SIXTH LOCAL PLANNING GUIDE PUBLISHED

The Southeastern Wisconsin Regional Planning Commission has completed and will shortly publish a sixth local planning guide entitled Soil Development Guide. This Guide is intended to provide an understanding of the detached operational soil survey and its accompanying interpretive analyses completed for the entire Region in 1966; to illustrate how such a survey and its interpretations can be used for regional, watershed, community, subdivision, and farm planning; and to suggest special soil-related regulations for incorporation into local zoning, sanitary, land division, and building ordinances. Previous SEWRPC planning guides, distributed to all cities, villages, towns, and counties in the Region, dealt with the subjects of land subdivision, official mapping, zoning, planning agency organization, and floodland and shoreland development.

The preparation of the Soil Development Guide was prompted not only by the need to assist local government officials and private citizens within the Region in becoming more familiar with the soil survey and its various applications in local planning and development programs but also to help avoid further misuse of the soil resource, one of the most important elements of the natural resource base, influencing both urban and rural development.

SEWRPC Planning Guide No. 6 is currently being printed and is expected to be available for distribution in December 1969. Pursuant to regular
Commission report distribution policy, all local units of government will receive a copy of the Guide. Individuals interested in obtaining copies may do so by contacting the Commission Offices. The cost of the Guide will be $5 to those residing within the Region and $10 to those outside the Region. The Guide was jointly prepared by the Commission and the U. S. Department of Agriculture, Soil Conservation Service, with financial assistance from the U. S. Department of Housing and Urban Development.

REGIONAL SOIL SURVEY AND INTERPRETIVE ANALYSES

Included in Planning Guide No. 6 is a description and explanation of the regional soil survey, which was completed for the entire Southeastern Wisconsin Region in 1966 as a result of a cooperative agreement.

SOIL EROSION DURING LAND DEVELOPMENT

The conversion of land from rural to urban uses can present serious problems of soil erosion and sedimentation. The waterway shown in this photograph, taken within the Region, is in an expanding industrial park and needs treatment to protect it from continuing erosion. Land development plans must include measures, such as the rapid establishment of permanent vegetation in waterways, dealing with soil erosion and sedimentation problems.
between the U. S. Soil Conservation Service and the Southeastern Wisconsin Regional Planning Commission. One of the important reasons for undertaking the regional soil survey in southeastern Wisconsin and for obtaining interpreive analysis for urban, as well as agricultural, land uses was to provide data essential to the preparation of the regional land use, transportation, and watershed plans. The steps involved in the survey were field operations, including mapping, and the preparation of interpretive analyses. A discussion of soil map numbers and symbols, including soil type, slope, and erosion; of soil characteristics, including color, texture, structure, consistence, reaction, and special features; and of laboratory analyses is included in the Guide, as well as an explanation of the three major soil classification systems and their interrelation: The U. S. Department of Agriculture System, which was used in the soil survey for southeastern Wisconsin; the American Association of State Highway Officials (AASHO) System; and the Unified System, used by the U. S. Army Corps of Engineers.

Various analytical interpretations of the data collected as a result of the soil survey are available to the soil survey user. A discussion of these interpretations, along with a discussion of the preparation of soil suitability or limitation maps, is also included in the Guide. There are four general groups of interpretive analyses that contain useful information for soil survey users. These are:

- Interpretations for engineering purposes, such as the chemical and physical properties of soils, water management characteristics of soils, and the limitations of soils for road construction and other specific engineering applications.

- Interpretations for planning purposes, such as the limitations of soils for residential development with or without public sanitary sewer service; for light industrial and commercial buildings; and for highway, railroad, and airport location.
HIGH WATER TABLE

The location of the water table in a soil is an extremely important soil characteristic. A very shallow water table exists in many areas of the Region. This characteristic affects the use to which land can effectively be put. The home basement excavation in this photograph is in a land subdivision within the Region where existing homes are plagued with high water table problems, such as poor drainage, wet basements, and inoperative septic tank sewage disposal systems. Fortunately construction was never completed on the homesite in this photograph.

