land by living in beauty and sharing with the stranger. May you never honor America less."

PLANNING FOR FLOOD DAMAGE PREVENTION

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Four years ago, in order to find out the extent of personal and family losses sustained from floods in the United States, I wrote to the American Red Cross for information. The Director of Research of that institution sent me a listing of the total expenditures by states each year for the ten year period 1948 to 1958. During this ten year period the 48 States and Alaska received about sixty (60) million dollars for flood relief, money down the drain. The States of Kansas, Connecticut, California, Pennsylvania and Kentucky in the order listed received the largest amounts of money. During this same period Wisconsin received $125,727.00. In Wisconsin our floods are relatively cheap floods accompanied by little loss of life. We have flash floods, catastrophic floods and floods that are of relatively short duration. Yet we do have floods and we do have flood losses and we can take steps now to effectively deal with them.

It must be remembered that these American Red Cross funds were for the bare essentials - food, medicine, clothing and temporary housing and that other agencies - the Federal Government, State and Local Government and other private organizations, such as the Quakers, Salvation Army, etc., also assisted in flood relief.

So much for the financial losses, there are other losses and other important aspects of this problem. Let me quote three statements by prominent and informed gentlemen.

(1) In a report to the Mayor and City Council of the City of Columbus, Ohio, John W. Alvord and Charles B. Burdick said (half a century ago) in 1913.

"It is very evident to everybody who has studied flood problems. . . . that a large portion of the suffering, loss of life, destruction of property has come about through the encroachments by unthinking population upon the flood water channels of the rivers." Two years ago in spite of upstream dams Columbus had another flood with 6 to 8 feet of water in some basements.

(2) Peter Farb in the May, 1961, issue of the Readers Digest in an article entitled "Let's Plan The Damage Out Of Floods" said:

"Our mounting losses are proof of the folly of building in the natural path of the flood waters."

(3) Allison Dunham in the University of Pennsylvania Law Review June, 1959 said:

"The demonstrated effectiveness of engineering works and the new emphasis on human adjustments to floods have led many to conclude that an approach preferable to that of large public expenditures is the use of police power to force human adjustment to floods so that flood losses will not continue to increase."

What has been done in Wisconsin

(1) Four Wisconsin Counties now have flood plain provisions in their County Zoning Ordinances, these are Milwaukee, Waukesha, Jefferson and Bayfield Counties.

(2) The special flood plain zoning subcommittee of the Natural Resources Committee of State Agencies caused to be prepared, through the help of County Highway Commissioners, a map of the flood plains of all the important rivers and streams in every County in Wisconsin. This was the first time such a program was ever contemplated and completed.

(3) This Committee, as a result of many discussions and after conferring with A. J. Thelen, Executive Secretary of the Wisconsin County Boards Association and Ben Hanneman, Executive Secretary of Wisconsin Town Boards Association, drafted an amendment to Wisconsin's County Zoning Law under which all Counties are required to have flood plain regulations by January 1, 1968. No action has yet been taken by the Legislature on this Bill #S133.

What we need to do in Wisconsin

If the state is to propose local regulations to zone the flood plains after 1968 and if the counties and municipalities are to do a good job of zoning before 1968, then we and they need to know much more about the flood plains than we presently know.

(1) We need to know the kind of use that is now being made of the flood plains of our important rivers -- whether agricultural, forestry, recreational, residential, commercial, industrial or wildlife uses.

(2) We need to refine the maps of the important flood plains - their width, length, area, degree of slope, soil type and proximity to cities and villages and residential subdivisions. Maybe we should also classify these as to the degree of hazard involved.

(3) We need to examine the incidence of flooding. How often does flooding occur - every five years, ten years or twenty years? What do we know about their severity, degree of property damage, amount of losses sustained? Are these floods principally spring floods, summer floods or fall floods? The relation between the flood season and the growing season is likewise important in agricultural crop production. Soil surveys of the flood plains might be very valuable in determining the type and kind of agricultural use of the flood plains.

The Southeastern Wisconsin Regional Planning Commission and its staff is to be complimented and congratulated in recognizing this significant fact, since they are now engaged in making a detailed soil survey of this entire seven counties in what I am told is the largest project of its kind in America.

(4) We need to classify the land in the flood plain for its best use. If, for instance, it is to be zoned against residential use and business and industry then what are the acceptable alternate uses for the land? They may be parks, playgrounds, ballfields, fairgrounds, certain types of crop production, forestry, recreation, wetlands, game fish or wildlife development. In addition special river front parks, special auto parking areas are possible in the flood plains in special seasons of the year.

(5) We need to know in general what is happening to other lands within the watershed and the intensity of use in neighboring built up areas.

(6) We need in fact to develop a new philosophy about floods and flooding. A river consists of two parts, the main channel and the flood plain, and the flood plain is as much a part of the river as the main channel. Neither one should be encroached upon. In this area lived a man who had such a philosophy - His name, Charles B. Whitnall. He alone pioneered the idea of river valley development for parks and parkways. We need to do more of his kind of thinking and planning and doing and we need to extend it throughout all of Wisconsin. The logic of flood damage prevention is now gathering momentum in many states. This is good. The recent preliminary report of the Milwaukee River 1963 by the Department of City Development of Milwaukee is, I believe, a real contribution to a solution of their problem with many alternative solutions proposed.

(7) And finally we need a great educational program, vigorous and continuous, among all our citizens and local government officials to acquaint them with the facts and figures on their local flood problems and what can be done about floods. We need to do this job thoroughly and systematically. State and Federal and Regional agency personnel familiar with the basic problem, who know local situations and understand local people and their customs and traditions, can be of tremendous help in furthering the cause of flood protection and flood prevention. In this new educational effort it is obvious that flood plain zoning can be safely advocated as an economy measure. We should continue this educational program until all our citizens are fully acquainted and fully informed with the hazards, the danger, the expense, and the futility of locating homes in the path of the floods. Flood damage prevention according to General Vogel, former Chairman of the Tennessee Valley Authority, is as elementary and as simple as "Coming in out of the Rain."

As was said many years ago, "It is better to keep the people out of the path of the floods than to try to keep the floods out of the path of the people."

There is a great deal of unfinished business on the flood plains of a number of states and one of these states is Wisconsin. We have had floods ever since a fellow by the name of Noah built a ship called the Ark and will have them again and again! but! the degree of damage sustained can be substantially reduced if planning for flood protection is made a realistic part of every land use planning program in America. Progress in planning as in anything else is made by people who dare.

OUR EXPANDING POPULATION AND CONTRACTING RESOURCES

by THE HONORABLE GAYLORD A. NELSON
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America must begin at once to make a massive investment at the local, state and national level to save our natural resources from destruction. If we fail to act in the few years we have left, we could destroy not only the resources which provide much of the beauty and recreation in our life but our most important, life giving resources as well--the water we drink and the air we breathe.

Much of our priceless heritage is already lost. The 200 billion board feet of pine in northern Wisconsin, which could have made this area rich forever, is gone, and heartbreak and financial problems have lingered ever since. The rivers of the east are almost hopelessly polluted, and the dull gray tide of pollution is slowly spreading over the surface waters of America.

The coastlines of America, the greatest recreational and scenic resource that the nation has, have been largely ruined by the most vulgar types of commercial exploitation. Much of the true wilderness--our last real link with the world which God created--has been destroyed.

Many of our most beautiful highways have become ugly slums of garish signs and shoddy development.

These resources--gone and never to be replaced--were lost because our optimistic young country believed in what Secretary of the Interior Udall has called "the myth of superabundance." It shocked America to learn that it could run out of timber and land and minerals and scenic vistas and a lot of other things.

But a new myth grew up to replace the myth of superabundance. It was what Secretary Udall calls "the myth of scientific supremacy"--a naive belief that scientists and technologists can somehow repair all the damage we do to our country.

They can't. Instead, we must immediately begin a major, nationwide program of resource preservation. Such a program will cost money. It will interfere with what some people consider freedom--their freedom to destroy natural resources. It will upset some of our traditional dogmas. It will require hard work.

But the alternative is a natural resources disaster which could blight the lives of all Americans and even affect our position as the leader of the free world.

In a newly published book, "The Quiet Crisis," Secretary Udall describes the history of America's fight to preserve its dwindling resources. It has really been one long retreat, with a few heroes of history standing up every now and then and fighting back against the relentless forces that have assaulted our resources since the very beginning.

Today we face a genuine crisis in that long history. To retreat any farther threatens America with the kind of resource destruction which turned a green forest into the Sahara desert, and which made it virtually impossible for China and India to sustain the lives of all their citizens.

This is not scare talk. The evidence is all around us. Many well informed people are trying desperately to bring it to our attention, but most of us simply won't listen.

It is hard to keep people aroused about a problem which never ends. The crisis in resources has been with us for a long time. It grows steadily more grave each day. Yet it is eclipsed for national attention by new crises--the tragedy of Viet Nam, the Russian threats in Berlin, the political scandals in Europe and America, and the battle between Rockefeller and Goldwater.

But look at some of the chilling facts.

1. Our population is expected to double by the year 2000--which is only 37 years away.

2. We are presently using water at the rate of 355 billion gallons a day, and encountering serious water shortages in many parts of the nation. By 1980, experts tell us we will need 600 billion gallons a day--almost twice our present water supply in a scant 17 years. And by the year 2000 we will need almost 900 billion gallons. Meanwhile, the relentless spread of pollution makes more and more water unsuitable for use each day.

3. Air pollution is growing at an alarming rate. While many cities have waged successful fights against coal smoke, much more serious damage is being done today by invisible gases from chemical plants and other industries, and from automobiles, which in themselves pose a massive threat to our resources. Experts have told our Senate Air & Water Pollution Subcommittee that air pollution does 11 billion dollars damage every year--destroying trees, flowers, vegetable crops, cracking automobile tires, ruining paint and metal surfaces, coating human lungs with deposits that can cause or aggravate many serious illnesses, including cancer.

4. Automobiles are creating a nation-wide traffic jam which is blighting the landscape of America and chewing up much of the valuable land--land which can never again be used for farms or forests or parks or homesites. The American Automobile Association estimates that our present 68 million passenger cars will increase to 95 million by 1976.

5. The increase in population, in the number of cars and in leisure time is causing a geometric increase in demand on all parks and recreational space. Yet we are making no comparable increase in the amount of space available.

Resources for the Future, an outstanding research organization, estimates that there will be 10 times the demand for outdoor recreation in the year 2000 that there was in 1950.

Marion Clawson, the resource expert who made this study, estimates that the present 750,000 acres of city and county parks should be doubled right now, just to meet present demand. By the year 2000, we will need five million acres, Clawson estimates. The greatest demand of all--for a major increase in national park lands--simply cannot be met because there is no longer that much additional outstanding land available. The result will simply be more overcrowding--and the more unique, the more desirable an area it is, the more it will be crowded and overused.

As Clawson observes: "Overuse can ruin a recreation area as thoroughly as a bulldozer, partly through actual physical damage but mostly through destroying its capacity to provide intellectual and emotional experience."

This is a crucial point, which is often overlooked. Even if we were to make a half-hearted effort and manage to save our resources from complete destruction, we could still reduce the quality of our environment to such an extent that many of the most important experiences of life would be lost. Or we could allow resource costs to climb so high that only a tiny few could enjoy them.

This brief review of the crisis in resources should point up one major fact. Conservation is not an issue by itself. It involves almost every form of human activity. It goes to the very heart of our nation, our way of life. It involves the air, the soil, the water, the forests, mountains, wildlife, minerals--and people. It embraces agriculture, transportation, industry, commerce, sports, education--and almost all of government.

This is not the time to lay out the specifics of just what a comprehensive resources program should include. That must be developed through careful, long range planning. It must emphasize acquisition of new land and new resources, for unless we acquire

this land now, the cost of acquisition will rise so rapidly that it may never be acquired and it will be, like many of our other resources, lost forever.

What I do want to do is to list some of the obstacles we must overcome if we are to have the kind of comprehensive national program we need so desperately.

The first obstacle is the protest that "we must not extend the power of the Federal government." This argument is used against virtually every national proposal by some group which opposes it, but it is particularly effective in blocking action to save our resources.

The fact is, I know of no way that we can make the kind of investment in resource preservation that is absolutely necessary unless the Federal government plays a vital role.

Natural resources have almost no direct relationship to city, town, county and state boundaries. Anyone who still argues today that the war against pollution, the acquisition of park land, the regulation of poisons, the research into resource problems must be handled entirely at the local level is more than likely the very person who does not want these programs pursued.

We have seen time and again, for instance, that communities will not take vigorous action against major industries which pollute their water or foul their air. They dare not, because these industries are politically and economically powerful, and if nothing else, they can threaten to move away. On the other hand, the public as a whole has a stake in the clean water and clean air of any community--not just the citizens of the municipality in which a given industry is located. Furthermore, if we make a nation-wide assault on air and water pollution, offending industries will lose their most powerful weapon against progress--their threat to move away. They would no longer be able to play one city or one state against the other.

The Federal government also must have a vital role in any comprehensive resource program simply because the job is too big for any one state or community and because the national interest is at stake. No city can do the research today to keep abreast of the complex threat of air pollution. No state can adequately protect itself against highly dangerous poisons and pollutants being sold to the general public.

The very changes which have brought about the crisis in our resources--the booming population, the increased mobility of our people, the wider horizons in recreational interests--have made resources a national problem.

Secondly, we must overcome the resistance to spending money for resource preservation. The public is understandably concerned about governmental waste and inefficiency. It must be attacked on every possible front. But we do not economize when we allow our resources to be squandered. If pollution is doing billions of dollars worth of damage each year, for instance, we should be willing to spend a few millions to put a stop to it. If we need to expand our park space to prevent existing parks from being ruined, we must be willing to spend a few millions to save an investment worth billions.

There is no better example of true conservatism than a willingness to spend money to save the resources of America.

Third, we must conquer the notion that any attempt to preserve the public's stake in natural resources is contrary to the free enterprise system. This argument is used in ridiculous ways to block resource preservation.

No industry and no individual has any vested right to pollute air or our waters, or to spread poisons throughout our soils, or to destroy the beauties of the landscape. The public has a basic, inherent right to protect its vital resources. The American frontier is gone. Every resource we have is now threatened by extinction. There is simply no longer any way that the public interest in natural resources can be reconciled with a philosophy which holds that everyone can use these resources as he sees fit.

Yet almost every program which we develop to protect the public interest in natural resources runs into serious opposition from some economic interest. We are accused of being "anti-business" when we insist that business not pollute our waters or foul our air, for instance. And we are accused of forgetting the great things which businesses themselves have done to protect resources, many examples of which can be found in Wisconsin.

