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Managing Growth and Addressing Urban Sprawl: An Overview

Michigan State University Agricultural Experiment Station and Cooperative Extension Service

Research Report

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Issued August 1999

27 pages

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RESEARCH REPORT



Michigan Agricultural
Experiment Station
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Managing Growth and Addressing Urban Sprawl: An Overview



Table of Contents

Introduction to Land Use	1	Growth Management: Methods for Addressing Sprawl	18
Land Use Trends	3	Zoning	18
The National Picture	3	Sliding Scale Zoning	18
Michigan Focus	5	Open Space Zoning	19
Land Use Regulation and Control	7	Agricultural Preservation	19
Legal Framework	7	Purchase of Development Rights	20
Property Rights	7	Urban Growth Boundaries	21
Police Powers	8	Concurrency	22
Takings and Eminent Domain	9	Cluster Development	22
Planning Framework	10	Transfer of Development Rights	23
Land Control in Michigan	10	Conclusions	24
Sprawl: A Critical Land Use Issue	16	Bibliography	25
Causes of Sprawl	16	Footnotes	26
Effects of Sprawl	17		

Acknowledgements

The authors thank the following individuals for their thoughtful review of this report: Jon Bartholic, Michigan State University Department of Resource Development and Institute of Water Research; Gordon Hayward, Peninsula Township Planner; William Rustem, Public Sector Consultants; and Jim Wiesing,

Michigan State University Extension, Grand Traverse Extension director. Additionally, we appreciate the design and editorial assistance provided by Alicia Burnell and Leslie Johnson, Michigan State University ANR Communications.

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Introduction to Land Use

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively: the land. A land ethic of course cannot prevent the alteration, management, and use of these 'resources,' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.

In short, a land ethic changes the role of Homo sapiens from conqueror of the land-commodity to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such. (Leopold, 1949).

The impact of human activities on landscapes is certainly not a new phenomenon. As long as people have been around, they have affected the land. However, as land and its associated resources are depleted and the world's population continues to increase, land use issues become increasingly critical. Witness the current devastating floods occurring in Bangladesh, India and China, thought to be caused by deforestation. Furthermore, economic disparity between classes, communities and nations is increasing, and the equitable distribution of costs and benefits of land use activities is more challenging than ever for societies.

The type and intensity of land use determine how the landscape appears and how it functions economically, socially and environmentally. Land use, more than any other type of human activity, has direct impacts on water quality, sensitive environments, public health, public service delivery, economic development and community character (MUCC, 1993). Land use effects

are more than environmental — they are economic and social. Table 1 indicates how different land uses are associated with different ratios of revenue dollars to expense dollars. For all locations, while revenue dollars may remain constant, the costs associated with residential land use are much higher than the costs associated with farmland or open space. Land use decisions also influence people's desire to move out of decaying urban cores. Furthermore, these land use decisions directly affect the mobility of socioeconomic groups — they have frequently determined people's ability to move out of decaying urban cores (Downs, 1996). Figure 1 illustrates the distribution of population by race in southeastern Michigan in 1990. In the city of Detroit, the white racial group accounts for only 21.6 percent of the total population, while in surrounding counties the percentages of people in the white racial group in the population range from 83.5 percent (in Washtenaw County) to 98.2 percent (in Livingston County). Alternative land use patterns result in differing economic and fiscal impacts upon

the members of different communities (Burchell, 1996). The effects of land use activities reach far across space and time. The irreversibility of various land use activities and the loss of options for future generations underscore the importance of good land use planning. Today's land uses directly affect present and future generations, how they will live and what their quality of life will be.

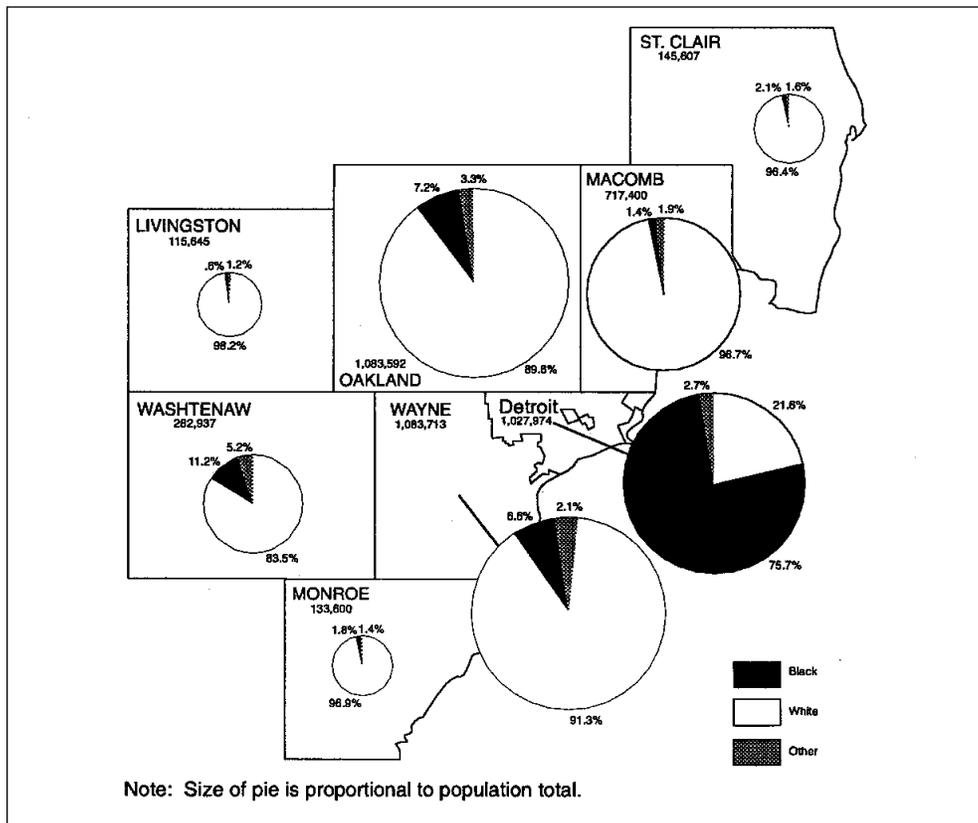
This paper examines growth management issues and various approaches used to address urban sprawl. After discussing national and state land use trends, it will examine the planning framework of land use regulation and the causes and effects of urban sprawl, and present a survey of growth management techniques.

Table 1: Ratio of revenue dollars to expense dollars by land use.