- Interpretations for agricultural purposes, such as the limitations of soils for cultivated crops, pasture, and woodlands; the capability of soils for irrigation and drainage; and estimates of crop-land and woodland yields.

- Interpretations for aesthetic and recreational purposes, such as the limitations of soils for wildlife habitat or the maintenance of greens, shade trees, and ornamental shrubs.

Basic tables containing this interpretive information can be found in SEWRPC Planning Report No. 8, Soils of Southeastern Wisconsin.
USE OF SOIL SURVEY DATA AND INTERPRETIVE ANALYSES

The regional soil survey data and interpretive analyses have been used extensively by the Commission in its preparation of regional, watershed, community, and neighborhood plans, as well as by the U. S. Department of Agriculture in its preparation of farm plans. Each of these uses is discussed in the new planning guide. For example, the soil survey data provided a particularly important input to the preparation and design of the adopted regional land use plan. Three alternative plans were prepared: a controlled existing trend plan, a satellite city plan, and a corridor plan; and in the preparation of each of the alternative plans, the Commission utilized information about the physical features of the Region, including data on topography and drainage patterns; surface and ground water; recreation-resource areas; and soils.

To date the Commission has also prepared or presently has underway comprehensive watershed planning programs for three important watersheds in the Region: the Root River, the Fox River, and the Milwaukee River watersheds. As an important part of each watershed study, a mathematical model, used to simulate the hydrologic and hydraulic performance under flood conditions of the river system under study, is developed. Soils data are an important input to the development of this hydrologic simulation model.

Soils data can be used in the preparation of a community plan in much the same manner as for the preparation of regional plan elements. The basic process involved is an areal analysis of the suitability of the soils for the various categories of land uses expected to occur in the community and the use of such a graphic analysis in the preparation of the basic community land use plan element. On an even smaller scale, the soils data can be effectively used in subdivision design. The Guide contains several examples of the use of soils data in the preparation of subdivision layouts.
Problems such as the residential foundation failure shown in this photograph, which recently occurred within the Region, can be avoided by restricting the placement of structures on soils having severe limitations for such use. The soil in which this basement was placed is characterized by a high shrink-swell potential and a high water table. Thus, this soil swells when wet and shrinks when dry, at times changing up to 10 percent in volume. This change in volume combined with the increased hydrostatic pressure created by the high water table can cause foundation failures such as this.

The Guide also discusses the use of soils data in health and sanitary regulations, with particular regard to the usefulness of soils data in regulating the installation of on-site soil absorption (septic tank) sewage disposal systems (see Figure 1). Included therein is a discussion of the operation of such soil absorption sewage disposal systems, which are often misunderstood by uninformed homeowners. The correlation between soil characteristics and proper operation of septic tank sewage disposal systems is clearly illustrated by Maps 1, 2, and 3, which indicate the results of an analysis of the location of recorded malfunctioning septic tank systems in recent years in Waukesha County with detailed soil survey maps. Clearly, if the detailed soils data are properly used in local regulations governing the installation of septic tank systems, many future problems in the operations of such systems can be avoided. In particular, it should be noted that simple filling of low-lying lands to provide man-made soil conditions for such systems does not always solve the problems, as illustrated by Map 2.
Figure 1
ON-SITE SOIL ABSORPTION SEWAGE DISPOSAL SYSTEM

Source: U.S. Department of Health, Education and Welfare; U.S. Department of Agriculture; Wisconsin Department of Health and Social Services, Division of Health; and SEWRPC.
Map 1
RECORDED MALFUNCTIONING SEPTIC TANK SEWAGE DISPOSAL SYSTEMS IN WAUKESHA COUNTY: 1966 - 1969

LEGEND

- Recorded malfunctioning septic tank sewage disposal system
- Areas shown on Maps 21 and 22