My answer is that there is nothing "anti-business" about conserving resources. And of course we are well aware of the many fine things which some businesses have done to preserve resources. But it is important to remember that in most cases, we have destroyed the resource before we have developed the conservation plans we now praise so highly. After the lumbermen wiped out the forests of the north, then they began some conservation practices. After the industries polluted the rivers with their industrial waste, then they began to invest in pollution control programs.

It is obvious that no business, in a competitive market, is going to pursue an enlightened but costly program of resource conservation unless such a program is required--of this business and all its competitors. And only some agency of government, representing the public interest, can make those requirements.

Finally I think we have to overcome the obstacle posed by the fragmentation of our interest in natural resources. This nation-wide fight to save the most priceless assets of our nation cannot be handled by hunters, fishermen, boaters, bird watchers, farmers, miners, lumbermen and wilderness lovers. These groups, by themselves, do not have a broad enough approach to resource preservation nor a broad enough influence on the community and the nation. We must develop a real national policy in the field of resource conservation, and then win support for it among all kinds of organizations and individuals.

As is so often the case, Wisconsin is showing the way to the nation on this vital issue.

We were the first state in the nation with anything as comprehensive as our 10 year, 50 million dollar outdoor resources program, heavily oriented toward land acquisition. We will be the first state in the nation with a truly comprehensive plan for the future--a complete inventory of all our resources, with suggestions as to how they might best be used to meet our future needs. We are making excellent use of the regional planning idea.

We all know that even the 50 million dollar Wisconsin program is inadequate. I said at the time that it was proposed that it was inadequate, that it should be twice as large. And if the state were to double the program and complete this great investment in the resource needs of our state over the next decade and a half, Wisconsin would be the only state east of the Mississippi to have saved a fair share of its outdoor resources for permanent public benefit. In the rest of the east and south, most of those vital resources would be lost to the future. The only reason there are states in the West as well situated as Wisconsin is not because of a comparable program but because so much of the land there is already in the public sector.

The inadequacy of even our fine program in Wisconsin, of course, points up the need for a nation-wide program of land acquisition, with the Federal government providing funds to match those put up by states willing to make a major investment in this field.

WORKSHOP A

"FLOOD PLAINS WETLANDS, RECREATION AND LAKES, PROBLEMS IN RESOURCES PLANNING"

METHODS OF STORING WATER

by JOHN R. SHEAFFER, Resource Officer
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The title of this session "Flood Plains, Wetlands, Recreation and Lakes, Problems in Resources Planning" is extremely broad and tempts one to deal with general principles of resources management. These principles such as multipurpose planning, regional development including spatial linkages, economic feasibility, etc., appear to be recognized in Southeastern Wisconsin and have been adequately discussed in the literature. In order to focus our attention on a narrow subject, I should like to limit my discussion to the need for water storage. The storage of surplus waters during flood events so that these waters can be later used is an important factor to be considered in the multipurpose development and management of water resources.

Water availability varies in time and space. Demands for water, such as domestic and industrial water supplies, recreation, irrigation, and dilution of water, however, appear to be somewhat constant although some of these demands exhibit seasonal peaks. Since it is likely that the supply-demand relationship will at times be out of balance, action must be taken to bring them into balance. This action can be geared to alter either the supply or the demand. The degree to which the demand can be altered affects the need for storage.

Methods are available to accomplish either end and unless consideration is given to both approaches, an incomplete job of resource analysis has been undertaken. However, only in recent years has there been an effort to consider the alteration of both supply and demand. The Northeastern Illinois Metropolitan Area Planning Commission is one of the first agencies to consider both facets on a metropolitan scale. Placing alternatives in demand or use before public agencies is a logical extension of multipurpose planning that was developed in the 1930's.

Research in Northeastern Illinois has shown that there are alternative courses of action that can be pursued to manage water to achieve a desired result. For example, there are several methods whereby surplus flood waters can be stored to aid in achieving a balance between natural water supply and demands. There are at least five types of storage that can be used to augment natural storage. They are:

1. Valley storage

2. Upground storage

3. Excavated storage

4. Subsurface storage in the materials

5. Urban storage

Valley storage, the traditional method used to impound water, generally involves the construction of a dam across a natural valley. The area upstream from the dam is a place where water will collect and be stored for later use. This method of impoundment is best suited to areas of high relative relief, for the deeper the valley, the greater the potential storage capacity behind the dam. The relatively even topography of much of the mid-west is not conducive to valley storage. Consequently, it is difficult to find valleys which have significant storage capacity.

Upground storage is a method that is well suited to areas of relatively even topography. It is based upon the premise that if a levee can keep water away from an area that is to be protected from floods, a levee can also be used to enclose an area to trap water for later use. Upground storage reservoirs have been constructed in flat topography by encircling a selected area with a levee.

Excavated storage is another method which is applicable to areas of relatively even topography. This method involves the excavation of materials to provide space for the storage of water. Such facilities are sometimes referred to as "borrow pit lakes." They are often developed where there is a demand for fill such as for the construction of highway interchanges. Also, they can be developed where minerals - sand, gravel, dolomite - have been excavated leaving an open pit.

Subsurface storage in the materials is another method which is applicable to many topographic situations. It involves primarily the establishment of an interconnection between the surface and ground waters. This interconnection can be achieved through spreading basins, artificial recharge pits and recharge wells. As more ground water is pumped to meet increasing water supply demands in metropolitan areas, the available space for subsurface storage increases.

Urban storage is a technique whereby storm water can be stored in fully urbanized areas. For example, a flat roof on a building designed to support a snow load can be altered to store up to six

inches of precipitation. Also, parking lots can be designed with a concave surface to permit the storage or impoundment of water.

Storage may be designed to achieve one or more of several ends. Therefore, the desired end result is an important factor in determining the type or combination of types of storage used.

The theoretical range of choice for storage is wide. However, the practical range of choice is narrower than and often tremendously reduced from the theoretical range. The gap that generally exists between the level of available technology and the level of application represents, in part, a time lag in the diffusion of new techniques. Several courses of action can be pursued to reduce this gap. One course of action is to research the alternative methods of storage in light of the physical environment. This research would delimit the areas where the various methods of storage or combinations of them can be best used, thereby establishing those locations where the theoretical choices are viable choices.

Another course of action is to increase the awareness of the alternatives, thereby countering the tendency of private and public officials to go on doing in the future what has been done in the past when many choices were not available. A simple reaffirmation of the past in one current management program is scarcely adequate for the 1960's. Even if choices are viable from the standpoint of the physical environment, resource managers must be made aware of them before they become practical choices. This consideration of alternative choices will result in a strategy for managing water resources. It is imperative that the strategy formulated is not restrictive and achieves a balanced program tailored to fit the natural environment and changing needs of a particular area.

This strategy should consider adequately the spatial linkages on local, county, state, and interstate levels. With respect to Southeastern Wisconsin, this would suggest close cooperation with Northeastern Illinois in any water resource development endeavor since water resources know no political boundaries.

RECREATIONAL WATER RESOURCES OF SOUTHEASTERN WISCONSIN

by C. W. THREINEN
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Madison, Wisconsin

Water is a focal point for outdoor recreation. We therefore require a knowledge of its extent and values for an appreciation of the problems which lie before us. Problems already exist or are to be expected because southeastern Wisconsin is now a heavily populated and rapidly growing region which is placing increasing pressure on the recreational water resource.

RESOURCE

First let us consider the resource base for this region. It can be divided into four segments, the inland ocean - Lake Michigan, inland lakes, large rivers and small streams. Data describing these waters appear in Table 1 and on the attached map (Fig. 3).

Now what are the characteristics of these waters? Lake Michigan with its large size (14,336,000 acres) and great depth (923 feet maximum) is a fearsome body of water which responds slowly to temperature changes. It therefore remains cool and can become quite rough. Although large in size it does not offer much frontage - 79.9 miles total within this region. Great depth and great size, although seeming advantages, render this body of water cool for swimming, rough for boating and limited for fishing although water quality, beach development and harbors are satisfactory. Despite drawbacks it is a valuable recreational feature - just not optimum in all respects.

Table 1. Summary of the types of water features in the Southeastern Wisconsin Regional Planning Commission area.

	Number	Area (Acres)	Frontage (Miles)	Public Frontage (Miles)
Lake Michigan	1	2,028,899[1]	79.9	13.66
Inland Lakes	326	37,986.5	534.66	33.59
Large Rivers[2]	2	2,082.2	199.0	10.02
Small Rivers[3]	241	3,251.1	2,254.8	155.36

[1]The portion of 14,336,000-acre Lake Michigan lying in Wisconsin opposite the four counties.
[2]Large rivers are defined as those with an average width of more than 80 feet.
[3]Small rivers have average widths of less than 80 feet. The number of streams is a gross summary of the number of streams in each county. Some will be counted twice.

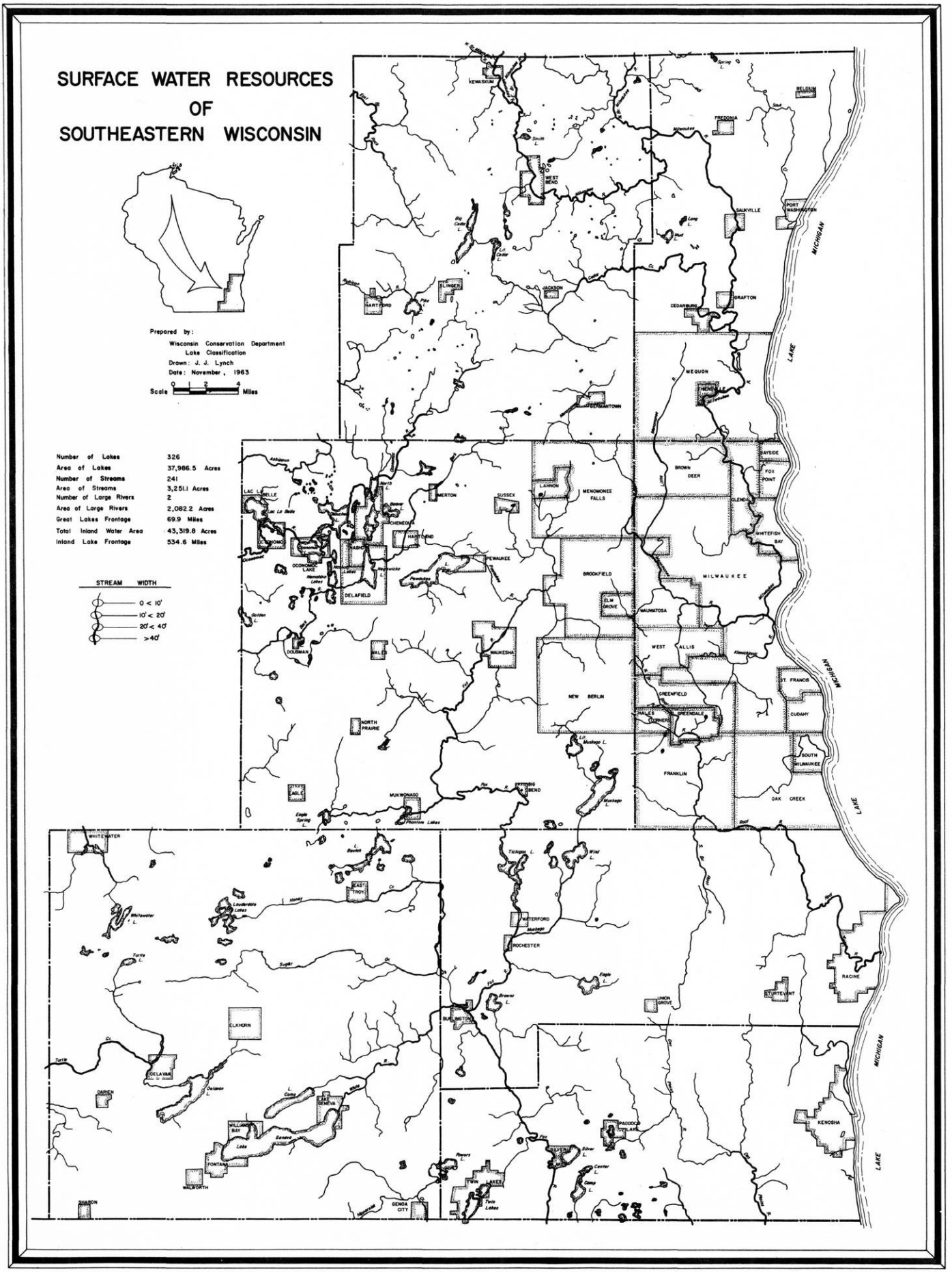
SURFACE WATER RESOURCES
OF
SOUTHEASTERN WISCONSIN
Prepared by:
Wisconsin Conservation Department
Lake Classification
Drawn: J. J. Lynch
Date: November, 1963
Scale 0 1 2 4 Miles
Number of Lakes 326
Area of Lakes 37,986.5 Acres
Number of Streams 241
Area of Streams 3,251.1 Acres
Number of Large Rivers 2
Area of Large Rivers 2,082.2 Acres
Great Lakes Frontage 69.9 Miles
Total Inland Water Area 43,319.8 Acres
Inland Lake Frontage 534.6 Miles
STREAM WIDTH
0 < 10'
10' < 20'
20' < 40'
> 40'
MICHIGAN LAKE
KEWAUNEE
FREDONIA
BELGIUM
PORT WASHINGTON
SALKVILLE
GRAFTON
CEDARBURG
MEQUON
HARTFORD
SLINGER
JACKSON
WEST BEND
GERMANTOWN
MENOMONEE FALLS
BROWN DEER
BAYSIDE
FOX POINT
WHITEFISH BAY
SUSSEX
LANNON
BROOKFIELD
MILWAUKEE
ELM GROVE
WAUWATOSA
WEST ALLIS
GREENFIELD
GREENDALE
ST. FRANCIS
CUDAHY
SOUTH MILWAUKEE
OAK CREEK
FRANKLIN
NEW BERLIN
DELAFIELD
WAUKESHA
MUKWONAGO
NORTH PRAIRIE
EAGLE
WHITEWATER
EAST TROY
WATERFORD
ROCHESTER
RACINE
STURTEVANT
UNION GROVE
ELKHORN
DELAVAN
DARIEN
SHARON
WILMOT
GENOA CITY
KENOSHA
PADDOCK LAKE
SILVER LAKE
TWIN LAKES
BURLINGTON

FIGURE 3

The inland lakes range in size from little ponds of an acre scarcely deep enough to float a duck in dry seasons to 5,104-acre 135-foot deep Lake Geneva. Values of inland lakes increase with size. The larger inland lakes have more sandy beaches sorted by wind action and more water space and more variety in fish resources, features which have meaning to people seeking aquatic recreation. Small lakes originally had encroaching rings of vegetation and accumulations of organic matter. Rightfully the inland lake resource will be classified on the basis of both size and depth such as we have done in Table 2. Inland lakes although having much less area have more of the commodity immediately usable by people; namely, frontage. The frontage can be usable as cottage or home and commercial frontage or it can be public frontage. At the present time within this region we have 33.51 miles of public frontage. The rest is private with some devoted to wild purposes.