	Residential	Commercial and industrial	Farm, forest and open space
Hebron, Conn.	1:1.06	1:0.42	1:0.36
Agawam, Mass.	1:1.05	1:0.41	1:0.30
Deerfield, Mass.	1:1.16	1:0.37	1:0.29
Gill, Mass.	1:1.15	1:0.34	1:0.29
Scio Township, Mich.	1:1.39	1:0.26	1:0.99 ¹
Beckman, N.Y.	1:1.12	1:0.18	1:0.48
Northeast, N.Y.	1:1.36	1:0.29	1:0.21
Madison Village, Ohio	1:1.67	1:0.20	1:0.38
Madison Township, Ohio	1:1.40	1:0.25	1:0.30

Figure 1: Total population by race, 1990

Source: Daniels and Bowers, 1997; Arend *et al.*, 1996.



Source: U.S. Census, 1992; SEMCOG, 1993.

Land Use Trends

The National Picture

Across the United States, land use trends such as the loss of open space, environmental resources and farmland, the abandonment of urban centers, the decline of established suburban settings and the fragmentation of the land into small, irregular parcels indicate a nationwide land use crisis. Between 1960 and 1987, urban areas in the United States grew from a total of 25 million acres to 56 million acres (MDNR, 1992). "Between 1970 and 1990, the number of metropolitan counties (counties that contain a city of at least 50,000 people) had grown from 446 to 599 of the nation's 3,137 counties. These metropolitan counties include 16 percent of the land area of the U.S. and nearly three-quarters of the nation's population" (Daniels and Bowers, 1997, p. 10). Figure 2 shows the population growth rate in metropolitan and non-metropolitan areas in the United States. In the United States, land conversion for urban development is largely (80 percent) associated with and focused on single-family residential use (Schultink and van Vliet, 1997). It has been estimated that urban and suburban

settlements consumed almost one-third more land per person in 1990 than they did in 1970 (Daniels and Bowers, 1997). "The U.S. Department of Agriculture National Agricultural Statistics Service reported that the number of farms declined by approximately 7 percent from 1987 to 1997 (from 2,212,960 to 2,057,910). The only documented increase in the number of farms during this period occurred from 1994 to 1995 at less than 1 percent (from 2,064,720 to 2,071,520.) While the number of farms during this 10-year period declined by 7 percent, the number of acres of farmland decreased by 3 percent (from 998,923 in 1987 to 968,338 in 1997)" (National Agricultural Statistics Service, 1998). The American Farmland Trust reported that, between 1982 and 1992, every state in the United States lost prime and unique farmland to urban development (American Farmland Trust, 1997). Of particular concern is the rate of conversion of high quality agricultural lands and the conflict between such lands and high development areas. Plate 2 indicates concentrations of prime and/or unique farmland coinciding with rapidly growing areas. These conflict areas are predominantly found near major metropolitan areas (Sorensen *et al.*, 1997).

Figure 2: Metropolitan and non-metropolitan population growth in the United States



Source: Michigan Society of Planning Officials, 1995

It has become obvious that many communities are facing the same multiplicity of challenges: sustaining viable urban centers; protecting rural communities, prime agricultural and environmental lands; and containing the urbanization of open and rural lands. In the past, individual communities have focused on these issues in isolation and have addressed each “problem” with narrowly focused and separate policies for land use control. However, these issues are interconnected and their long-term solutions require integrated policy choices.

One of the most pressing land use issues relates directly to individuals' employment and residential decisions. Some general trends in land use patterns are becoming more apparent. Employment and residential land uses existed in the urban core for many years, but after WWII, people began to move to suburban or exurban² areas and commuted back to the urban center for work and commercial services. That trend was followed by a wave of employment centers moving out of the urban core. As a result, many people could both live and work in exurban areas. Employment opportunities became a driving variable for determining residential location. Today, a further wrinkle in land use trends is becoming apparent — employment opportunities and residential opportunities for individuals are presenting themselves in different exurban centers. People seem to be moving farther from the old urban centers and choosing to commute from one exurban area to another for employment and for other commercial and recreational activities. Race relations, riots and other “push factors” such as personal safety also contribute to the movement to exurban areas.

The Detroit metropolitan area provides an illustration of the successive waves of land use change. Between 1955 and 1990, nearly 1 million people left Detroit for the suburbs; today the suburban Detroit population is three times greater than the city's population (Daniels and Bowers, 1997). First, Detroit residents moved from the urban center to the city's suburbs. Then the businesses followed. Today, the older, well-established working-class suburbs of Detroit's recent past are being abandoned by many people for homes in the “greenfields” in surrounding and more distant rural areas. It seems that people are moving farther away from the urban core, opting and able to reside and work in scattered communities in the growing metropolitan area. Table 2 illustrates the decline in

Table 2: Change in population between 1970 and 1990 for the SEMCOG region.

Location	1970	1990	Total change	Percent change
Livingston	58,967	115,645	56,678	96.1
Macomb	626,204	717,400	91,196	14.6
Monroe	119,215	133,600	14,385	12.1
Oakland	907,871	1,083,592	175,721	19.4
St. Clair	119,280	145,607	26,327	22.1
Washtenaw	234,103	282,937	48,834	20.9
Wayne	2,670,368	2,111,687	-558,681	-20.9
Detroit	1,514,063	1,027,974	-486,089	-32.1
Out-Wayne	1,156,305	1,083,713	-72,592	-6.
Region	4,736,008	4,590,468	-145,540	-3.1
Michigan	8,881,826	9,295,297	413,471	4.7
United States	203,302,031	248,709,873	45,407,842	22.3

Source: revised from Michigan Society of Planning Officials, 1995.

population in urban Wayne County from 1970 to 1990, while rural counties such as Livingston experienced a dramatic population growth (96.1 percent). Current efforts to reverse this trend, to encourage movement back into urban centers, can be seen in community revitalization efforts and enterprise zones.

Although it is often noted that the rural-urban fringe is where population growth and land use change are most evident, the line between rural and urban areas (the fringe) is becoming exceedingly difficult to discern. “Today's rural-urban fringe region typically lies 10 to 40 miles outside of urban centers and is typically characterized by two types of development. The first is a continued wave of large residential and commercial projects as population centers expand” (Daniels and Bowers, 1997, p. 4). The second is referred to by geographer Pierce Lewis as “the Galactic City” (Hylton, 1999; Daniels and Bowers, 1997; Castle [ed.], 1995). This type of development features scattered housing and commercial areas held together by a

system of highways. Both of these types of development are accompanied by land use patterns that include fragmentation, the adjacency of incompatible land uses, and the loss of cultural and natural resources. Both of these new trends in development obfuscate the distinction between urban and rural land use. The land use pattern in the fringe can be characterized as stale and monotonous, making it difficult to detect when one community ends and another begins.