Source: Waukesha County Health Department
Map 2

RELATIONSHIP BETWEEN SOILS DATA AND RECORDED MALFUNCTIONING SEPTIC TANK SEWAGE DISPOSAL SYSTEMS
SECTIONS 25, 26, 27, 34, 35 AND 36, T8N, R20E, WAUKESHA COUNTY

DENOTES SOILS WITH SEVERE LIMITATIONS

DENOTES SOILS WITH VERY SEVERE LIMITATIONS

DENOTES RECORDED MALFUNCTIONING SEPTIC TANK SEWAGE DISPOSAL SYSTEM

The recorded septic tank system failures for this particular six-square mile area in Waukesha County have been superimposed on a soils map interpreted for the absorption of sewage effluent. Most of the system failures occurred on soils rated as having very severe limitations for such use. In addition, a large number of failures occurred in an area that had been "made" or filled in an attempt to overcome the natural limitations.
In another six-square mile area of Waukesha County, a large number of septic tank sewage disposal system failures were found to occur on soils that are "tight" or have a slow permeability rate. Within this particular area, there have been a number of attempts to "improve" the operation of the systems by illegally draining the sewage effluent into roadside ditches and drainageways through pipes and hoses.
Applicable to rural development activities and directly related to the detailed soil survey and accompanying interpretive data are various farm management and conservation practices. Also discussed in the planning guide are several soil interpretations and guides which are relevant to farm conservation planning, including certain chemical and physical properties of soils, such as texture, reaction, permeability rates, water table, and erosion hazard; water management characteristics, such as available water capacity, drainage requirements, and irrigation capability; capability groups of soils; estimated crop yields; sprinkler irrigation guide; drainage guide; and various tree, shrub, and other planting guides.

MODEL REGULATIONS AND GUIDES

As in the past local planning guides, SEWRPC Planning Guide No. 6 contains several appendices setting forth suggested land use control regulations which, in this case, are based on, and related to, the detailed soils data. These appendices include zoning district regulations related to soil capabilities, special soil regulations to be incorporated into zoning ordinances, special soil regulations to be incorporated into land subdivision ordinances, and special soil regulations to be incorporated into building codes or ordinances. These suggested regulations are intended to be added to or to replace model regulations set forth in previous local planning guides. It should be stressed that such model regulations are intended only as guides to be used by local units of government as a beginning in the formulation of sound development regulations, health and sanitary regulations, and soil and water conservation regulations. Other appendices to SEWRPC Planning Guide No. 6 include suggested guides for erosion control as developed by the Milwaukee-Waukesha Soil and Water Conservation District, in cooperation with the U. S. Soil Conservation Service; a soil photo map index for ordering copies of soil maps; a listing of soils by hydrologic grouping in the
Southeastern Wisconsin Region; a description of the soils educational program in the Region; and a copy of the Memorandum of Understanding on the use and adaptation of soils data for local planning in the Southeastern Wisconsin Region.

Fable for today

Shortly after Johnny came marching home from World War II, he found that his old neighborhood had changed for the worse. So Johnny Urbanite and his family decided they wanted no part of Urban Congestion. They traded in their season symphony tickets for a set of garden tools and moved out to Crabgrass Acres.

The Urbanite family settled down in a suburban paradise of trees and fields and streams. They drew deep breaths of the fresh country air and they took early morning walks along the nature paths to learn the songs of birds.

But soon their paradise began to change. Other Johnnies had heard about Crabgrass Acres and decided to move out too. Soon the open fields were sprouting houses instead of vegetables. Trees began to buckle under the fresh country air and the old cornfield became a shopping center where frozen vegetables were sold instead of fresh corn and beans and tomatoes.

Swimming hole closed

The good country air began to take on strange odors from the new plastic plant that had been built alongside the new expressway.

The swimming hole was shut down with a sign that said "Polluted Water: Danger." Nature walks were out of the question because the woods had now been turned into a municipal dump, and many of the birds had been killed by pesticides.