Table 2. Numbers of lakes and area of water falling in various size classes and depth classes within the Southeastern Wisconsin Regional Planning Commission area.

Area (Acres)	Depth less than 10 feet		Depth more than 10 feet	
	Number	Area in Acres	Number	Area in Acres
0 - 19	121	319.44	69	559.34
20 - 49	13	362.7	25	910.4
50 - 99	9	614.0	24	1,747.6
100 - 199	9	1,153.4	22	2,824.6
200 - 499	-	-	15	5,041.0
500 - 999	-	-	11	7,953.0
1,000 - 1,999	1	1,058.0	3	3,308.0
2,000 +	-	-	4	11,735.0
	153	3,907.54	173	34,078.94

The large river resource has limited acreage and much frontage compared with lakes of equivalent sizes. It has inferior water values because of enrichment, siltation and pollution. It is paradoxical that with rivers we should have the greatest amount of frontage per unit of water and some of the poorest quality of water.

Small streams do not have so many values. They will best be described as the small boy's playground where frogs, turtles and minnows can be caught. They are highly usable with much frontage but in the aggregate containing very little water for their numbers and mileage. The immense amount of ditching for marsh drainage in this region has not benefited this resource.

DEMANDS ON RESOURCE

People want the following primary activities from water resources:

	Participation (% of population)	Frontage Demand	Water Demand
Swimming[1]	50	High	Low
Fishing	25	Medium	Medium
Boating	25	Low	High
Duck Hunting	2	High	Medium
Esthetics	50	High	Medium
Wildlife Observation	25	High	Medium

Obviously, with high levels of participation and a large nearby population the total demand on the water resource will be tremendous. One should keep in mind that every corner of the region is within the "day-use" area (within 50 miles) of a million or more people and will therefore come under intensive use. Taking the population for this region alone we can gain an appreciation of the total demand - and total demand should be just about doubled to account for the large numbers of Illinois people who look to southern Wisconsin for outdoor recreation. The total inland lake and large river acreage of 40,069 divided by the regional population (1,573,614) gives 0.025 acres of water per person. This amount is not much water for a quarter of them to seek fishing, half seeking esthetics and like numbers wanting other activities. The number of people in the region divided into the frontage on the Great Lakes, large rivers and inland lakes leaves 2.7 feet per person - not much to supply summer homes for those who want them, swimming for many, esthetics for almost everyone and other activities all of which have shore demands.

Further detail on fishing, my area of experience, will furnish an insight on the demands for this important sport and its capacity to supply these demands to give some perspective to the supply-demand picture.

If we assume 393,000 resident anglers[2] wish to have fishing recreation, we would have 0.10 acres of water per person in all the inland lakes

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[1] Swimming is broadly construed to mean beach recreation which may mean purely absorbing sunshine to actual swimming.

[2] Actual resident license sales including sportsmen's licenses within this region were 166,482 in 1962. License sales do not include those under 16 years of age and those over 65 nor those who fish Lake Michigan exclusively. License sales are not a perfect indicator of participation for the age groups requiring licenses because of angler mortality and ability to fish without a license on Lake Michigan. A national survey lists 25 percent participation.

and large rivers. How does this demand measure up to the harvestable crop? We do not know exactly how many fish are present in these lakes, but it is reasonable to assume they contain between 200 and 400 pounds per acre. Obviously anglers cannot crop all this amount and still perpetuate the stock. Actually, they would lose interest in fishing before they did, but they might crop 100 pounds. Dividing 100 pounds among the 10 anglers dependent on the acre of water leaves relatively little per person as a season's ration. An even more striking example will be seen by comparing the possible number of northern pike with the potential demand. Being a predator it is present in low density - perhaps 10 per acre as opposed to panfish which number hundreds per acre. Assuming 10, there would be a total population of 400,000 northern pike in the whole region that have to satisfy future reproduction needs and angling for the region. Fortunately, not all anglers catch large numbers of fish and not all of them pursue the highly favored northern pike because we have about as many anglers as catchable northern pike. One should not infer from these speculative data that the stock of fish is depleted. Rather, the harvestable crop is divided into smaller take-home harvests. To have a greater harvest per person would require more water.

A little detail on swimming is in order too. Swimming is a sport that needs shore and preferably sandy beach and, as is true of so many activities, it requires some space. How does one accommodate it in the natural lake? By individual cottage holdings, by resorts, by public beaches, private beaches? The total frontage on lakes with no regard for quality is 530 miles (2,800,000 feet). This amount could provide 28,000 cottages with lots 100 feet wide. Surely cottages alone would not satisfy the great numbers desiring swimming. The bulk would have to be sandwiched into the private commercial and public facilities. Right now we have a total of only 33 miles of public frontage on these lakes which is supplying the need for boat access, fish and wildlife, esthetic areas and swimming frontage.

TRENDS IN USE

An intensification and pyramiding of uses of water is taking place. We can see it in the evolution of housing on lake shores - from estate to cottage, from cottage to permanent housing and finally apartments and hotels. The same body of water now has to accommodate more users while its qualities are being eroded. Will a body of water have the same capacity to provide the range of recreational experiences desired when it has become enriched to the point of being covered with algae? The overfertilized lake will produce more carp than game fish. Will the esthetic experience be the same when the shores are crowded with buildings and there is no space left for the many aspects of the esthetic experience? What kind of enjoyment will be forthcoming from river systems which are overloaded with organic matter whose diel oxygen cycle reaches both extremes.

We are at a crossroad and we should ask, "Do we want our lakes to be ringed with buildings, to be overfertilized, to become constricted in the resources they produce? Do we want our rivers to carry so much of an organic load that they become useless or to drain so much cemented landscape that showers produce floods?"

Formulation of a public policy is needed to guide utilization of the surface water resources. It will search for means to avoid the debilitation of pollution and fertilization. It will guide property uses and water uses to protect resource values. We shall expect to see the dazzling white water lilies in some places in the shallows, to be able to swim on a good sandy beach, to listen to the croak of a frog, to catch a few game fish, to observe the mood of the woods and marsh or dune at water's edge, watch the ducks test their wings, catch the lap of the waves against the hull of the boat. All these expectations are dependent upon farsighted public policy, a policy which requires the help of all of us for development.

ACKNOWLEDGEMENTS

Data for this paper has been extracted from the surface water resources publications of the Wisconsin Conservation Department published or under preparation. The data collection and summarization of Mr. Ronald Poff is gratefully acknowledged.

APPENDIX TABLE 1.

SUMMARY OF WATER FEATURES IN THE SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION AREA.

GREAT LAKES[1]

County	Number	Area	Frontage	Public Frontage
Kenosha	1	307,200.0 AC.	14 mi.	3.0 mi.
Racine	1	291,840.0 AC.	14.9 mi.	.75 mi.
Milwaukee	1	853,149.7 AC.	25.3 mi.	9.91 mi.
Ozaukee	1	576,709.0 AC.	25.7 mi.	0.03 mi.
Washington	0	0	0	0
Waukesha	0	0	0	0
Walworth	0	0	0	0
Total	1	2,028,899	79.9 mi.	13.69 mi.

INLAND LAKES

Kenosha	24	3,352.0 AC.[2]	48.84 mi.	1.43 mi.
Racine	17	3,397.2 AC.	50.37 mi.	1.36 mi.
Milwaukee	38	150.6 AC.	14.18 mi.	12.17 mi.
Ozaukee	36	590.9 AC.	25.12 mi.	0.38 mi.
Washington	60	3,229.4 AC.	65.02 mi.	1.51 mi.
Waukesha	118	14,722.4 AC.	199.73 mi.	7.33 mi.
Walworth	33	12,544.0 AC.	131.40 mi.	9.41 mi.
Total	326	37,986.5	534.66 mi.	33.59 mi.

LARGE RIVERS[3]

Kenosha	1	420.0 AC.	32.4 mi.	1.35 mi.
Racine	2	336.0 AC.	59.4 mi.	.05 mi.
Milwaukee	1	683.1 AC.	31.4 mi.	7.24 mi.
Ozaukee	1	643.1 AC.	75.8 mi.	1.38 mi.
Washington	0	0	0	0
Waukesha	0	0	0	0
Walworth	0	0	0	0
Total	5	2,082.2 AC.	199.0 mi.	10.02 mi.

APPENDIX TABLE 1. (Continued)

SMALL RIVERS[4]

County	Number	Area	Frontage	Public Frontage
Kenosha	18	68.5 AC.	187.8 mi.	9.81 mi.
Racine	17	274.1 AC.	151.0 mi.	3.02 mi.
Milwaukee	14	192.3 AC.	319.0 mi.	104.4 mi.
Ozaukee	27	846.4 AC.	220.6 mi.	0
Washington	39	662.1 AC.	442.8 mi.	21.64 mi.
Waukesha	97	837.9 AC.	625.2 mi.	16.49 mi.
Walworth	29	369.8 AC.	308.4 mi.	(Turtle Creek not available)
Total	241	3,251.1 AC.	2,254.8 mi.	155.36 mi.

[1]The area and frontage on Lake Michigan includes only that opposite these counties within the Wisconsin boundary.

[2]Includes areas of whole lakes 64 acres of which lie in Illinois because some waters straddle the boundary.

[3]Large rivers are defined as having average widths of more than 80 feet.

[4]Small rivers are defined as having average widths of less than 80 feet.

APPENDIX TABLE 2.

SIZE CLASSES OF LAKES IN THE SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION AREA

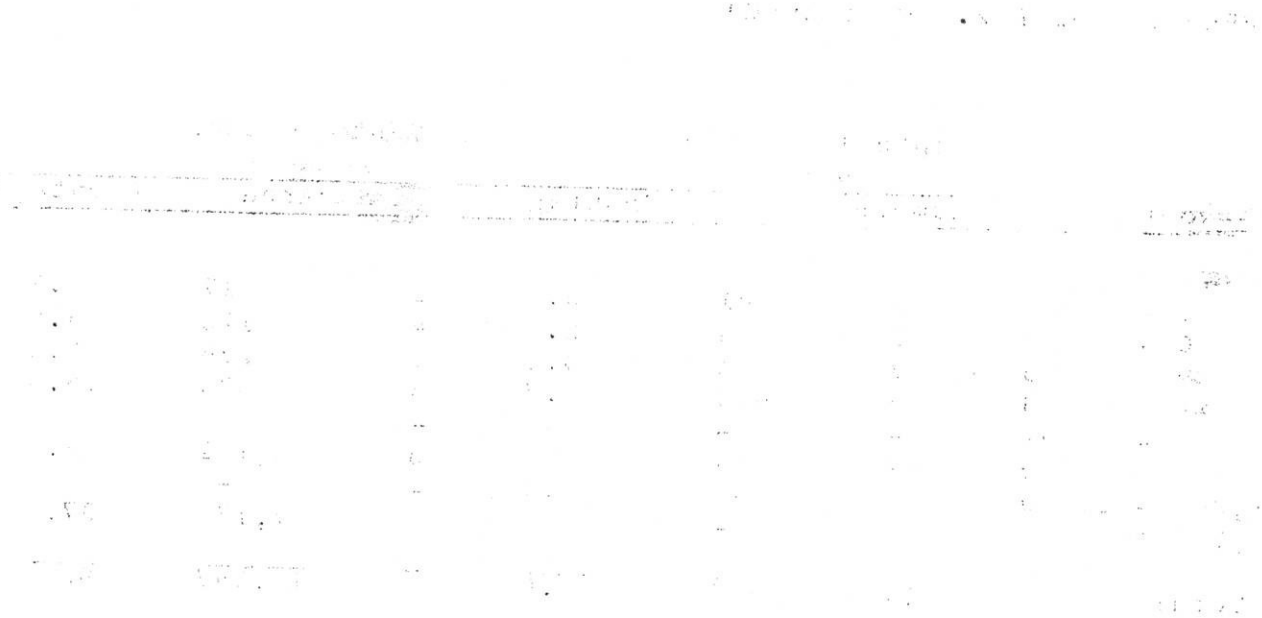
	Depth less than 10 feet			Depth more than 10 feet		
Kenosha	Number	Area	Frontage	Number	Area	Frontage
Acres						
0 - 19	2	21.1	.92	4	40.8	1.83
20 - 49	-	-	-	4	150.7	4.5
50 - 99	1	81.0	1.3	5	368.8	8.18
100 - 199	-	-	-	3	371.6	10.56
200 - 499	-	-	-	4	1,696.0	16.15
500 - 999	-	-	-	1	622.0	5.4
1,000 - 1,999	-	-	-	-	-	-
2,000 +	-	-	-	-	-	-
Total	3	102.1	2.22	21	3,249.9	46.62
Racine						
Acres						
0 - 19	4	39.2	2.0	2	24.2	1.25
20 - 49	-	-	-	1	44.8	1.34
50 - 99	-	-	-	1	96.0	2.17
100 - 199	3	333.0	12.0	2	256.0	4.13
200 - 499	-	-	-	1	383.0	5.0
500 - 999	-	-	-	3	2,221.0	22.48
1,000 - 1,999	-	-	-	-	-	-
2,000 +	-	-	-	-	-	-
Total	7	372.2	14.0	10	3,025.0	36.37
Milwaukee						
Acres						
0 - 19	30	88.08	9.74	8	62.50	4.44
20 - 49	-	-	-	-	-	-
50 - 99	-	-	-	-	-	-
100 - 199	-	-	-	-	-	-
200 +	-	-	-	-	-	-
Total	30	88.08	9.74	8	62.50	4.44

APPENDIX TABLE 2. (Continued)

Ozaukee	Depth less than 10 feet			Depth more than 10 feet		
	Number	Area	Frontage	Number	Area	Frontage
Acres						
0 - 19	15	99.8	7.87	14	71.6	6.05
20 - 49	1	25.6	1.2	3	105.1	3.6
50 - 99	1	65.0	2.1	1	66.4	1.7
100 - 199	1	157.4	2.6	-	-	-
Total	18	347.8	13.77	18	243.1	11.35
Washington						
Acres						
0 - 19	19	120.5	9.30	21	178.9	9.68
20 - 49	2	63.0	2.6	3	91.0	2.8
50 - 99	3	201.0	5.4	5	326.0	9.0
100 - 199	-	-	-	4	464.0	8.5
200 - 499	-	-	-	1	259.0	4.0
500 - 999	-	-	-	1	522.0	3.8
1,000 - 1,999	-	-	-	1	1,004.0	10.0
Total	24	384.5	15.68	36	2,844.9	47.78
Waukesha						
Acres						
0 - 19	48	309.76	16.06	19	164.34	10.37
20 - 49	8	240.1	13.58	10	395.8	12.15
50 - 99	1	66.0	2.2	9	654.4	16.17
100 - 199	-	-	-	7	899.0	15.8
200 - 499	-	-	-	9	2,703.0	35.9
500 - 999	-	-	-	3	2,427.0	22.9
1,000 - 1,999	-	-	-	2	2,304.0	23.7
2,000 +	-	-	-	2	4,559.0	30.9
Total	57	615.86	31.84	61	14,106.54	167.89

APPENDIX TABLE 2. (Continued)

Walworth	Depth less than 10 feet			Depth more than 10 feet		
	Number	Area	Frontage	Number	Area	Frontage
Acres						
0 - 19	3	41	3.0	1	17	.7
20 - 49	2	34	2.4	4	123	4.0
50 - 99	3	201	4.5	3	236	5.4
100 - 199	5	663	16.7	6	834	15.5
200 - 499	-	-	-	-	-	-
500 - 999	-	-	-	3	2,161	33.4
1,000 - 1,999	1	1,058	8.0	-	-	-
2,000 +	-	-	-	2	7,176	37.8
Total	14	1,997	34.6	19	10,547	96.8



RECREATION AND LAKES

by PHIL SANDER
Southeastern Wisconsin Sportsmen's Federation
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In evaluating "Recreation and Lakes" in Southeastern Wisconsin I would like to present a few observations from associations with sportsmen, conservationists and those who seek the fun and leisure of Wisconsin's outdoors.