Michigan Focus

Many of the land use issues that were first recognized on a national scale — for example, loss of agricultural land, destruction of environmental resources, abandonment of urban centers, decreased quality of communities and the inherent interconnection of these issues — are now emerging at the forefront of Michigan's policy agenda. In 1992, a relative risk analysis project funded by the EPA produced a document, "Michigan's Environmental and Relative Risk," that ranked the state's environmental priorities. The resulting ranking of Michigan's 24 most important environmental issues was headed by land use planning problems. "Lack of land use planning that recognizes the integrity of ecosystems" was at the top of the list, closely followed by the "degradation of urban ecosystems" (Rustem, 1996; MDNR, 1992). The lack of integrated land use planning in Michigan has been repeatedly recognized as a broad issue with far-reaching effects (MDNR, 1992).

The results of the 1995 Trend Future survey conducted by the Institute of Public Policy and Social Research (IPPSR) at Michigan State University (MSU) found that, among stakeholder leaders, urban sprawl (11.5 percent) was mentioned most often as the most important land use problem facing the state. The other problems mentioned were redevelopment of urban areas (10.8 percent), protection of private property rights (8.1 percent) and preservation of productive farmland (7.4 percent) (Hembroff, 1995). These problems are interrelated. Without redevelopment, sprawl is more likely; with sprawl, the preservation of farmland is less likely. All these issues are related to development. As exurban development encroaches on and destroys open space, rural communities and ecological, social and economic systems are threatened. Increased urbanization also results in an

increase in runoff and water quality concerns because of the attendant increase in impervious surfaces, abandonment of existing infrastructure and new infrastructure development in the outlying area. Furthermore, the dominant low-density growth patterns exclude lower socioeconomic groups from the suburbs (by pricing them out of the market) while at the same time they contribute to the abandonment and deterioration of urban infrastructure. The result is that the state's poor are forced into more concentrated and declining communities (Downs, 1996). Between 1980 and 1990, Michigan's central cities continued to decline in population — Detroit lost 175,365 people while Flint, Saginaw and Grand Rapids declined by 18,850, 7,996 and 7,283 people, respectively (MDEQ, 1995, p. 2). The decline of Michigan's central cities has contributed to the state's high degree of fragmentation. In examining metropolitan areas, Rusk (1996) noted that Michigan rated the worst among states in housing segregation, the worst in school segregation and the third worst in city/suburb income ratio.

"Between 1980 and 1990 the population of Michigan grew by 0.4 percent. This has been attributed, in part, to the substantial out-migration of 133,000 persons between 1985 and 1990 due in part to a high statewide unemployment rate of 15.5 percent" (MDEQ, 1995, p. 2). Despite this out-migration and low population growth rate, some Michigan communities experienced pressures as a result of in-migration — a reflection of the population shifts and movements within the state's borders. One primary discernible trend is that people are moving from the state's urban areas to its suburban and rural areas. As Michigan's economy strengthened in the 1990s, the state's population began to grow as well. "Unlike the earlier pre-1990 out-migration, between 1990 and 1994, the state's population increased by 2 percent (228,914 persons). Significantly, for this period as well as the last 30 years, there has been an overall increase in the population density of rural communities. Projections for the next 20 years suggest the trend will continue" (MDEQ, 1995, p. 2). Plates 1 and 3 illustrate the increase of urbanized area around Grand Rapids, Kent County, Mich. A number of rural townships in Kent County became more urbanized between 1980 and 1993.

The results of these land use trends include substantial increases in the density of rural populations and stress on infrastructure, including rural roads, emergency services and schools. Without doubt, this development

pattern is much more costly to service than previous land use patterns. Instead of development being concentrated and taking place in a compact pattern, the currently evolving pattern requires the delivery of services in scattered locations and on very large and spread out lots. Such trends have resulted in much more land being converted for use by fewer people than during any other period since Michigan's original settlement. The Michigan Society of Planning Officials Trend Future Report (1995) projected that, between 1990 and 2020, between 1.5 million and 2 million more acres of land will be occupied by 1.1 million more people. This estimate predicts that there will be a 63 to 87 percent increase in Michigan's developed land accompanied by only an 11.8 percent increase in population in Michigan between 1990 and 2020 (Rustem, 1997). Putting this into historical perspective, Wyckoff (1997) points out that the amount of additional land that will be converted to residential and commercial use that will accompany the projected population increase of 1.1 million people will be roughly the same size as the land that served 9.2 million people in 1987. Therefore, it seems that the modest increase in the state's population and its attendant land use impacts will change Michigan's landscape and affect the quality of life for Michigan communities and citizens long into the future.

The predicted urbanization of so much land is especially alarming because land is a valuable resource in Michigan's economy. As a leading expert has pointed out, "Four industries in Michigan are dependent on the land: tourism, forestry, mining and agriculture. Michigan tourism provides direct employment to approximately 130,000 people and in 1994 generated \$8 billion. Forestry and forestry-related products contributed nearly \$3.2 billion in economic activity and 68,500 jobs. In 1994, oil and gas industries in the state contributed \$599 million to the economy and provided jobs for 11,500 families" (Rustem, 1997). "Michigan's agricultural industry contributes \$37 billion annually to the state's economy. Michigan has 46,500 farms that utilize 10.1 million acres and employ 100,000 workers. Despite the strong presence of farming in the state, Michigan has lost 9 million acres of farmland since 1920; between 1982 and 1992, the number of acres lost was 854,000" (Michigan Farmland and Agricultural Development Task Force, 1994, pp. 3-4). The highest loss rates have been seen in the Grand Rapids, Kalamazoo and Traverse City areas.

Thirty percent of the state's total converted cropland was located in counties surrounding Grand Rapids and Kalamazoo. Antrim and Benzie counties near Traverse City experienced a 17 to 20 percent reduction. Given the incompatibility between urban residential and rural agricultural land uses, not only is the total amount of acreage converted a concern, but also the increase in the amount of "edge" or interface between urban and rural lands.

The majority of farmland loss has been attributed to urbanization — the conversion of agricultural lands to residential, commercial and industrial uses (see Plate 1 and Plate 3). These images depict land cover change from 1980 to 1993. Plate 1 represents land cover in 1980 based on MIRIS land use data. The red areas depict urban use, the yellow areas depict agricultural cover and the green areas depict forest cover. Plate 3 represents land cover in 1993 and is based on a supervised classification of a Landsat Thematic Mapper image. The areas in red represent urban use, the yellow areas represent agricultural use, gray areas represent shrubland and brush, green areas represent forest cover and blue areas represent wetlands and water. The spread of urban areas into rural agricultural areas is evident in the northwest portion of the image and at the urban/rural fringe surrounding Grand Rapids. The results of the conversion of agricultural land to urban land include the fragmentation of Michigan's agricultural landscape, greater land use conflicts and increasing demands on local government for services and infrastructure. Many farmland owners stand to make more if they subdivide their land and sell small tracts for residential use rather than selling the entire farm. The practice of splitting off and marketing marginal or non-productive portions of farmland at inflated prices has resulted in major increases in property values and taxes for the remaining farms (MSPO, 1995). Many times, the result of some farms being subdivided is that the remaining farms cannot continue to afford to keep land in agricultural production. Rising property values and the resultant rise in property taxes force farmers to seek means to increase their productivity. Many times this is accomplished through specialization, which in turn may lead to greater environmental risks due to greater intensity of agricultural practices upon the land. The family farm in many cases is being replaced by agribusiness.