To make matters worse, taxes on the split-level house at Crabgrass Acres had doubled in 10 years from $450 to $900. So Johnny, whose family was outgrowing the split-level anyway, decided to sell his house and move into a larger house way out in Urban Sprawl, which was a paradise of tree and fields and streams.

Johnny had paid only $14,500 for his split-level 10 years before, so he was elated when he sold it for $25,000. But his joy faded a little when he found that the new house was priced at $42,000. Besides, it had two acres of land which Johnny didn't need or want. But that was what the zoning law called for.

Election fades

Johnny's elation faded even more when he went to Exurbs Savings & Loan Association and found that the $18,000 he needed to borrow would cost him 8½ percent, instead of the 4½ percent rate he had enjoyed under the GI Bill of Rights.

So now Johnny and his family had moved twice. They found cleaner air and greener fields as they had in the early years at Crabgrass Acres, but all was not paradise even in Urban Sprawl. For one thing, Johnny still had to commute back to Urban Congestion every day to his job.

He could drive the 30 miles, but that took 90 minutes, and $4.50 a day for tolls and parking. So Johnny had to take public transportation, which wasn't very reliable or comfortable.

One day Johnny got a letter from the town clerk saying that taxes in Urban Sprawl would go up 10 percent because more families were moving into town, and new roads, new water and sewer lines, and new schools were needed.

Waste condemned

Then Johnny read a magazine article by Marion Clawson, a land economist. This is what Mr. Clawson had to say about Johnny's new hometown:

- A sprawled or discontinuous urban development is more costly and less efficient than a compact one.
- Sprawl is unattractive and unesthetic.
- Sprawl is wasteful of land since the intervening land is not specifically used for any purpose.
- Land speculation is unproductive, absorbing capital, manpower, and entrepreneurial skills without commensurate public gains.
- It is inequitable to allow a system in which the new land occupier is required to shoulder such a heavy burden of capital charges or debt merely for site costs - costs which in large part are unnecessary and avoidable.

Johnny pondered what he had read for a long while, and then one day he heard a speech by Swiss city planner Kurt Otto Schmid. This is what Mr. Schmid had to say to his American audience:

"I have visited neighborhoods of high quality by all standards of livability. It is shocking to be informed that nobody would consider buying a home there, because home values are sliding down. Why? Under the impact of 'pullout mentality,' the residue value of a piece of property is about the worst of all value judgments about environmental quality...."

Criticism added

"I take the 'pullout syndrome' to be a more destructive determinant for segregation than most of the usually cited attributes of postindustrial man. The pullout syndrome (particularly as expressed by the affluent) is an abuse of the freedom of mobility."

After reading that, Johnny drove back home and said to Jane, "We moved out of Urban Congestion and Crabgrass Acres because we had a pullout mentality. No more pullout thinking for us!"

And so Johnny Urbanite became an active member in the Regional Plan Association. And Jane Urbanite joined the local League of Women Voters, to fight for metropolitan government. And now, when the Urbanites have a few quiet moments together in between their jobs, chores, and civic meetings, they sometimes dream aloud about moving back into Urban Congestion and renovating an old house in an urban-renewal area, close to the kids' schools and Johnny's office.

And as Johnny rides along on his power mower every Saturday morning, he dreams of turning it in for a set of season symphony tickets.

G. H. F.
As noted in an earlier issue of the SEWRPC Newsletter, the Commission has underway a regional sanitary sewerage system planning program designed to produce another key element of a comprehensive plan for the physical development of the Region: a regional sanitary sewerage system plan. The program is designed to assist in implementing the adopted regional land use plan; to assist in resolving problems in the provision of sanitary sewer service to developing areas of the Region; and to meet the federal planning prerequisites for federal grants-in-aid to local units of government within the Region for the construction of sanitary sewerage facilities. The need for, the scope and content of, and the organization, timing, and budget for this program have been set forth in the Commission prospectus published in December 1968. Several staff memoranda have been prepared under the study to date and approved by the Technical Advisory Committee on Regional Sanitary Sewerage System Planning. These include:

- **Regional Sewerage Plan Study Design.** This memorandum describes in summary form the major work elements and their interrelationships, the staff requirements, and the time schedule necessary to prepare a preliminary regional sanitary sewerage system plan.