The seven counties of the Region have been favorably endowed by nature as a result of the last ice age glacier. It left, in retreating, a maze of lakes and wetlands. Surrounding the lakes, rolling hills and ridges were formed that grew into green stands of forests and vegetation.

To the east of the Region, and bordering four counties, is Lake Michigan with approximately 85 miles of shore line. Scattered throughout the seven counties are some 60 square miles of inland lakes and streams, all varied in size, depth and shape.

For the early people (1835 to 1850) these lake areas offered a store-house of food, such as fish and game that inhabited the adjacent lands. Hunting and fishing became an important resource. Migratory and upland birds were in great abundance. Market hunting flourished and thousands of birds were shot and sold in the open markets of the big cities.

Later sportsmen found that the lakes afforded a certain amount of relaxation, and in the late 1800's and early 1900's fishing shacks and hunting lodges appeared; they became a man's place to retreat.

During the past 50 years or more summer cottages and resorts emerged at the beauty spots of the larger lakes; and they became a place for the family and friends to relax, fish, swim or row a boat.

On some lakes, with picturesque surroundings and good communications, communities or villages developed. A weekend trip became an accepted way to enjoy a vacation. The people of the Region's cities and Chicago area vacationers soon learned of Wisconsin's lake resorts. In a car it took only a few hours to drive to a place of fun and sport. The resort business began to flourish, and this gave an important economic boost to Southeastern Wisconsin.

What has happened to leisure time in the present generation was beyond the best economic experts' predictions. The big increase in the use of lake recreational areas is the direct result of changing social habits in the average American's way of life.

The growing population is one factor that will continue to keep the pressure on. The regional planning Prospectus reports that about 40% (1.57 million) of the state's population (3.95 million) reside within this Region. The population of the Region is expected to reach 1.96 million by 1970 and 2.37 million by 1980 and possibly by that time comprise almost 50% of the state's population.

Also predicted is that within 25 years more than 10 million persons will live in the eight counties of Northeastern Illinois and Northwestern Indiana that make up the Chicago metropolitan area. Many of these people will be looking forward to vacationing in Wisconsin recreational lake areas.

Other reasons for recreational increases are rising incomes and shorter workweeks (average 40-hour workweek) which are giving the average family more money and time to go places and see Wisconsin.

The excellent highway system has increased the number of family automobiles, many fitted with a hitch to take along the new boat or trailer. The average family has now become mobile and more responsive to the call of outdoor living and sports. The trend watchers now predict that between 85 to 90% Americans will participate in some form of outdoor sports in the years ahead.

In analyzing some of the old favorite sports, it is of interest to look at a few figures. The 1962 fishing license sales in the Southeastern 7-county region totaled 137,955 resident licenses and 33,485 nonresidents or a grand total of over 171,000 people fishing the lakes of the area.

Hunting can also be quoted as there is duck and upland bird shoot available around the wetlands of lake areas. The 1962 figure for small game license in the 7-county region was 80,477 hunters. The State Conservation Department has done a tremendous job of supplementing the supply of fish and game over and above nature's reproduction. The fishermen and hunter who belongs to conservation clubs have assisted the Conservation Department in cooperative programs to assure a continuous supply of fish and game.

The region now has a number of public hunting grounds to give the hunter a place to go within close traveling distances from home.

Fishermen and speed boats, within the last few years are competing for lake space. Fishermen constantly complain of speed boats coming too close or disturbing their fishing areas, as well as rocking the boat. Some lake communities have enacted regulations as to time for speed boating as well as speed. Further regulations may be necessary to keep up with the growth in speed boating.

Outboard motors started with 3 1/2, 5, 7 1/2 and up to 15 horse power. Today boats are larger, better styled; and motors run from 35-40-60-75, and it was quite common this past summer to see boats with 100 horsepower motors. Boat trailers have made boating mobile; and with a number of access points at inland lakes and on Lake Michigan, it is a thrill for the entire family to cruise the blue shoreline, or for the younger folks to go water skiing--trailing a silver wake, as they skim over the waters surface.

Swimming is still an old standby for young and old. When the weather and water are ideal, beaches become extremely crowded and reach a peak during July and August. Some beaches must be regulated as they become overcrowded with visitors. A need for the future is additional bathing beaches.

Camping has taken like wildfire, again this is now an outdoor sport for the family. The surge of campers has strained the seams of Southeastern Wisconsin campgrounds. Peak summer pressure forces restrictions on the number of campers that can be accommodated. Many times latecomers must look elsewhere to set up camp. In the Region's 7 counties, camping accommodations are as follows:

Kenosha County	1 Privately Operated
Milwaukee County	2 County Parks
Ozaukee County	3 County Parks, 1 Privately Operated
Racine County	1 County Park
Walworth County	3 State Operated, 4 Privately Operated
Washington County	1 Privately Operated, 1 City Operated
Waukesha County	1 County Park, 1 Privately Operated

There are a number of other sports enjoyed at lake recreational areas. To mention a few: Sail boating, Ice Boating, Ice Skating, Ice Fishing and Tobogganing. All of these have a place and can be enjoyed as the seasons change.

The biggest boost for recreation came in September 1961, when the outdoor recreation act became effective. This act set up a 50 million dollar, 10-year program financed by money that comes from a 1¢ tax on a package of cigarettes.

The Wisconsin Conservation Department has been exceedingly busy on this new program. A number of projects are planned and will be activated in the Southeastern Wisconsin Region; such programs are:

1. Purchase of land for fish and game management.

2. Purchase of land for additional state park, forest and recreational areas.

3. Easements on inland lakes for public boat landings.

A number of projects are still in the planning stage that will be forthcoming to meet the mass recreation demand.

The metropolitan sprawl caused by rapid population growths cause changes in lake property values. These have recently increased 25 to 30% and many cases higher. Much of the rise is attributed to improved economic conditions. An example of rising land costs at the Kettle Moraine State Forest area shows that costs mounted from $24.29 an acre in the late 1930's to $93.53 in the late 1950's (340%), with another jump to $159.70 in the 1960-62 period (70%). There has been a steady increase of summer cottages being remodeled into permanent year-round homes. This is the result of people retiring and their need for only one home to keep up, and they enjoy the pleasure of a home on the lake away from the crowded city life.

Wisconsin's outdoor recreation program has been going through some legislative confusion. The question being shall the State Recreational Committee or the Wisconsin Conservation Commission direct the planning and execution of land acquisition. In my opinion, the Conservation Commission should be given full power to operate their part of the outdoor program. Present personnel is trained and has the knowledge of those acquisitions necessary to meet the future recreational requirements.

In Southeastern Wisconsin there is a definite need for new recreation areas. Each county should plan and seek additional county parks, and take options on unusual land formations or glacial hills, with an eye for skiing, tobogganing and hiking. This should be done before sand and gravel interests destroy the hills leaving only an ugly eyesore. Wilderness and scientific areas should be set aside, such as the small tamarack swamps that exist in many areas. Counties should cooperate with the Conservation Department in securing easements and access to lakes and rivers.

Pollution is starting to come into lakes with a high summer population. This problem cannot wait for extended studies, for pollution is not easily reversed. Steps must be taken now to relieve this situation and protect the health of the public. At some beaches "No Swimming" signs have been posted by health authorities because of high bacterial counts.

Increased populations at lake areas has caused high fertility in the lake bottom thus causing constant weed problems. Experiments continue with poisoning and weed cutting.

Boating continues to gain popularity wherever it is not restricted by lack of marina facilities or water front parking. Cities along the shore line of Lake Michigan should plan for additional marinas and access points for the big boat enthuasiasts.

The big boom in participation sports is the smart new crop of resort sport centers and motel developments that are springing up or being planned, located near the lake areas, and open the year round, where they can cater to the weekend sports enthusiast from the urban areas. These centers will be equipped with swimming pools, tennis, shuffle board courts, billiard rooms, golf driving ranges, putting courses and full size courses. For the water fans there is water skiing and fishing facilities.

All this indicates that Americans are eager to occupy their leisure time with events that are exciting, competitive and call for physical exercise. What the future trends will be depends on the planners of today. Care must be taken, that in spite of the constant rise in population, that the Southeastern Wisconsin lakes will not become worn out by constant use and abuse.

The only word of advice I can give is, that when programs must be undertaken to expand the supply of adequate facilities and areas, that planners, government officials and private developers recognize and practice the wise use of Wisconsin's natural resources.

WORKSHOP B

"THE REGIONAL SOIL SURVEY AND URBAN PLANNING"

PLANNING AND POLITICS

by CLARENCE E. VORAS, Supervisor
Ela Township
Lake County, Illinois

Our County Planner once ribbed our County Board a little bit about some definitions. He said a politician is a person who takes the people where they say they want to go and a planner is someone who leads them to where they will be happy when they get there.

These two definitions are not necessarily in conflict with each other. If one is to be a good elected official, he is going to have to be a planner and a politician -a politician if he is to stay in office, but at the same time he is going to have to make like a planner if he is going to make any real contribution to his constituents and his community. Sure, he's going to reflect the views of his people; but he's not just a machine that counts up a showing of hands and reports the total. He's going to devote an awful lot of time to investigating their problems, because that's his job and because he thereby works with more facts in particular and a greater awareness of the broad general implications. He may come to a somewhat different conclusion than some of his constituents; this is where he must go beyond a purely political role. He must lead as well as follow. He must be able to create and influence as well as receive citizen views. He must guide as well as be guided by public opinion; and don't forget, even though you're an elected official, when you're talking to one of your constituents it is just your opinion against his. In fact, you're the underdog because he figures you have to listen to him; but he doesn't have to listen to you!

If your're going to be effective in molding public opinion, it's going to be because you have the facts on the subject. I sometimes think it was a public official who, from intuition and broad experience, just knew he was right but couldn't prove it! I believe he thought up the first Planning Commission!

In Lake County, when we feel something is wrong in the County we can generally go to our planning office and get the facts to prove it. I say generally because once in a while you're going to see that the facts point the other way. If you're worth your salt, you're going to want to know that, too. But this, I think, is the major role of your planners, to give accurate, objective, factual information that the elected official can use to improve the quality of his decisions and serve his people better.

Now that's a point you might say is subject to a lot of argument. What is serving the people better? Well, every once in a while some individual or group is always going to feel unhappy about something, no matter what you do; but I don't think there is any argument that through planning, which is only foresight and good judgment, we can provide better services at lower cost. We can create a more attractive environment; we can protect our individual and community investments through preserving property values; and we can prevent the creation of health, safety and other hazards. These are fundamental benefits we can most certainly achieve; and best of all, from either the planner's or the politician's point of view, these benefit every single individual in the community whether he is a farmer, a schoolboy, a home owner, a merchant or a housewife. Now you might say that if anything is that useful to the politician, that beneficial to the community it must cost money. Well, IT DOES; and it costs more than that because you can't get planning for just money, plans, these shiny books, colored maps, yes, but not planning. If you want a planning program, you're going to have to contribute some of your time, time to spend with your staff to get to understand this new approach to problems. You're going to have to contribute your knowledge of the areas and of the needs and desires and sentiments of your constituents. You're going to have to contribute your moral support to good sound planning proposals, even when they're not very popular. But most of all, when you commit yourself to a planning program you should realize that planning goes beyond inventories and data collecting and evaluation and the production of reports and paper plans. They're like the blueprints for a building. You can't build a decent building without them, but they're absolutely worthless in themselves. If you're not going to build a building, you don't order the blueprints. So don't order plans for a better community unless you intend to build one. So you should realize that, when you embark on a planning program, it is going to reveal a need for action. Some problems will require new ordinances regulating land use and development. These would be your zoning and platting ordinances and other codes. Other proposed solutions would require you to inform and convince the public that certain actions should be taken. Still other solutions will be to purchase land or construct buildings or contribute matching funds for state or federal projects. I certainly don't mean to imply that, after you put your coins into the Planning machine, you just wait for the answer to be cranked out and then blindly do as you are told. What I do mean is that you feed into this process all the good sound information that you can get hold of and see that it is well handled; and you examine the answers very, very carefully. You'd better ask questions about them because you can bet your bottom buck your people are going to ask you. But I would like to add that I think you should expect the right answer and give it every fair chance before turning it down.