Orchard in Grand Traverse County

Antrim, Benzie, Grand Traverse, Leelanau

The counties of Antrim, Benzie, Grand Traverse and Leelanau possess a unique microclimate that supports numerous fruit orchards and most of the tart cherry production in the United States. The proximity to water and the topography create a unique microclimate that is conducive to fruit production. "Between 1982 and 1992, these counties lost more than 14 percent of their farmland. Additionally, the populations of Leelanau, Grand Traverse and Antrim counties rapidly increased, with growth rates of 23.5, 22.6 and 16.7 percent, respectively. Most of Michigan's farmland loss is due to the large demand for second homes and retirement homes and fragmentation of land caused by low density developments. Michigan has the largest number of second homes in the nation" (American Farmland Trust, 1997, p. 19). The actual number of acres of farmland converted to other uses does not show the complete picture of the demise of farming because residents adjacent to farms result in conflicts over odor, dust and noise and make farming less practical.

Land Use Regulation and Control

Legal Framework

The U.S. Constitution established a system of both federal and state laws in support of a constitutional democracy. This system of federalism allows both federal and state governments with exclusive and overlapping executive, legislative and judicial jurisdiction. Each state has its own constitution, statutes and legal precedents that may not provide state citizens with rights and protection less than those under federal standards but which may differ (e.g., more stringent pollution standards may be imposed) from federal as well as sister state law. The governmental authority to act on behalf of its citizens, at both the state and national levels, is generally agreed to be constitutionally based. The courts, in turn, have interpreted various constitutional provisions, the constitutionality of legislation and the constitutionality of various undertakings. These judicial interpretations and decisions form legal precedents that control future

interpretation of the constitutions, legislation and official undertakings. Three basic legal doctrines and subject areas provide a background to the regulation of land use in the United States — property rights, police power and takings.

Property Rights

The American concept of property ownership traces its roots back to the land tenure system of England during the Middle Ages. Contrary to popular belief, property rights have never been absolute in our legal system (Wright, 1994). Real property ownership gives rise to exclusive, not absolute, rights. People may hold property rights individually or share them with some other people to the exclusion of others. However, property rights have always been "subject to the controls and limitations vested in the sovereign power" (Barlowe, 1978, p. 396).

Lawyers, economists and other scholars commonly describe the ownership of land as constituting a “bundle of rights” (see Figure 3). These include the right to possess and use, to sell, to devise, to mortgage and to subdivide the property. These rights of ownership, as well as certain limitations, make up the entirety of an individual's ownership interest in land. Some common limitations of property ownership include liens and easements. Liens are claims, encumbrances or charges on property for payment of some debt, obligation or duty. Easements are rights of use over the property of another. Typically, these permitted uses are rights-of-way and rights concerning flowing water and utilities.

In our society, the largest bundle of rights that a private owner can hold in real property is known as fee simple ownership. Fee simple ownership today would be called complete ownership. Generally, a fee simple owner can dispose of the land as he or she sees fit, and when the fee simple owner dies, the property passes to the owner's heirs. Other forms of property ownership less comprehensive than fee simple ownership include life estates, estates for years and tenancies at will. Such ownership interests convey to the holders of such interests less than a full bundle of rights in the land. For example, an individual receiving a life estate in a property from a grantor does not have the right to pass the subject property on to his/her heirs on death. Rather, upon the death of a holder of a life estate, the property passes according to the original grantor's directions or to the grantor's heirs. There are myriad rules and restrictions on the transfer of property interests from individuals to individuals and from individuals to their heirs.

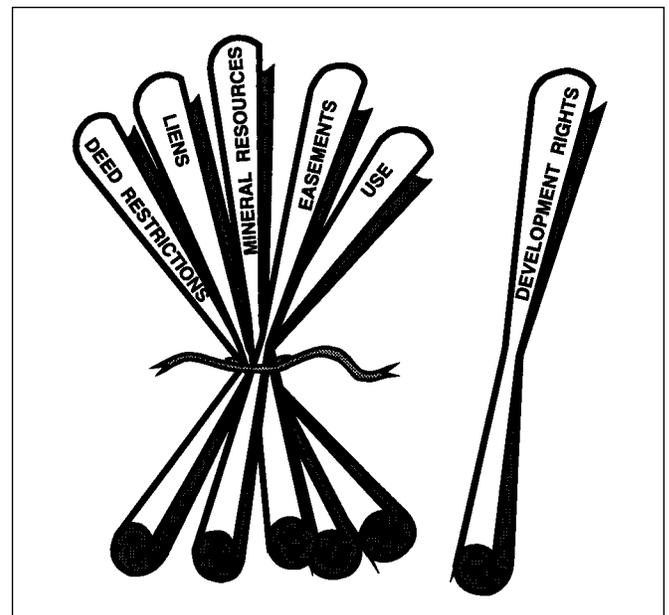
Fee simple ownership, as described above, implies exclusive rather than absolute rights, which, in turn, are limited and conditioned by the overall interests of society. Therefore, some rights in property are always reserved for the state and are not included in a fee simple owner's property rights bundle. These include the state's right to tax, take for public use, control the use of land and escheat (return the property to state control when there are no heirs to inherit) (see Figure 3). Society's right to take private property for public use, to tax and to control property use falls under governments' police powers and is subject to constitutional prohibitions against taking private property without due process and fair compensation.

Land tenure can then be described as a bundle of rights made up of many heterogeneous, complex, highly flexible sticks, including claims, privileges, powers and immunities (Hagman, 1986; Barlowe, 1978; Rose, 1975; Harris, 1953). The ownership of land includes a number of use rights such as minerals, timber, water, air and development, which are part of title to or ownership of land. A development right is equal to the unused development potential of a parcel of land — i.e., the difference between the existing use of a parcel and its potential use as permitted by existing law (Redman/Johnson Associates, 1994; Pizor, 1986). Development depends on the acquisition of two separate components: land and permission to build a given number and type of units. Because both are usually acquired through land purchase, we do not think of them as separate and different (Gans, 1975). However, viewing property as a bundle of rights and a development right as a single stick in that bundle allows communities and planners flexibility in controlling land use.