- **Proposed Computer Usage.** This memorandum describes the proposed computer programs to be used in the development of the regional sanitary sewerage plan.

- **Proposed Study of the State-of-the-Art of Sewerage System Planning.** This memorandum describes the studies to be conducted in relation to the identification and evaluation of recently conceived or developed methods, materials, processes, and operations applicable to the regional sanitary sewerage plan.
• Plan Preparation, Test, and Evaluation. This memorandum describes the strategy and general procedures envisioned for the preparation of alternative regional sanitary sewerage plans.

• Design Criteria. This memorandum describes the design criteria that will be used in the development of the regional sanitary sewerage plan; the development of cost estimates for the construction, operation, and maintenance of the various system components; and the analyses of the relative economics of the various sewerage system plan alternatives to be developed.

An inventory of the existing sanitary sewerage facilities within the Region is essential to provide a basis for the preparation of a regional sanitary sewerage system plan. In 1963 the Commission completed as part of a basic public utilities study a regional inventory of sanitary sewerage systems, in which these systems were mapped on a uniform basis by county at a scale of 1:24000 (1" = 2000') and in which individual subsystem plans were acquired at various larger scales for individual cities, villages, and sanitary districts. These maps indicate the location of all existing sanitary trunk sewers, sewage pumping stations, sewage treatment plants, and emergency overflows and bypasses. The sizes, invert grades, and type of pipe of all trunk sewers and all combined sewers are also noted on the maps; and invert elevations are shown at critical points in the system. All of the data for this original inventory were acquired from local records.

Under the proposed sanitary sewerage system planning program study, the foregoing inventory data are carefully being reviewed and updated to reflect current conditions. Accordingly, it is necessary to remap all existing sanitary sewerage facilities, delineate existing committed service areas, and tabulate relevant capacity data. Any serious gaps in the original inventory data due to lack of good local records will have to be filled in by data collection operations, including, if necessary, field
surveys. In addition, data are being acquired on the area and population served by septic tank sewage disposal systems. Also being collected as part of the inventory is information about future local expansion plans, pertaining to both sewer extension and service areas. A file copy map of the sewer service areas, indicating the existing area; the planned service area; and Commission determination of the possible service area, based on the drainage of individual areas as delineated on Commission base maps, is being sent to all local units of government operating sewerage systems within the Region. It is requested that additions be made to the map for any new areas to which service has been provided, any new facilities, any proposed new service areas, and any proposed new facilities.

The regional sanitary sewerage system planning program is being guided by a 24-member Technical Coordinating and Advisory Committee on Regional Sanitary Sewerage System Planning and is scheduled for completion in December 1970. The program is being partially funded through a planning grant from the U. S. Department of Housing and Urban Development. As noted above, such a plan is an absolute necessity if local governments in the Region are to remain eligible for federal grants in the support of construction of sanitary sewerage facilities.

TECHNICAL RECORD PUBLISHED

Volume 3, No. 2, of the SEWRPC Technical Record will be available for distribution in January 1970. This publication, designed to document technical procedures applied by the Commission in its work, is published on an irregular basis, as needed. Because of the irregularity of publication, subscriptions to the Technical Record are not available. Standing orders, however, may be placed; and the issues will be mailed out as they become available. The cost per issue is $0.50 inside the Region and $1.00 outside the Region. The current issue contains articles on "Characteristics of Travel in the Milwaukee Central Busi-
ness District," discussing the diversities in the uses of land and the activities associated with these land uses as they affect travel patterns within the Milwaukee central business district; "Computing the Center of Population and the Geographic Center," which presents a description of the computation of centers of population and geographic centers within the Southeastern Wisconsin Region; and "A Backward Glance," a feature which traces the historical development of the central business district of Milwaukee.
AROUND THE REGION