This brings me to my last point about our relationship with our planning commissions. These commissions are not mandatory, so we

choose to bring them into existence. We appoint the members; we hold the purse strings, and we give them the money with which to hire staff. So we are the boss. In our democracy the elected official is always the boss. In fact, it is even against the law for him to delegate his authority. But with this authority comes responsibility. Our main responsibility here is to see that our tax dollars are used rather than just spent. We have to give our commissions the opportunity to help us. We have to provide them with adequate budgets with which to get qualified staff, if we are to expect the proposals and recommendations on which we can rely. We elected officials, through our own acceptance of the planning process as a modern improvement on traditional methods of grass roots government, can hasten the day when all levels of government will operate on a more factual basis, welcoming the information that the planning process can provide as a basis for sound decision making. This is what the planner likes to refer to as a good planning climate; but I'd like to remind you it's also a good political climate, too.

To be specific, a supervisor in my township could not be elected if he came out against planning. We had a big scare about six years ago when a developer got control of about 6,000 acres in my township and wanted to create a new city of 60,000 persons. Our own village planners and the county planners agreed it would be misplaced, and we fought this development right up through the courts. The facts were on our side, and the planners testified for us. And now we're breathing easier again. But I don't know what we would have done against such high-powered, high-pressured, expensive tactics if we hadn't been at least a little bit organized ourselves.

We, as elected officials, have the statutory authority and the financial means to improve our communities through planning. If we do not do so, only we are to blame; so let's get with it and work toward one common goal. This, by the way, sort of proves my point about the elected official being a combination planner and politician.

My goal, and I suggest you make it yours, is to develop the best possible plan adequate for tomorrow's needs, yet politically acceptable today.

HOW COUNTY PLANNING OFFICIALS CAN USE SOILS MAPS

by JOHN QUAY, Vice-Chairman
Lake County Regional Planning Commission
Barrington, Illinois

For a number of years now, soil maps have aided the farmer, farm planner, and farm manager to grow food and fiber for our society. It is also possible to put known soil facts to work for urban planners and decision makers. We are using soil facts in Lake County, Illinois. We will make even better use of them as soon as modern survey maps are available for the entire county and when the soil scientist's maps and terminology are translated into terms more meaningful to the professional planner or interested lay citizen. The Ela Township survey, completed in March, 1962, was the pilot study that proved to our commission and our county board of supervisors we were started in the right direction. Now we are embarked, through technical services of the U. S. Soil Conservation Service, on a survey of all of Lake County. It will help us deal with our continuing urban expansion problems.

As chairman of the Ela Township Area Planning Board and vice-chairman of the Lake County Regional Planning Commission, I am interested in both regional and detailed planning. In the six-county Illinois part of the Chicago metropolitan area, 6.2 million people are using about 30 percent of the land area for urban purposes. Lake County's share of this metropolitan total is 300,000 people, again using about 30 percent of the land area. The other 70 percent of the county is agricultural land, forest preserves, swamp areas, lakes, and miscellaneous undeveloped tracts.

While the surge of population growth outward from Chicago will continue, even the most optimistic population projections for the next 20 to 40 years do not indicate that all non-urban land will be needed for urban uses. It would therefore seem reasonable that a prudent planning official would want to guide urban interests toward geographical areas best suited for development. And going one step farther, he will want to advise both public and private interests of the hazards and opportunities within a geographical area.

Soil mapping for farmers and ranchers has pointed out alternative methods of using the land and saved rural landowners from trying to grow crops unsuited to their environment. A kernel of corn, planted in a soil with an excessively high water table, will have a difficult time germinating and growing to maturity. Houses, roads, factories, and public buildings "planted" in saturated soils will, like the corn plant, have to divert some of their growth resources to overcoming water-related problems.

Practices that worked well on farm land sometimes do not fit urban needs. Tile drainage is an example. When the land use changes from farming to an urban use and the drainage system is no longer maintained or is destroyed, the field tends to revert to natural conditions that existed prior to installation of the system. When this happens and houses are built in the area, we have flooded basements, roads that prematurely disintegrate, septic systems that do not function properly, lawns that will not grow grass, and a community liability instead of a fine residential area.

Soil mapping with agricultural interpretations provides the basis for an agriculturally oriented colored land capability map. Urban planners need colored capability maps, too. This is the way we are using facts turned up by the Ela Township soil survey and other township surveys currently being completed.

With help from the director and staff of the Lake County Planning Commission, we have prepared seven colored capability maps, all based on interpretations given in the Ela survey. All have special significance in urban planning. Interpretations, each on a separate enlarged map, include:

1. Percolation rate
2. Bearing strength
3. Degree of slope
4. Flooding potential
5. Depth to water table
6. Corrosion potential
7. Agricultural capability

To be consistent, we used the same color code to cover different degrees of hazard in each interpretation as are found in the widely used farm and ranch land capability maps. Green shows absence of special problems; yellow is in the area of caution; red is in the danger zone; and so on to the "impossible" situation.

Translation of cold facts into a visual presentation of this kind is important to us in Lake County because it permits us to do more positive planning based on understandable facts. Up to this time, not having specific information that we could easily communicate to others, we have sometimes had to be defensive in our operations.

Let me explain. Not long ago a subdivider went to a local village planning commission with a request to put a new road along the edge of a swampy area. Looking at the swamp grass and cattails and examining the soil maps, the planning officials questioned the wisdom of such a location for a road. However, the subdivider persisted, so the village authorities prescribed special requirements for construction and maintenance that placed the major responsibility on the subdivider. Use of soils information thus protected local taxpayers from heavy repair costs if the road

should sink or break up. However, if used in a positive manner, soil facts could have kept the road back on high ground and prevented the spoiling of a potential lake site. Such a change would also make it unnecessary for pedestrians to cross the road to reach a future recreation area.

Few of our urban problems can be economically corrected after the wrong land-use decision is made. As county officials, we on the county planning commission are available to give advice and assistance to 45 local municipalities. We and other planning bodies advise developers, individual property owners, locally elected officials, attorneys, civic groups, and representatives of industry, transportation, and utilities. In Lake County, 2,000 or more elected or appointed officials are in a position to influence or make decisions on land use or changes in land use. When we work with them, we can't afford to be negative. We should be able to give the facts in 30 seconds while the inquirer is interested and before he makes a decision. The colored interpretive maps are the best way we have found to reach the individuals involved. When charts, tables, and soils "jargon" are used, communications break down.

The right soils information at the right time can prevent a lot of idle talk. Arguments about physical problems at a given site can go on for hours due to defects in memory, differences in vantage points, and lack of understanding. Precise soil descriptions and interpretations can be an immediate conservation-stopper at many conferences, particularly when presented visually. For example, a developer recently presented to the planning commission of an Ela Township village the plat of a proposed subdivision. Looking at the soils map, we found one lot entirely in a depressional area. The soils had a high water table. During most of the year septic system performance would have been zero. With the soils information, we were able to point this out. As a result, the developer put the undesirable building site in with the lots on either side. The resulting larger lots will go into homes and the low area will be available for recreational or wildlife habitat purposes.

In this case, filling the hole would not have been a solution as the basement footings would still have rested on wet unstable soils. Monetary losses are usually sustained by the people who can least afford them--young couples who put a heavy mortgage on a $13,000 home built on a flood plain or buy a split level home that does actually split due to settling.

For many people, home-buying brings on a highly emotional condition. When Mother and Dad go out on a Sunday to buy a home they have a dream in mind. Things they see that tie in with the dream may loom out of proportion to other considerations. When they move in, and the walls crack, the basement floods, the septic system

doesn't work, the grass won't grow, and planting die due to unsuspected soil deficiencies, their dream is quickly shattered and the bills begin to come in.

When such things happen, the disillusioned home owner's reaction is to lay the blame for his problems on anyone who might have been involved-- public official, developer, builder, real estate broker, and sometimes his neighbors. When all is said and done, the home buyer is usually left holding the bag. Aggressive use of soils information can help prevent such misfortunes.

Many other examples can be cited of both mistakes and progress where soil knowledge or lack of it has made a difference. An 18 percent slope sometimes does not show up on a developer's plat and any level land covered with grass looks good to the inexperienced buyer. In the North Libertyville Estates, located on a floodplain of the Des Plaines River, 120 families had to be removed from their homes in a 1960 spring flood, many of them by boat. The Lake County Red Cross estimated damages at $200,000. In a subsequent town meeting, the heavy turnout of voters from this subdivision helped to vote in a proposed soil mapping project for the township. These people were keenly aware of the flooding problem and were willing to vote their tax money to help find a solution and to prevent future flooding problems.

In recent months there has been an increased awareness among public officials of the need for soils information when working with urban development problems. A Vernon Township schoolboard member showed this when he asked for a statement on soil problems likely to affect construction of an addition to a school. He wanted the information BEFORE working on a bond issue.

Because use of soil maps in urban planning is a new twist on an old science, we have a tendency to seek dramatic applications that can be touted on a "Look--see what we did!" basis. But the real benefit to society is going to be in the day-to-day work of the line and policy functions of our local governments. Applications like the following will directly affect the daily lives and pocketbooks of Mr. and Mrs. John Q. Public:

1. The realignment of a subdivision road a hundred feet to one side in order to miss a spot of structurally unstable soil.

2. The reshaping of a lot in order to include a more porous soil for the septic field.

3. The selection of plantings for a park or parkway based on soil types.

4. The building of a dam and lake on lands not suitable for house construction.

Lacking a backlog of experience in the total application of soils knowledge to urban development problems, we in Ela Township--to say nothing of the county as a whole--have only started to explore the many interpretations from one soils map. With a little work I believe the number of agrologic and engineering interpretations could reach one hundred. In our case, the seven interpretations previously mentioned have been the ones explored first and have all proved most beneficial. One of the things we are especially interested in pursuing further is the opportunity for recharge of ground water supplies. Groundwater resources are a growing problem throughout our area. With the construction of reservoirs in the more suitable sites and better management of our water, we should be able to help assure a continued supply of good usable water.

In the big picture, zoning ordinances are a prime concern of all planning bodies. In Lake County, the present zoning ordinance dates back to the action of the Board of Supervisors in 1939. One of the planning objectives of the county planning commission is to up-date this ordinance in line with modern developments and future needs. With the help of land use studies and a long range plan, we have tried to put together a zoning ordinance that will reflect the advances of the past 25 years. Soils information now becoming available is proving most useful in this work.

In an area of rapid and varied development as exists in Lake County, there must be constant vigilance by these local officials to see that each daily decision adds up to a sensible and imaginative future. As we on the county planning commission work with them, it is nice to know that we have a tool in the modern soil survey that will be applicable to both the incorporated and unincorporated areas of our county. We are looking forward to the day when surveys like that for Ela Township will cover the entire county. When we have all the soils facts in visual form at our fingertips, we will be able to do a better job of planning for both today and tomorrow.

THE SOUTHEASTERN WISCONSIN SOIL SURVEY

by MINOTT SILLIMAN, JR., Assistant State Conservationist
U. S. Soil Conservation Service
Madison, Wisconsin

"Beauty is only skin deep" or "it is what's below the surface that really counts," some of us rationalize as we look into a mirror. The same can be said with greater cogency of the soil we see when driving down the highway or walking across a field. You cannot be certain what is inside a book simply by looking at the cover. You must open the book and read it to know its worth. Likewise, you cannot just look at the soil on the ground surface and tell the kind of land. You must examine the soil layers that are under the surface, identify and interpret what you find to evaluate land, just as you turn the pages and read to evaluate a book.

This layer by layer examination of the soil, which includes examination of the soil's characteristics and qualities and the further classification and recording of these findings, is termed soil surveying.

V. V. Dokuchaiev, a Russian scientist of the late 1800's, is regarded as the founder of the scientific study of soils as natural objects. He was employed to classify and map the soils of Russia as a basis for tax assessment. This is still one of the uses of soils information.

Before Dokuchaiev's work soil was considered as just plain dirt made up of weathered rock debris with some organic matter mixed with it that provided a place for plants to grow. Dokuchaiev challenged this thought and introduced the idea that soils are natural bodies. He felt that soils result from the combination of five natural factors; namely, parent material, topography, climate, vegetation and animals, and time. Dokuchaiev's concepts have spread throughout the world and the study of soil is widely accepted as a basic scientific discipline. The science is known today as Pedology.

We are all familiar with a land survey whereby a civil engineer determines land or property boundaries--but what is a soil survey?

A Soil Survey is an inventory of the soil resources in a given area. A soil survey tells the kinds of soils and their characteristics and records it on an aerial photo or other map. The soil survey in southeast Wisconsin is being placed on an aerial photo at a scale of four inches equals one mile.

Soil survey maps have been made and published by the United States Department of Agriculture for more than 60 years. In fact 80 years have elapsed since Professor T. C. Chamberlin, geologist who later became president of the University of Wisconsin, published the first soil map of the State.

The Soil Conservation Service in the Department of Agriculture has the federal leadership for making soil surveys. All of the work throughout the country is cooperative with the State Agricultural Experiment Stations and with other Federal, State and local agencies. In Wisconsin cooperating agencies in the soil survey program are the United States Soil Conservation Service, Wisconsin Agricultural Experiment Station, Wisconsin Geological and Natural History Survey and the U. S. Forest Service. This is known as the National Cooperative Soil Survey.

A soil survey includes both field and laboratory investigations and classification of the soils according to a national nomenclature system, interpretations of the maps for different users, and the publication of the results in a standard U. S. Department of Agriculture Soil Survey Series. This type of soil survey now is being made in the seven county area under the planning jurisdiction of the Southeastern Wisconsin Regional Planning Commission which leads to the question, "WHO MAKES THE SOIL SURVEY AND HOW IS IT MADE?"

Soil surveys are made by soil scientists who have formal training and field experience in the identification and classification of soils and related land features. A soil scientist with the U. S. Soil Conservation Service must have completed a full 4-year course of study in an accredited college or university leading to a bachelor's or higher degree. His major study must have been in soil science or a closely related subject matter field. Soil science is his career. The twelve soil scientists who have been mapping in the SEWRPC counties this past season represent 99 years of professional soil survey experience.

The soil scientist walks over the land, identifying the soils and other features of the landscape. He carries with him a soil auger, a slope indicator and an aerial photograph of the area he is mapping.

His soil auger is normally a 1" open-face bit welded onto a 5 1/2' length of 3/4" gas pipe with a cross bar on top or a bucket type auger. He bores holes--lots of holes, to determine the 3rd dimension of a 3-dimensional soil system that includes length, breadth, and depth. He is frequently asked, are you looking for gold, oil uranium or are they going to put a new highway through here? The field work for the soil survey can be made only during the mapping season which is normally between April 15 and November 15 in this part of the State.

Just as you turn the pages when you read a book, he examines the soil in six-inch bites to a depth of at least sixty inches. He may put an extension on his auger or find a ditch or road cut to examine the soil material below 60 inches.