Police Powers

Police powers — the power to legislate and regulate on behalf of the health, safety and general welfare of citizens — are one of the authorities delegated to

Figure 3: Bundle of Rights



Source: MDEQ, 1995, produced by Planning and Zoning Center.

states. Public regulation of private property by states and municipalities, through planning and land use control laws and practices, is based on those entities' police power. Through a municipality's legitimate exercise of its police power, rights of an owner can be restricted to protect the public health, safety, morals and general welfare. Examples of legitimate public purposes for land use controls include floodplain protection and the preservation of natural, scarce or valuable resources. For example, the protection of groundwater recharge areas could be defensible under the public's right to protect its general welfare.

Police power is the exercise of the sovereign right of government to promote health, safety and the general welfare within constitutional limits. In our federal system, police power authority is conferred by the 10th Amendment of the U.S. Constitution upon individual states and, in turn, is delegated to local governments. In general, restrictions and limitations regarding the use and disposition of real property are seen as legitimate exercise of governments' police power. This power can be exercised even though it imposes burdens on the use and enjoyment of private property. Not all burdens, restrictions and controls on property ownership are permissible, however. Justice Holmes in *Pennsylvania Coal Co. vs. Mahon* pointed out, "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking" (260 U.S. 393 [1922]). Though some regulation is permitted, too much regulation of real property may trigger the constitutional protection of landowners' interests and rights.

Takings and Eminent Domain

Both the U.S. and Michigan constitutions proscribe the taking of private property for public use without substantive due process and just compensation (U.S. Constitution, Amendment V and Amendment XIV; Michigan Constitution, 1963, Article I and Article X). Regulation of property rights and uses does not constitute infringements on private property rights per se, but at some point regulatory requirements have been adjudged to have taken owners' property without just compensation. The just compensation requirements articulated in the United States were extensions of principles espoused in Great Britain's Magna Carta (Wright, 1994). The basic rule is that

private property may be taken by governmental action only for public use. There are, however, two views of what "public use" means: "use by the public" or to "public advantage" in a broader sense. An example of the former is land taken for highway construction; an example of the latter may be found in the preservation of endangered species.

"Eminent domain" refers to the power of states, municipalities or other entities authorized to exercise functions of a public character to take private property for public use. Eminent domain is the explicit exercise of one of the rights in property retained by the government. The process of exercising the power of eminent domain is commonly referred to as condemnation or expropriation. The government can assume possession and use of property whenever the public interest so requires as long as due process is followed and just compensation is paid to the owners of property that is taken. An example of governmental exercise of eminent domain is the condemnation and the forced sale of private property to facilitate highway or road construction.

When exercising their police power, including the right of eminent domain, governmental entities must follow procedures that ensure private property owners receive due process (procedural and substantive fairness). The U.S. and Michigan constitutions require the payment of just compensation to owners of private property taken for public use. Just compensation is compensation that is fair to both the owner and the public when property is taken for public use. In determining the level of compensation that will be paid, the agency considers criteria such as the cost of reproducing property, its market value and resulting damage to remaining property.

The Supreme Court in *U.S. vs. Reynolds* said that just compensation means the full monetary equivalent of the property taken (397 U.S. 14 [1970]). Just compensation, therefore, is the fair market value of the property as of the time of the taking. Where only part of a property is taken, just compensation is calculated as the fair market value of the part taken plus the damages to the part not taken. Fair market value is deemed to be the amount the property would reasonably be worth on the market between a willing buyer and seller. The comparable sales approach method, which looks at similar parcels in the area, is often used to help determine fair market value.

Though eminent domain cases for widening roads, constructing defenses or expanding the provision of utilities are fairly straightforward, the law governing other takings cases remains somewhat confusing. This is especially true in situations where the use of land is restricted or controlled to provide a framework for planning.

Land use regulations per se are legitimate exercises of governmental power and do not constitute a taking unless the regulation or restriction either takes all economically viable use (categorical taking) or exacts an interest in land from the property owner where no reasonable relationship exists between the owner's proposed use and the impacts claimed to be reduced or prevented by such action (Olson, 1996). Land use restrictions that do not take away all economic viable use nor amount to an exaction without reasonable relationship have been upheld as legitimate forms of police power.

The Planning Framework

Land use in the United States occurs within a legal and institutional framework but is not considered to be federally regulated. Though the United States lacks a single, unified system for land use planning, a significant number of federal laws and regulations affect land use decision making. These include the Coastal Zone Management Act (1972), the Clean Air Act (1979), the Water Pollution Control Act (1972), the Rivers and Harbors Act (1899), the Safe Drinking Water Act (1974), the National Environmental Policy Act (1969) and the Intermodal Surface Transportation Efficiency (ISTEA) Act (1991). This matrix of federal environmental legislation is far from a national land use planning system, however. In keeping with the U.S. system of federalism, powers not delegated to the United States by the U.S. Constitution are reserved for the states. Therefore, the authority to plan and to regulate land use is relinquished to the states.

Despite federal legal authority to do so, few states have assumed a primary role in land use planning. A limited number of states have statewide land use planning systems (e.g., Vermont [1970], Florida [1972], Oregon [1973], Colorado [1974], Hawaii [1978], New Jersey [1986]), but in most states, the planning responsibility and oversight are carried out at the local government level. Furthermore, though many counties

may have planning authority, land use planning is most often exercised and carried out at the lowest levels of government — townships and municipalities. The importance of planning at the local level is true, not only in states that lack a statewide land use planning system (e.g., Michigan) but also in states that have implemented statewide land use planning approaches (e.g., Oregon, Florida, Hawaii).