KENOSHA COUNTY

In an intergovernmental effort, the Kenosha County Board of Supervisors, the Common Council of the City of Kenosha, and the Town Board of the Town of Somers have given approval to the preparation of large scale topographic maps of a 12.5 square mile area encompassing the newly established University of Wisconsin-Parkside Campus and environs in the Town of Somers. The topographic maps will be prepared to National Map Accuracy Standards and will incorporate the horizontal and vertical survey control system recommended by the Commission, including the location or relocation, monumentation, and establishment of State Plane Coordinates for all U. S. Public Land Survey Corners in the area to be mapped. Preparation of these topographic maps is viewed locally as a first step in the preparation of precise neighborhood unit development plans for the entire Parkside Campus environmental area. The base mapping being prepared represents a means of collecting, coordinating, and presenting in a permanently useful form much valuable information essential to sound municipal planning and engineering and, as such, represents one of the soundest long-term capital investments communities can make. It should also be noted that the proper application and effectiveness of certain plan implementation devices, including the official map, subdivision control ordinances, and precise neighborhood development plan, all depend to a considerable extent on the quality and the availability of community base maps.

CITY OF KENOSHA

Mr. Robert F. Kolstead has assumed duties as the new City Planner for the City of Kenosha. Mr. Kolstead retired from the United States Air Force in 1968, where his responsibilities included military logistics planning. While in the U. S. Air Force, he was also a member of a panel specializing in preparing planning and development requirements for various military base activities. Mr. Kolstead has completed basic studies in geography and received a masters degree in geography, with specialization in urban and regional planning, from Southern Illinois University in August 1969.
HOW HAVE SOIL MAPS BEEN USED IN THE SOUTHEASTERN WISCONSIN REGION?

The detailed operational soil survey was completed within the Region in 1966. The Commission, however, began reproducing copies of the detailed soil survey photo maps and selected interpretive data on a work progress basis for interested purchasers in 1964. Since that time, nearly 6,000 such soil photo maps have been purchased by various units of government, by lending institutions, by realtors and land developers, and by interested individuals within the Region. The soil maps and interpretations have been used by state, county, and local units of government in highway location and design; subdivision plat review; real property assessment; zoning district delineation; storm water drainage planning and design; and neighborhood unit plan preparation. The soil maps and interpretations have been particularly useful in the preparation of local land use control ordinances and administrative procedures, which regulate the installation of on-site soil absorption (septic tank) sewage disposal systems. For example, in administering the Walworth and Washington County Sanitary Codes, local officials utilize the detailed soil maps to advise prospective developers and homeowners as to the nature of the particular soil under consideration and its suitability for septic tank effluent disposal.

While the use of detailed soil survey photo maps has been widespread in governmental work, the maps and accompanying interpretive analyses have also been of great value in the private sector. Many land developers and builders, almost as a matter of course, consult the soil maps before making commitments to purchase and develop land. Similarly, many lending institutions, such as banks and savings and loan associations, consult the soil maps as an aid in decision making with respect to requests for real estate loans. Industrial and commercial firms utilize
the soil survey maps as an aid in alternative site evaluation. Appraisers often consult the soil survey data in connection with requests for land appraisals. Many private individuals also consult the soil survey map and data before making home ownership commitments.

Copies of soil photo maps may be obtained from the Commission Offices at a scale of 1" = 2000' and for most parts of the Region at a scale of 1" = 1000'. These maps may be ordered by telephone, in writing, or by personal visit. The Commission charges only the actual cost of reproduction, as well as mailing cost, if any, for the soil photo maps. Currently, prices are $0.50 for each soil photo map to those residing within the Region and $1.50 for each map to those residing outside the Region for maps at a scale of 1" = 2000'. The larger scale maps of 1" = 1000' are available at costs of $1.00 and $3.00, respectively.
"To waste, to destroy our natural resources, to skin and exhaust the land instead of using it so as to increase its usefulness, will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them amplified and developed."

Theodore Roosevelt
Speech to Congress of the United States in 1908