The soil scientist observes the thickness and arrangement of each layer; its color, the proportions of sand, silt and clay in each boring. He studies the soil structure; the shape, size, and distinctness of the small natural crumbs, plates, or blocks in each layer. He observes if there is gravel or stones. He may make a simple test for alkalinity or acidity, and he estimates the organic matter content of the soil.

He is very careful to observe the color of the soil as he bores his way into the earth. Soil color is very important in identifying the different soils. It is amazing how many soil colors there are in this world. Soil scientists everywhere carry with them a standard book of color charts. There are 250 different colors in this book. They range from white through black, including reds, browns, yellows--even pink and olive green. They use this standard color chart so that all the soil scientists can look at the same color and recognize it as the same. Color of soil in the profile may be related to the drainage or wetness of the soil. For example, grayish or bluish colors in the soil profile can infer poor drainage.

The soil surveyor learns to predict very closely the amount of clay in a soil by feeling it or rubbing it out over his thumb. He learns, through observation and experience in his mapping area, which kinds of soil swell when wet and shrink when dry. From this he can infer undesirable stability and strong resistance to the penetration of water through the soil.

He then compares the properties of the soil in his individual boring with similar soil conditions that have been identified and named elsewhere. If it fits a known soil description, which also has a soil number, he places the soil type number on the aerial photograph. If the soil is unlike all others classified, it is given a new name. He uses his slope indicator to determine the slope of the land and records this on his map in a lettering code, along with the depth of the surface soil or degree of erosion in another code.

He also identifies unusual land features, such as rock outcrops or marshes, on the aerial photograph with appropriate symbols. He moves back and forth across the field boring holes to identify or pick up changes in the soil. When he comes to a change in soil type, predominant slope or depth of surface soil, he draws a line and records the appropriate symbol on his map. He surveys an average of 300 acres per day in this area. He can survey only

when the fields are dry, but not too dry. Predominant soils of a given area are sampled at key spots and taken to the laboratory for intensive study. The intensive lab analysis includes determinations of physical, chemical, mineralogical, and biological properties.

A uniform system of soil classification is followed in the United States so that all soils that are alike have the same descriptions and names. This system of soil classification and identification is based on the fact that even widely separated soils with the same weather (rainfall and temperature ranges); the same topography (hilly, level or depressional); the same drainage characteristics (water table height, permeability, etc.) and similar parent material will be the same kind of soil and thus grow the same type of agricultural crops, vegetation and respond to the same type of treatment. Thus the soils of Wisconsin and any other state are the same if they have in common the above factors of soil formation. Too, the experience and knowledge of one user becomes a guide to another at a far distant location if the soils are alike.

The use and application of scientific facts to soils account for many advances in today's high standard of living. Let us not forget, however, the assistance we have received from the abundance of this natural resource. In fact our resources have been so abundant that we sometimes think all soil is good or that the bulldozer can push it into shape for any use. Many mistakes are made by people because they assume that soils which look alike on the surface behave alike.

Soil surveys have been used in agricultural pursuits for many years because the soil, along with climate and water, is the base for the farm enterprise. It enables the user to apply accumulated knowledge from decades of research to specific kinds of soil. Research information is most beneficial when applied to a known soil situation as shown by a soil survey.

Appraisers for investors, insurance companies, realtors, loan companies, and others find soil surveys helpful in appraising the soundness of proposed loans or investments in land. Soil conservation districts, watershed associations, development corporations, and other groups interested in the use and treatment of land find soils information useful in planning immediate and long-range programs.

Let us consider some of the qualities or clues to interpretations that can be obtained from a detailed soil survey map and report.

1. Soil drainage is significant to almost every soil use, whether agricultural or non-agricultural. It provides information on root development for the farmer and on frost hazard, stability and trafficability for many other users. For example, a soil that is wet the year around, even if not reached by floodwaters, is not a suitable site for roads or buildings.

Wet soils freeze in cold climates like that of Wisconsin, where in some years the frost will go down 40 or more inches. If these soils are used under driveways or paved roads, ice may form underneath the pavement. Water flows under the slab from higher ground, or by capillary movement from the water table below. The lenses of ice grow until they heave up and break the slab just like they can crack the metal in the radiator of your car. This hidden hazard in some soils can be predicted from the soil survey. For a road or driveway on such soils the plans and specifications call for a raised grade with coarse-grained material added to make a firm well-drained subgrade.

The soils that can cause serious trouble for the unsuspecting are those that are wet only part of the year, have a water table that moves up and down without reaching the surface, or that absorbs water very slowly. Observation and research make it possible for the soil scientist to delineate or map out these differences in soils.

One of the promising uses of soil survey information is in predicting the suitability of different soils for individual septic tank filter fields. A joint study in Lake County, Illinois in 1961, made by representatives of the Lake County Health Department and the United States Soil Conservation Service, found that with the aid of a standard soil survey map it was possible to make accurate predictions (19 times out of 20) about the suitability of a soil for a septic tank filter field. These accurate predictions were possible because the observed properties and inferred qualities of soils do not change much under use.

2. Flooding hazard. In order to evaluate flooding hazard the soil scientist must know the geology or natural features of the area. He must know how the soils got there. Were they carried in by the wind, deposited by a melting glacier, or laid down as a result of running or standing water? Alluvial soils that were deposited by flooding in past centuries along the flood plains of streams are very likely to be flooded from time to time if they are not protected by levees. The farmer has learned to keep these soils in crops, such as woods or pasture, that are not severely damaged by flooding. This does not eliminate the need for topographic and other surveys to delineate the exact boundaries of a flood plain.

3. Load-bearing capacity. Capacity of a soil to bear the weight of a heavy load such as a building is very important to many types of constructions. A fine textured soil, such as one with a high clay content, can be very hard when dry. The average person may gain the impression that it will make a good foundation. The opposite is true. A fine clay soil tends to flow as a vicious fluid when wet and will fail to support much weight. The clay content of the soil is one of the characteristics which the soil surveyor uses to separate the different soil types in southeast Wisconsin. The soil survey does not eliminate the need for on-site investigations.

4. Shrink-swell potential. Soil maps show the location of soils that shrink and swell on changes in moisture content. You have heard farmers say that the weather has been so dry his fields are full of cracks. Structures placed on these soils shift and crack unless they have a sturdy foundation. Underground pipelines may break.

5. Stability of soils. Unstable slopes affect many kinds of construction. Some soils slip downhill when water is concentrated on them. The water seeps down to an impervious layer and, so to speak, "greases the skid." Some of these soils have slid before, though the slippage scars may go unnoticed by the untrained observer. Some soils do not disclose this latent instability until after some type of construction has been completed which changes the moisture supply at a certain level in the soil. Hillside sites for homes are becoming increasingly popular. Unstable sloping soil areas can frequently be determined from a soil map because the soil surveyor has examined each layer in the soil profile.

6. The depth of soil critically affects many uses. The farmer always has been interested in putting his highest profit crops on soils where the roots can penetrate easily and deeply and where moisture supply is greatest. Soils shallow to heavy clay, gravel or rock are readily identified and recorded by the soil surveyor. Shallow soils can make it expensive to dig a basement, build a road, or cut the trench for a utility line. Soils which look good on the surface can be shallow to cracked bedrock which, in turn, can be easily contaminated by waste from septic tank disposal fields finding its way deeper to the ground water.

7. The reaction of a soil. Acidity or alkalinity affects the corrosion or chemical reaction on farm tile, metal pipes, and cables. The life of ordinary concrete may be greatly shortened if it is used in soils high in free sulphates or organic soils. By knowing the kind of soil it is possible to better plan for the type of material placed underground.

8. Run-off and erosion. These qualities can be predicted from a soil survey. Soils vary in their ability to soak up the rain as it falls. Soils vary in their tendency to erode. The surface water run-off and the amount of soil that washes downhill depends upon the kind of soil, the intensity and duration of the rainfall, the slope of the land, and the cover on the surface of the land.

   The soil conservationist uses this information very effectively as he designs the necessary width and depth of a grass waterway for the soil and water conservation district cooperators.

9. Organic soils. Bodies of peat and muck are scattered through southeastern Wisconsin. Farmers have always recognized their boggy soils. However, a soil survey map pin points the location and size of these organic soil areas. This can be very helpful in planning the best use of the land. Sometimes these organic soil areas can be dredged out and used for recreation or wildlife purposes.

PROGRESS IN SOIL SURVEYS IN S. E. WISCONSIN - Soil surveys had been made in the seven county area on approximately 400,000 acres through 1962. These soil surveys have been made on 1,654 farms cooperating with the soil and water conservation district in each of your seven southeastern Wisconsin counties.

One of the first steps the Soil Conservation Service technician takes in helping a district cooperator develop a conservation plan of action is to obtain a detailed soil survey of his land.

The detailed soil survey map then is interpreted by the soil conservationist who provides a land capability map for the farmer. A color scheme is used which helps point up the land best suited for maximum agricultural uses, such as cropland, permanent pasture, woodland or wildlife land. The land capability map also points out suitable soil treatment and cropping patterns and the principal practices needed for erosion control such as contour farming, strip cropping, terracing, etc. The land capability map also helps determine the need for or potential efficiency of water management practices such as tile or surface drainage ditches.

SUMMARY

In summary, soil surveys are a scientific study of soils as they occur in the natural landscape. These soil surveys are being made by trained soil scientists.

Detailed maps on aerial photographic bases are prepared and are accompanied by a comprehensive narrative report that discusses soil characteristics that are important to a variety of users.

The soil survey map in southeast Wisconsin is a part of the National Cooperative Soil Survey. It separates different kinds of soils in some areas as small as one acre. However, let us repeat, a soil survey map does not eliminate the need for on-site investigations for any intensive land-use.

Soil is a complex combination of characteristics, no one of which has meaning by itself and apart from the others. A whole group of characteristics, each influencing the other, make up the soils of any area. There is never a dull day as the soil surveyor bores, examines, classifies and makes the soil survey maps of southeast Wisconsin. The map, however, is only the beginning as the facts from the soil survey map must be interpreted and then put to use so that each acre of land is used within its capability and treated according to its needs, whether the use be corn, hay, pasture, woodland, houses, factories, highways or what have you!

WORKSHOP C

"PARK AND OPEN SPACE"

THE ROLE OF THE WISCONSIN CONSERVATION DEPARTMENT IN STATE PARK AND OTHER OPEN SPACE PLANNING

by CY KABAT
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As a preface to a discussion on the state parks and other open space planning, it is necessary to define these terms. State parks under Section 27.01 of the Wisconsin Statutes are: "A system of areas. . . . .to provide. . . . . .for public recreation, for public education and conservation nature study. An area may qualify as a state park by reason of its scenery, its plants and wildlife, or its historical, archeological or geological interests."

The Federal Housing Act of 1961 (Whyte, 1962) defines "open-space land" as:

> "(1) Any undeveloped or predominantly undeveloped land or urban area which has value for (A) park and recreational purposes, (B) conservation of land and other natural resources, or (C) historic or scenic purposes.
>
> "(2) The term "urban area" means any area which is urban in character, including those surrounding areas which in the judgment of the administrator form an economic and socially relating 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."

By these definitions and other Wisconsin Statutes that will be cited later, any lands that have or potentially have significant state park, forest and wildlife values including fish and game are the primary "open-space" lands that the Conservation Department is legally obligated to manage.

AUTHORITY AND RESPONSIBILITY

To understand the role of the Wisconsin Conservation Department's program in state park and other open-space planning, it is necessary to have some knowledge of the authority and responsibilities of the Wisconsin Conservation Department. The Conservation Department is the working arm of the Wisconsin Conservation Commission,

which was created under the Conservation Act of 1927, to "provide an adequate and flexible system for the protection, development and use of forests, fish and game, lakes and streams, plant life, flowers and other outdoor resources of the State of Wisconsin."

The Commission employs a conservation director who is the administrative head of the State Conservation Department, who employs by and with the advice and consent of the Commission such technical and administrative assistance as is necessary for the execution of the Commission policies. Functionally, the Conservation Commission, together with these personnel, form a policy making, planning, operational and service unit which in essence is the Conservation Department, under the Conservation Act. The Commission's delegated authority includes making rules and regulations, conducting studies and surveys, acquiring and developing land, providing public services and establishing projects, priorities and long-range plans.

The Conservation Act of 1927, supplemented by subsequent laws such as those creating the Forest Crop and Woodland Tax programs, the State Soil and Water Conservation Committee, Natural Resources Committee of State Agencies, Regional Planning Commissions and the Outdoor Recreation Act Program, sets forth the primary statutory basis for the current programs.

To show the recognition of the importance placed on certain natural resources and the specificity of the authority of the Conservation Commission under the Conservation Act of 1927, the following subsections are cited:

> Section 23.09 (7) (d): "To acquire by purchase, condemnation, lease or agreement. . . .lands and waters. . . .for state forests. . . .state parks. . . .public shooting, trapping or fishing grounds or waters. . . .fish hatcheries and game farms. . . .forest nurseries and experimental stations."
>
> Section 27.01 (2) (c): "Make, and as rapidly as possible carry out, plans for the development of the state parks, including the layout and construction of roads, trails, camping and picnic areas, buildings, water and sewer and other sanitary installations, and the development of all other facilities considered necessary for the preservation of special features or the overall usefulness of any state park."
>
> Section 28.01: "Forestry supervision. The state conservation commission shall execute all matters pertaining to forestry within the jurisdiction of the state, direct the management of state forests, collect data relative to forest use and conditions and advance the cause of forestry within the state."

Section 23.09 (7) (b) and (c): "To designate such localities as it shall find to be reasonably necessary to secure perpetuation of any species of game or bird. . . .or fish. . . ."

The above definitions, the resources cited in the Conservation Act and the other rules and regulations delimit the types of lands involved in the Conservation Department's park and other open-space planning.

THE NEEDS FOR NATURAL RESOURCE PLANNING

To anyone deeply involved in resource planning programs, a general understanding of what this entails is clear. But for purposes of orienting this report in perspective with this meeting, I am taking the liberty of presenting first a definition of a plan and next a statement on resource planning needs.

A Allen (1958) offers this definition of a plan, "a proposal designed to guide and direct work to be performed. Plans consist of five major elements: objectives, policies, programs, schedules, and budgets." This definition does not spell out the inclusion of inventory of resources and facilities and other data gathering on their use, need and demand required in planning. However, we can assume that these elements of planning are covered by the terms in Allen's definition.