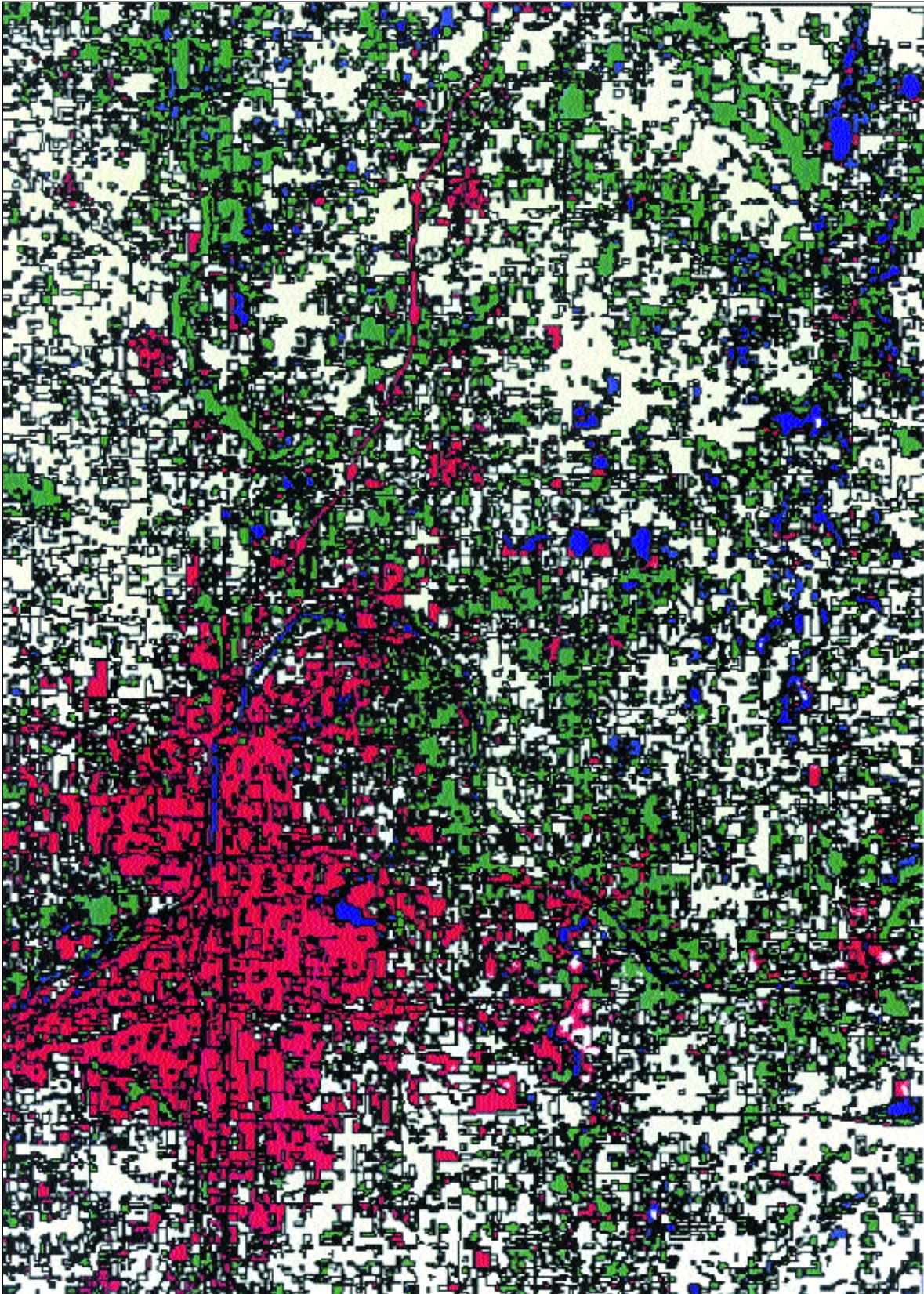
Land Control in Michigan

Michigan lacks statewide or regional planning systems that encourage appropriate land use policies and practices for sustainable environmental and natural resource health (MDNR, 1992). Instead, Michigan has approximately 1,800 planning entities that typically make land use decisions with little or no interagency coordination (Americana Foundation, 1992). At present, Michigan has 83 counties, 1,242 townships, 271 cities and 263 villages (Schultink and van Vliet, 1997). Each of these political entities is permitted to make land use planning decisions under four state planning enabling acts: the Municipal Planning Act (P.A. 285 of 1931, AM. 152, Act 25), the Township Planning Act (P.A. 168 of 1959), the County Planning Act (P.A. 282 of 1945) and the Regional Planning Act (P.A. 281 of 1945).

In addition to Michigan's land use planning acts, the state has three legislative zoning acts that enable local units of government to control land uses by regulating the activities that may take place on land. The City-Village Zoning Act (1921), the Township Rural Zoning Act (1943) and the County Rural Zoning Enabling Act (1943) provide local entities with authority to place zoning restrictions on land use. Zoning restrictions regulate land use through the delineation of zones or districts (i.e., areas) in which certain uses or activities are permitted or proscribed. Zoning standards relate to the configuration of the subject parcel and concern the bulk, height, lot area and setbacks of buildings and other structures on the land.

Michigan's enabling legislation specifies the development activities that can be regulated, the broad management techniques that can be used (e.g., zoning, districting, development review), the methods of implementation (e.g., staffing, financing), the functions and design of planning commissions, and the enforcement powers (Nelson, 1992).