The great stress on the need for natural resource planning in the past several years tends to give the impression at times that our predecessors were unmindful of its importance. That this was not the case is shown in the following statement of the Wisconsin Regional Planning Committee (1934):

B "The basic function of state planning is to outline and develop such a program for the state, based on adequate studies of its population, resources, and facilities, to the end that the resources and facilities available may be utilized to the maximum benefit for the population and without unnecessary permanent deterioration. Unplanned or poorly planned use of resources will cause a premature depletion to the detriment of posterity, the uncoordinated use of facilities will cause waste, and too high charges for services and lack of continuing economic fiscal policies will result in too high cost of government."

There are undoubtedly better definitions of a plan and expressions of the need for planning, but these will suffice, at least for my own orientation in proceeding with this report.

PROBLEMS, CONCEPTS AND TRENDS

Before proceeding further it is important to emphasize a few major problems, concepts and trends in natural resource planning.

First, while the Conservation Department is responsible for the management of all Wisconsin wildlife populations, including fish, game and nongame species, it owns and controls only a small part of the area occupied by these resources. The Wisconsin Regional Planning Committee (1934) was aware of this problem which of course has a bearing on all comprehensive land-use planning. "If all the land were owned by the state, the Planning Board and other administrative boards would have the power to direct the uses of the land in the same way that a farmer arranges his woodlot, crops, pastures, lanes and gardens. However, the state does not own all the land; some is held by the Federal Government, by towns, cities, and counties. By far the largest area is privately-owned and under least control by public agencies."

To amplify the importance of this point the following examples are cited: Fish and other aquatic wildlife which are owned by the state inhabit entirely or primarily the permanent surface water areas. However, the degree of habitability of these natural resources in these waters is determined largely by the management of the surrounding lands. Thus, the management of fish and other aquatic wildlife includes not only the surface water area itself, but also the waters draining into them from the surrounding wetlands and uplands.

A somewhat similar situation exists with the state-owned farm game (pheasants, Hungarian partridge, quail, rabbits and squirrels). These recreationally and economically important resources exist primarily on privately-owned agricultural lands. However, within these lands, it is the undisturbed nesting and roosting cover that produces farm game and most of the good agricultural practices normally destroy these paramount habitat niches. Thus, it is necessary to deliberately manage these niches or lose all our farm game.

These two examples show that fish and other wildlife lands must be managed for the public, both through public ownership or control and through cooperative programs with private landowners. Examples of cooperative programs which include provisions for natural resource management on private lands are the Small Watershed, Soil Bank and Agricultural Conservation Programs and the leasing of State Public Hunting and Fishing Grounds administered by the United States Department of Agriculture and the Conservation Department respectively.

Next, the Conservation Department is an operational, service and planning agency similar to the Highway Commission, which is in contrast to those agencies whose primary, if not only, function is that of planning. This simply means that the Conservation Department must devote a proportionately large effort to planning its current operational program. Included in this program are

the annual efforts required for the protection, maintenance and development of the land and use facilities administerd by the Conservation Department, as well as various responsibilities for natural resources on other public and private lands;for example, forest protection, administration of the State's Forest Crop and Woodland Tax Laws, shooting preserves, game farms and fish hatcheries, the establishment and administration of fishing, hunting and trapping seasons, control of various forms of wildlife damage and the enforcement of conservation laws.

The Conservation Department has always cooperated with other governmental units in interagency resource planning activities. However, in the early years of this cooperation, these usually concerned individual resources. For example, locally it cooperated with town and county boards on forest management, on the state level with the Wisconsin Public Service Commission in water-use regulations, and nationally with the U. S. Fish and Wildlife Service in migratory bird management and the U. S. Forest Service in forestry on all lands.

Gradually as the recognition developed that natural resource planning had to be accomplished on a more comprehensive basis, multi-agency planning programs became a reality. For example, although Soil Conservation Districts which involved many aspects of natural resource use including planning were established in about 1937, it wasn't until 1953 that the State Soil Conservation Committee, U. S. Soil Conservation Service, University of Wisconsin and the Conservation Department, adopted a formalized agreement for cooperating in this program. In 1951 the Natural Resources Committee of State Agencies was created to make studies, recommendations and coordinate activities in the state on natural resources and it immediately established several subcommittees for this purpose. These included land and long-range planning. The enactment of the Federal Watershed Protection and Flood Control Act of 1954 establishing the small watershed program further intensified land-use planning but this was limited to just those watersheds eligible under this specific program, most of which are in western Wisconsin.

Examples of the most recent developments in multi-agency planning for natural resources in which the Conservation Department participates are the efforts being made by the Wisconsin Department of Resource Development, the Regional Planning Commissions and the United States Bureau of Outdoor Recreation.

The above discussion on trends in planning for natural resources is obviously brief and incomplete. A recently completed survey of the agencies with which the Conservation Department cooperates in various programs most of which directly concern natural resource management, including planning, lists 96 agencies and organized groups in over 200 programs (Wisconsin Conservation Department, 1963).

NATURAL RESOURCE PROGRAMS AND LONG-RANGE PLANNING

For purposes of this report I am dividing the Conservation Department's functions into "operational" and "long-range planning." In reality these functions are not clearly separable. As indicated previously the "operational" function includes current program planning. The "long-range planning" function is generally a projection of the planning effort involved in operational programs together with the development of new concepts and programs to meet future public demands.

Operational Functions

The Conservation Department has full responsibility for almost 700,000 acres of land and all fish, game and other wildlife in the state; and it has varying degrees of responsibility for 15,588,000 acres of forest land, 1,137,550 acres of inland surface waters, and 6,464,711 acres of boundary water. To meet its responsibilities in the 1962-63 fiscal year for these resources, the Department maintained 1,620 buildings, 980 vehicles, 268 tractors, 11 aircraft and other equipment, and employed 1,170 permanent personnel (administrative, office, technical field, field maintenance, and labor force) together with 372 seasonal man-years.

Included in the lands it owns as of July, 1963, are 392,086 acres of state forests, 23,533 acres of state park and recreation areas, 28,060 acres of fish management land and 252,504 acres of game management land. This acreage increases almost daily.

The Department's responsibilities in the management of the above resources and facilities is carried out by 11 divisions: six field divisions (Fish Management, Game Management, Forests and Parks, Forest Management, Forest Protection, and Law Enforcement) and five service divisions (Research and Planning, Information and Education, Engineering, Finance and Clerical). The responsibilities of these divisions is generally spelled out by their names.

The "operational function" is further subdivided into divisional, interdivisional and interagency activities.

Divisional

Each division is responsible for both its mechanical and planning activities. A number of these functions were cited previously under "Problems, Concepts and Trends." They included inventorying resources and facilities, setting objectives (goals), establishing policies and programs, program implementation and budgeting.

Interdivisional

Any activity that involves two or more divisions falls under this category. Examples of such activities are: game and other recreational area management on forest lands, maintaining and developing fish and game habitat in the same aquatic areas, and land acquisition for multiple-use. Generally, all service divisions are concerned with interdivisional activities along with their own specialties.

Interagency

All of the Department divisions are engaged in cooperative programs with other agencies. In some activities such as watershed development and management, at least five divisions cooperate with the U. S. Department of Agriculture, the Extension Service of the University of Wisconsin and various watershed associations. Examplesof other interagency cooperation are: fish management with the Great Lakes Fisheries Commission; participation in the Mississippi Flyway Council which includes 14 states, Mexico, four Canadian provinces, the Canadian Wildlife Service, and the U. S. Fish and Wildlife Service on wildfowl research and management (ducks, geese, rails, coots, etc.); hydrological investigations with the U. S. Geological Survey; preparing, approving or reviewing fish, game and forest management practices for the U. S. Department of Agriculture; providing technical assistance to the U. S. Department of Commerce in Area Redevelopment programs; several programs with the Wisconsin Highway Commission including access roads; and cooperating with various travel and tourist promotional organizations.

Long-Range Planning

This function, previously explained, includes both the projection of planning on all of the functions and activities cited above under "operational functions" and the development of new programs to meet future demands. New programs are developed by the Conservation Department alone or in cooperation with other planning agencies. Although the list of operational functions is brief as regards both number of activities and their scope, it will have to suffice for this discussion. Detailed lists and descriptions of Conservation Department's operational functions are contained in Biennial Reports and in the Department's 1963 Long-range Planning Report now in press.

Emphasis here will be on the cooperation with some of the major agencies whose primary function is planning and limited to the following (even though the Conservation Department has cooperated at some lengths with such local groups as Dane County in the preparation of comprehensive planning reports):

Nationally - the U. S. Bureau of Outdoor Recreation and the Outdoor Recreation Resources Review Commission.

Wisconsin - the Department of Resource Development and the Southeastern Wisconsin Regional Planning Commission.

Generally the Conservation Department's cooperation with the national Planning agencies to date has consisted primarily of the preparation and submission of numerous reports from existing information on natural resource inventories, current and future land acquisition and development, recreational use facilities, and other related data on outdoor resources.

Department of Resource Development

In addition to supplying information on all of its programs and long-range plans to this agency, the Conservation Department has been contracted to identify and plot all unique natural and man-made outdoor resources in Wisconsin (Department of Resource Development, 1962). These data are being used by the Department of Resource Development in mapping environmental corridors in all Wisconsin counties. These are areas of high recreational potential and should be considered in any development plan.

Southeastern Wisconsin Regional Planning Commission

The Conservation Department participates on several of the study committees, furnished existing data on the resources and facilities under its responsibility and is currently engaged in evaluating and plotting all significant forest, fish and game areas and conducting a cooperative survey of all potential park and other open-space sites in this region.

A summary of the existing data on fish, wildlife, recreation and open space has been recently published by the Southeastern Wisconsin Regional Planning Commission in Planning Report No. 5 (1963).

The evaluation and plotting of all the significant forest, fish and game open-space areas in this region is nearing completion. The park and other open-space survey is underway with all field checking expected to be completed by January 1, 1964, and the entire survey to be completed by September 1964. As of September, 1963, 106 sites in 35 out of 77 townships have been field checked. The unique area survey performed for the Department of Resource Development is one of the basic references for these surveys. Instruction sheets for these surveys and a form used in classifying potential park sites are included in the appendix.

This specific cooperative effort is being conducted under a Memorandum of Understanding with the Southeastern Wisconsin Regional Planning Commission and the Department of Resource Development. This procedure should be applied in all similar planning studies and the results of the surveys then integrated with other land-use data to form the basis for preparing the master comprehensive plans. Specifically we hope that this procedure and the resultant data will be used in all phases of land-use planning. For example, its use in the transportation plan can prevent destruction and enhance preservation and public utilization of these natural resources and facilities. Roads can destroy natural resources by dissecting valuable fish and game habitat or they can enhance utilization by providing adequate access. Forests can lose their high scenic and recreational values if noisy industrial or commercial developments are established next to them.

CONCLUSION

The Conservation Department deems it highly desirable to cooperate with all planning and natural-resource management agencies. However, because of both the high priority on carrying out its operational activities and fund limitations, it is often strained in providing the desirable services and participation in interagency activities concerning natural resources particularly on short notice.

Nevertheless, since the Conservation Department has a legal responsibility for all wildlife, including fish and game and their habitat, state parks, recreation areas and forests, it is paramount that the Conservation Department directly participate in all planning activities concerning these resources.

Finally, for acceptable efficiency to all parties involved in these interagency activities, formalized agreements such as the one Conservation Department has with the Southeastern Regional Planning Commission and the Department of Resource Development on the unique area survey are highly desirable. Such agreements should be consummated as a basis for interagency cooperation.

In closing, I feel compelled to emphasize one of the greatest frustrations of all planners and that is the failure to implement plans once they have been completed and to assure their constant updating. In this respect it is interesting to note that in 1934 the Wisconsin Regional Planning Committee recommended acquisition of a preliminary 30,000 acres for recreation and "re-creation" somewhere in the Kettle Moraine district of Southeastern Wisconsin. Almost 30 years have elapsed since this recommendation and the state ownership of these lands as of April, 1963, was 11,676 acres. I am not implying that plans are infallible but they are, or at

least should be, based on the best information available and when they are not implemented the public is usually the loser. For this reason the public should support good plans and thus help to bring about their implementation.

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APPENDIX - 1

GAME AND WILDLIFE HABITAT DESIGNATION CRITERIA

FOR SEWRPC ON MARCH 1963 AERIAL PHOTOS

Game and wildlife habitats are assigned to three classes based on an appraisal of their over-all importance from the standpoint of recreational use and potential value as wildlife habitat. The three classes are in descending order of desirability indicated with Eagle Prismacolor pencils as follows:

Class 1. Most desirable, essential to maintain species in area. Crimson Lake #925 (Red)

Class 2. Desirable, but can be compromised in case of serious conflict. Canary Yellow #916

Class 3. Supplemental and should be recognized where other developments permit. True Green #910

Principal criteria used to arrive at these classifications are:

1. Size - This is important so that territorial requirements of species is met and that a certain minimum population level is possible.

2. Quality - Habitat requirements must be met at a sufficient quality level to sustain populations of the species.

3. Distribution - Quality is enhanced if contiguous or nearby areas are present. Two such areas together, e.g., would have a greater value than two isolated areas.

4. Multiple species - give an area greater value because of the broader base.

Designations of species groups involved on the area are made using initial codes as follows:

(P or Ph) - Pheasant and associated species as rabbits, Hungarian partridge, fox, as well as song birds of fields and meadows, raptors and amphibia and reptiles, insects, plant species.

(S or Sq) - Squirrel and associated species as rabbits, fox, raccoon as well as song birds of woodland, raptors, amphibia and reptiles, insects, plant species.

(D) - Deer and associated species as rabbits, raccoon, occasional ruffed grouse (RG) and woodland song birds, amphibia and reptiles, insects, plant species.

(W) - Waterfowl, primarily ducks with associated aquatic species as rails, bitterns, muskrats (M), mink, passerine birds, amphibia and reptiles, insects and other invertebrates, aquatic plants.

In making the designations, the most restricted boundary line possible has been drawn in order to have a definite line. Otherwise placement of lines becomes highly arbitrary, indeed, if lines could be drawn at all. For example, pheasants will utilize cropland heavily even though no cropland (except that apparently abandoned) is included in the designations. Replacement of cropland with platted developments would severely jeopardize an adjoining designated pheasant area. Hence the designations cannot be regarded as absolute - they presume minimum encroachment and disturbance or their value may be greatly impaired.

Further, the designations largely ignore existing regulations and ordinances pertaining to utilization of the wildlife resources, since these are presumably subject to amendment. This includes hunting or shooting restrictions, trespass posting, parking restrictions, ownerships, etc.