Plate 1: Kent County land use in 1980

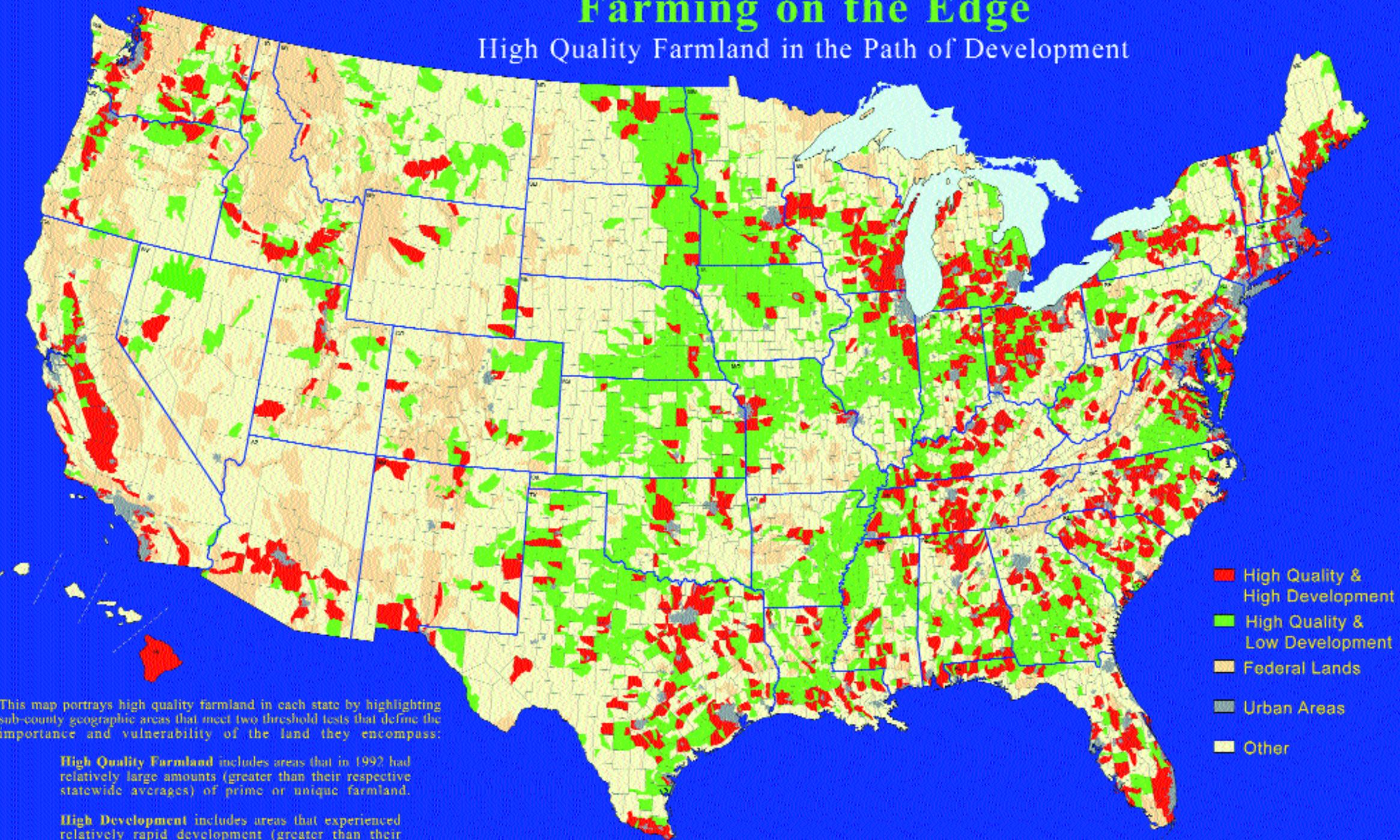


Source: Institute of Water Research, Michigan State University, 1997.



Farming on the Edge

High Quality Farmland in the Path of Development



- High Quality & High Development
- High Quality & Low Development
- Federal Lands
- Urban Areas
- Other

This map portrays high quality farmland in each state by highlighting sub-county geographic areas that meet two threshold tests that define the importance and vulnerability of the land they encompass:

High Quality Farmland includes areas that in 1992 had relatively large amounts (greater than their respective statewide averages) of prime or unique farmland.

High Development includes areas that experienced relatively rapid development (greater than their respective statewide averages and having at least 1,000 acres of urban conversion) between 1982 and 1992.

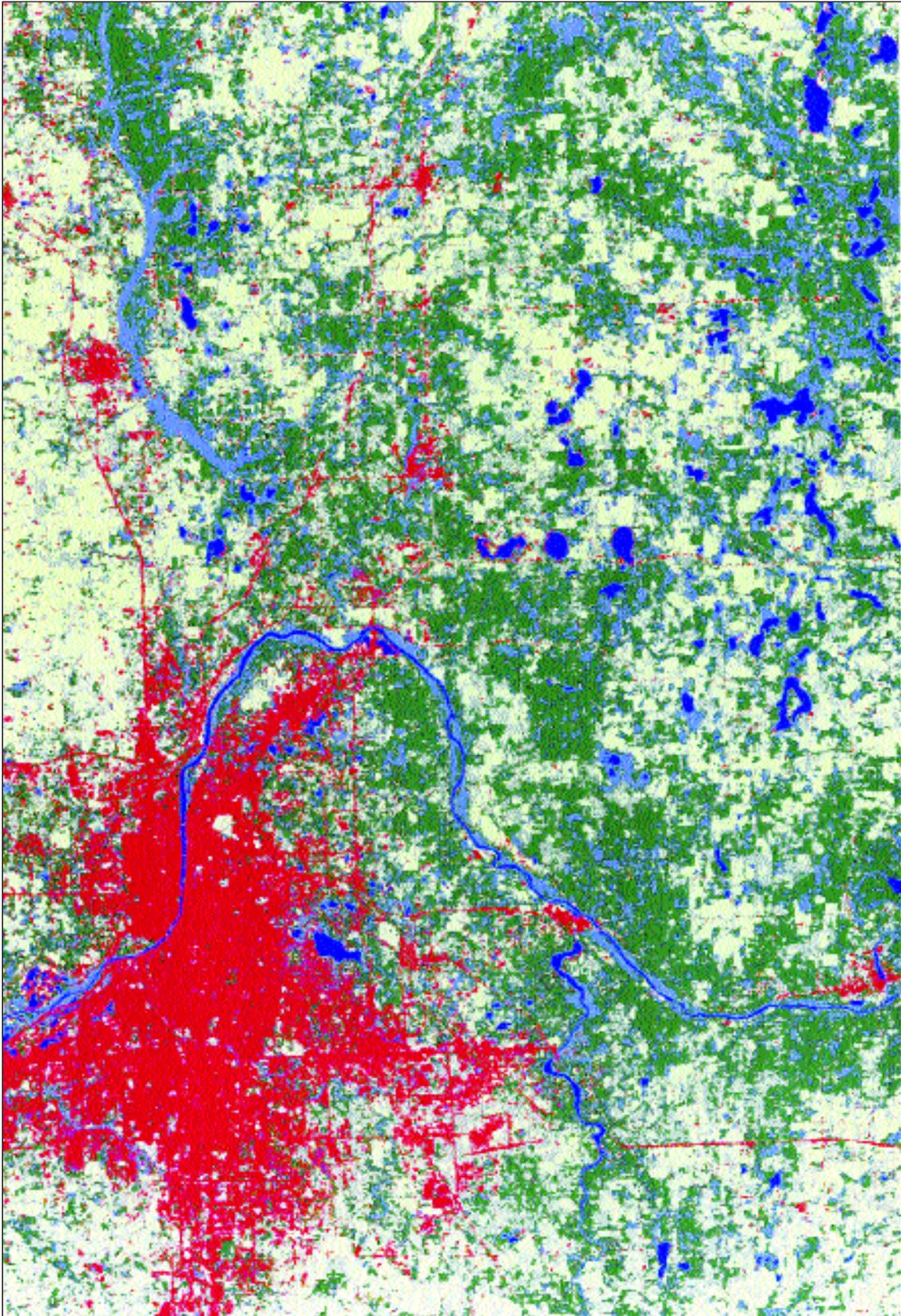
Other includes all areas not meeting the two threshold tests.

Unique farmland was defined to include areas where unique soil and climate conditions support the growth of specialty crops.

Data are from the National Resources Inventory of 1992 by the National Resources Conservation Service of the U.S. Department of Agriculture. The urban built-up areas are defined by the Bureau of Census, U.S. Department of Commerce (1991).

Source: Sorensen *et al.*, 1997

Plate 3: Kent County land use in 1993



Source: Institute of Water Research, Michigan State University, 1997.

Unfortunately, Michigan's land use planning statutes have not been revised to include contemporary planning techniques and tools. For example, authority for the transfer of properties' development rights, use value assessments, concurrency, and the creation of urban and rural service districts have not yet been specifically included in Michigan's land use planning legislation.

The Planning Law Committee of the Michigan Chapter of the American Planning Association is working on a coordinated planning act that would try to combine the state's land use planning acts. The planners of Michigan seem to recognize the need for a unified approach and system for planning in Michigan. This proposed unified act would not require nor would it permit the creation of a Michigan state land use plan. Rather, it would require coordination of land use planning activities at and between all levels of state government that are involved in land use planning activities.