APPENDIX - 2

VEGETATION DESIGNATIONS FOR SOUTHEASTERN WISCONSIN

PLANNING COMMISSION ON MARCH 1963 AERIAL PHOTOS

Code Explanation (Type outline shows forest quality)

Red - Good
Green - Medium
Blue - Poor

Red Outlined Tracts:

1. Well stocked stands
2. Any age from reproduction to maturity - good form & quality
3. Not grazed
4. Good potential for production of forest products
5. Good access for management

Green Outlined Tracts:

1. Medium stocking
2. Any age with a medium amount of overmaturity allowed - medium form and quality
3. Light grazing damage or showing recovery from past grazing
4. Medium potential for the production of forest products
5. Medium access for management

Blue Outlined Tracts:

1. Poorly stocked
2. Any age from reproduction to heavy overmaturity - poor form and quality
3. Heavily grazed
4. Poor potential for production of products
5. Poor access for management

Letters in the edge of the type line indicates the best use of the forest type.

F - Production of forest products
A - Aesthetic, parks, bridle paths, etc.

Selection of mapped areas was based on:

1. Size - Unless there was some special reason such as location or special interest, the larger tracts were selected (40 Ac. or more).

2. Location - Preference was given to tracts with lake or stream frontage, nearness to or in wetland areas where high use could be expected.

3. Multiple Use - Tracts with a good potential for simultaneous use for parks, forest production, and game habitat were also given preference.

Comments on methods of site selection:

1. The letter designation will show the estimated best or primary use for the area; however, it is assumed that the other uses will be evident but secondary on any of the selected tracts.

2. In the west half of the county, forest production will be emphasized and in the east half, aesthetic values will be emphasized.

3. Many of the areas selected are poorly drained wetlands because (1) they are usually large in size, and (2)there is a better chance that they can be saved from urban or industrial development. Although many of these areas will have little aesthetic value in the near future due to dead trees resulting from the dutch elm disease, other species such as soft maple, black ash and tamarack should replace the elm eventually and improve aesthetic values.

4. In the wetland areas, only the islands of forest have been mapped; therefore, the use designation will indicate either forest production or aesthetic value as far as the forest land is concerned, even though the game value of the area and the surrounding marsh may be very high in value for wildlife production. It is assumed that most of the selected forest land areas have at least a medium potential for the production of wildlife, even though this is not designated as such on the map. The wildlife survey should overlap in many of the forest survey areas.

5. The bulk of the higher value forest land in Waukesha County is located in tracts of 40 acres or less on well drained land. These tracts are generally not shown in the survey unless they have a potential for development as a good aesthetic area. As urbanization and other development moves in, it would be unrealistic to hold such tracts for the production of forest products, due to their high value for other uses. However, the wetland areas may be left undisturbed for many years to come because of their very slow urban or industrial development.

6. Forest land located inside the boundaries of the purchase area of the Kettle Moraine State Forest and the Vernon Marsh were not mapped since the use of this forest land is already designated.

APPENDIX - 3

RECREATIONAL WATER USE DESIGNATION CRITERIA

FOR SEWRPC ON MARCH 1963 AERIAL PHOTOS

Waters are assigned to three classes, based on an appraisal of overall importance from the standpoint of recreational use and potential value as fish habitat. The principal criteria used here are:

1. Size - In general, the importance of a lake or stream is proportional to its size. Exceptions occur in the case of shallow lakes with winterkill or excessive weed growth, or badly polluted streams.

2. Accessibility - Waters not accessible to the public are of less value than those that are unrestricted.

3. Use - Estimates of degree of use are based on opinions of the district manager, reports of the Waters Classification Section, and in some cases, instantaneous boat counts by the Law Enforcement Division.

4. Value to Fish - The size and variety of the fish population and the potential for spawning or preservation of important species.

5. Development - The degree to which the shoreline is occupied by buildings.

First priority (Prismacolor #925, Crimson Lake (red)) is assigned to larger, more heavily used waters. No absolute size is designated, but most first grade lakes are over 200 acres. All waters that contain trout populations are included in this category, as well as certain others that have special value as spawning grounds or for experimental projects.

The division between first and second priority (Prismacolor #916, Canary Yellow) lakes, based on district managers and Waters Classification Section reports corresponds approximately to an average count of 8 to 10 boats at any one time in the summer on those lakes checked by Law Enforcement.

Distinction between second and third priority (Prismacolor #910, True Green) waters is based on the same criteria at lower levels. Most streams in this area are rated in the third category with only a few of the largest listed as second or first degree. No

waters are considered worthless; the lower limit for designation on the photos is determined by the mechanical difficulties of location and marking.

In some cases, land areas adjacent to waters are marked in red (first priority) these are areas which should be controlled and protected from development or exploitation to preserve aesthetic values or protect valuable fish habitat. Wildlife values other than for fish are not considered here since they are being evaluated separately. Only undeveloped areas are indicated, in keeping with the philosophy that a part of the shoreline of every lake should be preserved in its natural state if possible.

Where use and protection are concerned, the bank is an essential part of a stream. All streams indicated on the photos should be considered to include a minimum of 2 rods of land on either side of the channel. This could not be accurately marked on the photos. If acreages are desired, they should be calculated from the stream length.

PARK AND OPEN SPACE. . . .COUNTY LEVEL

by HOWARD GREGG, General Manager
Milwaukee County Park Commission
Milwaukee, Wisconsin

At long last the open space needs of our citizens are receiving more and more attention. Recently, the Bureau of Outdoor Recreation, Department of the Interior, was established by the Congress of the United States. Its basic functions are coordination, planning, research, education, technical assistance, and cooperation with State and local governments and private parties.

Congress, in the initial section of that act, declares it to be desirable that all American people of present and future generations be assured adequate outdoor recreation resources, and that all levels of government and private interests take prompt and coordinated action to the extent practicable, without diminishing or affecting their respective powers and functions; to conserve, develop, and utilize such resources for the benefit and enjoyment of the American people.

Mr. Edward Crafts, Director of the Bureau, has stated that "States" should play a key role in intergovernmental relations concerning this problem.

We are fortunate that our state government has taken positive action in implementing a plan to encourage local units of government to acquire "Open Space" lands. This program has been implemented through the State Department of Resource Development, and has been supported by grants from a cigarette tax.

One of the most effective blocks to the development of a comprehensive "Open Space Plan" has been the lack of cooperative planning among the many governmental agencies in the Milwaukee Metropolitan Area.

There is now tangible evidence that this problem is fast being resolved.. Through the encouragement and aids given by the Federal Government, the State, and the Southeastern Wisconsin Regional Planning Commission, there is increasing awareness of the problem. A fine example of this new cooperation has been the deliberations of representatives on the Root River Watershed Committee which have produced a firm recommendation for a plan of action. The Committee has recommended four serious inter-related problems that exist within this watershed and should be solved as soon as possible:

1) Drainage and flood control, both urban and rural.

2) Land use development in relation to the stream and its floodways and flood plains.

3) Recreation and public open space reservations.

4) Stream pollution and water quality.

This advance has been made through the action of the Southeastern Wisconsin Regional Planning Commission and its staff.

The Milwaukee County Park Commission has had firm long range plans for providing adequate open space for about 50 years. We have been spending approximately one million dollars each year during the past 5 years for land acquisition, and anticipate spending like amounts for the next 5 years. Yet we are not able to keep ahead of the need, as we see it.

Our County has experienced a steady growth of population, with the resultant demand for more subdivisions and industrial sites. This pressure increases land costs and further aggravates the acquisition problem related to public open space.

We now have about 12,000 acres of park lands. It has been apparent to our Park Commission for many years that the problem transcends political boundaries. As a result, many meetings have been held with park people in the counties surrounding Milwaukee previous to the creation of the Southeastern Wisconsin Regional Planning Commission. The pressure of urbanization is now being felt in these counties, and positive action is being taken to provide open space. This is encouraging, because we are in a position presently to produce a comprehensive plan for the entire region. This is being done by the SEWRPC.

Professional park administrators have been aware of the growing open space need, yet the layman has not been made sufficiently aware of the problem. We are in an era of movement to the out-of-doors. There are more people, more leisure time, funds, autos, boats, better roads, and more recreation equipment manufactured; in short, there is quite a sociological change occurring in this country. In addition, our work weeks are getting shorter. . . . we are living longer. . . .and we are using thousands of time-saving devices.

This change is producing vast amounts of surplus man-hours, for which we must find constructive use.

It is my feeling that a well-planned, comprehensive park and protected open space system offers the greatest number of different

solutions to this problem. People are turning more and more to the out-of-doors for recreation, and this is good, as parks open up an unlimited range of healthful and emotionally satisfying experiences to people of all ages. Protected natural areas provide that renewed contact with nature, which is the best remedy we know, for the mounting tensions of urban living. We must continue to keep in mind that urbanization apparently is here to stay, and we better design our recreation and open space to acknowledge this fact.

Someone has said if our urban areas do not provide for these amenities, in 50 to 100 years we may find it necessary to abandon them and start anew at a different location. This is, perhaps, a facetious statement, but we should not be so stupid as to let this happen. We do not think that Milwaukee will ever be so treated.

LET'S PAY NOW SO WE CAN PLAY LATER

by John R. Zillmer, Executive Secretary
Ice Age Park and Trail Foundation

Mr. Chairman, Ladies and Gentlemen, now that we have heard from the professionals, I guess that it is time to hear from one of the group for which we are all trying to work and which must inevitably end up paying the bill for whatever we do - a much beleaguered taxpayer. For I, as most taxpayers, am a conservationist only by avocation, not by vocation.

I think there can be no question that our open space areas in southeastern Wisconsin are now woefully inadequate and are becoming more so by the day. And as a taxpayer I want to issue a call for immediate action to correct this situation. We have procrastinated much too long already. The greedy, and sometimes even the needy, have monopolized public funds so long that such "non-emergency" programs as conservation that benefit all of us, and not just special interest groups, have fallen almost hopelessly behind. But unless we now act with all deliberate speed there just are not going to be any open space areas available to our children and their children.

In prior times open areas were plentiful and could be taken for granted. This is, however, very plainly no longer true. Our population is expanding rapidly. Moreover, and this is perhaps a less realized point, we are at the same time decentralizing our population. It is no longer the central cities that are expanding most rapidly. It is the areas surrounding the central cities that are exploding. For instance, Waukesha County with its eighty-two per cent (82%) population growth between 1950 and 1960 was the fastest growing county in the state and one of the fastest in the nation. There can now be no reasonable doubt that southeastern Wisconsin will soon, very soon in fact, be one great urban area.

Moreover, and again I think that this is a fact usually overlooked, our recreational use patterns have very quietly changed. In times past our open spaces were used primarily by the man of the house who would go out into the country for a day of hunting or fishing with the boys. In addition, there were, of course, always the few nuts who liked to hike or ski or bird watch. Today, however, there is a completely different situation. Most of us have joined the nuts. And it is no longer a question of roughing it with the boys. Today it is much more apt to be mother, father, and the kids who take to the country as a unit.

Our economic system is providing us with ever increasing leisure time and the money to enjoy it. It has provided us with high speed highways which have made accessible the hitherto inaccessible. We have become a nation of year round family outdoor consumers. For there are today very few of our younger generation who don't like to picnic or ski or camp or snowshoe or swim or just plain stroll through the woods to breathe some fresh air for a change and take in the wonders of nature.

And thus our problem is created. At the same time our present open spaces are being mercilessly chewed up by this decentralization of our ever increasing population, our demand for open spaces is also increasing tremendously. We not only must do something about it, but we are in the unique position of still being able to do something about it. I say "unique position" because for probably the first time in our history, by reason of the work of such agencies as the Southeastern Wisconsin Regional Planning Commission, we have the facts available to see what is happening before it is so late that we can no longer be the masters of our fate. It is difficult to contemplate how our region would look today had this type of information been available to us fifty or even twenty-five years ago.

But seeing our problem is perhaps the easy part of our job. For the only possible rational solution can be the setting aside of vast areas of open space now. Tomorrow there will be none. The prices today are high and rapidly going higher. Tomorrow they will be astronomical and beyond reach. The urgency of immediate purchase of land, land, and more land cannot possibly be overstated. It is the key to the solution of our problem. The picture of a highly urbanized southeastern Wisconsin in the not too distant future without adequate open spaces is too drab to contemplate. Man lives not by bread alone.

Now don't think for a minute that I do not realize that a crash program such as I propose doesn't have enormous problems. It most certainly does. Probably the most presently critical of these is the problem created by taking vast quantities of land off the tax rolls. This matter is already of concern because of the increased purchases of land by the state for the Kettle Moraine State Forest. I certainly don't have a pat answer to this problem. Probably ultimately all presently exempt land will be fully taxed. This would seem to be only fair. Until this time, however, I would think, as regards this Kettle Moraine problem for instance, that the state should make payments to the local units of government in lieu of taxes. The amount of these payments should probably be equal to the cost of the local governmental services to the non-taxed land areas minus the benefits accruing to the local populous by reason of the presence of the state forest. I will add, however, that I don't think that state owned conservation land should be singled out alone for this treatment. All state owned land should be treated equally.

Another big problem is the question of development of the newly acquired land. Ideally, development would take place just as soon as the land becomes available. But so crucial is this need to secure land now, that we will just have to put development off to the future. For if we don't put all of our resources and energies into a crash program to secure open spaces now, we just will not have any to develop in the future.

Moreover, I don't think that our present outdoor consumers want much of this land highly developed. Certainly there will have to be some highly developed areas such as we presently have in the Mauthe and Whitewater Lakes areas in the Kettle Moraine. But I firmly believe that most of it should be left alone with a very minumum development to grow up once again as God created it and as it was before man happened upon the scene to bend it to his uses. Perhaps development should consist of not more than well marked trails and shelters.

We in southeastern Wisconsin are more fortunate than most in the open spaces that we do have available for preservation. For the glaciers have left us with the most renowned vestiges of the ice age not only in this country, but in the world. People come from all over our globe each year to study and enjoy them. Our region is rugged and varied. It is dotted with what we hope will remain sparkling lakes and rivers. Just stand, as I have on many occasions, on the top of a hill in the Holy Hill area on a fall day with a blue sky above. You won't find a more beautiful sight in the world. Most areas would give their eyeteeth to have open space to preserve such as we have in profusion in our very midst. We have a singular opportunity and responsibility to protect it.

We live in the most highly developed civilization the earth has ever known. Is it too much to ask that we spend a small portion of our income setting aside places where a man and his wife and their children can get away from the stresses and strains of the fast living of our teeming cities, where they can stretch their legs and breathe a little fresh air, and where they can know the birds, the animals, and the plants, and perhaps understand just a little of nature as God created it? Won't they be better citizens because of this? Won't this be a better country because of this? We spend billions to go fast. Can't we spend just a little to go slow? I wonder if we can really afford not to.