Michigan's current land use planning legislation provides a framework for local, county and regional planning. Current legislation does not make land use planning mandatory, nor does it mandate comprehensive or master plans. "A master plan is a comprehensive, long-range plan intended to guide the growth and development of a city, village, township or county. It includes the goals, objectives and policies of the community as they relate to physical growth and development issues and usually includes elements on land use, transportation, community facilities, population, economy, housing, parks and recreation, environmental protection and natural resources management" (Wyckoff, 1997). Master plans provide communities with an overview of their land use and growth objectives. Many urban and rural communities do not have master plans, and many have outdated land use master plans and regulations. Furthermore, some municipalities have updated plans that are inconsistent with the community's land use management practices. Even in communities that have master land use plans, few have plans adopted by a governing body. Of Michigan's local governments, only 48 percent are known to have adopted comprehensive plans, and only 66 percent are known to have adopted zoning ordinances (MSPO, 1995).

Most recently, the Land Division Act (1997) and its precursor, the Subdivision Control Act (1967), have greatly influenced land use throughout Michigan;

together they have established a mechanism for landowners to divide their larger parcels of land into smaller parcels for sale or development. Under the Subdivision Control Act, land divisions that did not cumulatively create more than four parcels of 10 acres or less every 10 years, land divisions that created parcels larger than 10 acres and land divisions that transferred property from one parcel to a contiguous parcel were exempt from meeting the state's platting requirements. These platting requirements are prohibitively expensive and are in and of themselves a barrier to land subdivision. The result of the Subdivision Control Act was a state land use pattern dominated by 10-plus-acre parcels. Many of them are long and narrow, often described as "bowling alley lots" (Norgaard and Pierson, 1998). The effect of the Subdivision Control Act seemed to be to encourage the fragmentation of Michigan's landscape.

In an effort to address the shortcomings of the Subdivision Control Act, Governor John Engler signed into law the Land Division Act (P.A. 591, 1996). In 1997, P.A. 87 amended the 1996 Land Division Act. "Goals of the Land Division Act include the elimination of incentives to create 10.1-acre lots, changing the pattern of development from long narrow lots, reduction of linear sprawl along roads, lessening the cost to plat, and reducing the amount of farmland and open space converted to residential use. The Land Division Act was supported by realtors and home builders but opposed by farmers, local governments and environmentalists" (Norgaard and Pierson, 1998, p. 1).

Under the Land Division Act, a new schedule and framework for land division in Michigan was established. This new schedule allows a certain number of splits (subdivisions) of any existing parcel with no ability to renew those splits. The act allows: four splits of any parcel under 10 acres; one split for each additional 10 acres on parcels up to 120 acres in size; one additional split for every 40 acres on parcels over 120 acres; and two bonus splits on parcels if a new road is built or if at least 60 percent of the original parcel is maintained in one parcel after the split(s). Additionally, divisions producing parcels greater than 40 acres are not counted as splits; and new parcels over 40 acres in size earn their own split rights after a 10-year wait. Given its recent passage, the effect of the Land Division Act is not yet known.

Sprawl: A Critical Land Use Issue

The predominant pattern of development in Michigan and throughout the United States over the past 50 years is characterized by continued low-density development that extends from cities into rural areas. This phenomenon of rapid conversion and scattering of urban land uses away from a centralized urban core is referred to as “urban sprawl”. Sprawl is land and energy consumptive and automobile dependent, requires a very high ratio of road surface to development served, and is often poorly planned on an area-wide or metropolitan basis (Wyckoff, 1997). Administratively distinct communities that are otherwise indistinguishable from one another characterize the resultant landscape. The effects of sprawl are seen by many as the reason for the demise of community character and the loss of quality of life for current and future citizens.

Historically, the spreading of new regional growth and development has been viewed as progress. Too often communities and their residents have eschewed recognition of the negative effects of growth and development. However, there is growing awareness that low-density growth or sprawl is market driven, expensive and inefficient. The process of sprawl appears as a pattern where, first, piecemeal residential development takes place in the outskirts of urban areas, where the landscape is green and undeveloped. Then new infrastructure in these areas is built, and commercial development follows. The construction of roads, sewers, water systems, solid waste facilities and schools, and the attraction of shopping and employment opportunities lead to increased taxes, congested roads, and environmental, landscape and aesthetic degradation. Ironically, these are many of the same conditions that initially influenced people to leave the urban areas and “move to the country.” As a result of these changes, many people choose to move farther into the countryside. This process is characterized as urban sprawl.

Causes of Sprawl

Both individual choices and public policy contribute to sprawl. In the United States, people have a high regard for individual choice and the “American dream” of home ownership. An increasing desire for large-lot single-family housing and changes in household dynamics are among the causes of sprawl. Today's American dream of owning a house in the country in many ways parallels the early 1900s notion of each family having its own farm. U.S. history and culture have reinforced the notion of the desirability and value of the goal of private land/home ownership. The increase in the size of suburban and exurban house lots has resulted in lower densities and a greater consumption of land per person. Another individual choice influencing residential development patterns is the modern family structure. Although Michigan's population increased by only 0.3 percent from 1980 to 1990, the number of homes increased by 6.7 percent. In part, this may be attributed to the divorce rate and an increase in single-parent households. Additionally, the seemingly disproportionate number of homes in Michigan is in part due to the abundance of second and recreational homes.

Current public policies — including federal, state and local policies and programs — have either encouraged sprawl or discouraged urban redevelopment. Our society's automobile dependency and highway/road construction are often cited as causes of sprawl. Transportation networks and access to modes of transportation influence individuals' decisions about where to live. However, existing development patterns make automobile ownership necessary. Previous and on-going highway funding and now telecommunications funding have made distant, rural lands accessible and thus vulnerable to development. Additionally, subsidies and the tax code can also be seen as contributing to sprawl. The federal government contributes to sprawl through home financing (e.g., FHA mortgages), the home mortgage interest deduction and its infrastructure funding. State tax structures and resultant property tax systems have a direct effect on what land uses are economically viable. Similarly, budgetary constraints on urban maintenance

and revitalization contribute to the presence of sprawl. Environmental policies that make it difficult and expensive to contend with contaminated urban sites have contributed to developers' disinterest to locate in urban areas. Rather than incurring the cost and potential liability for cleaning up a site or revitalizing a previously developed area, developers opt to locate on undeveloped land.

On the local level, communities and their governments' land use programs and policies have been enticing development and have both enabled and promoted sprawl. Local decisions to "attract business" and to "bring jobs to the community" have led to increased spending on infrastructure construction and reduced tax bases as a result of tax-based incentive programs offered to businesses. Such spending and incentives have direct impact on the patterns of development. Many municipalities' desires for economic development and growth have come at the expense of the competing uses of the regions' land and other environmental and natural resources. Rather than working together to direct and manage growth for regional prosperity, municipalities compete for industry and development in the absence of regional planning or tax base sharing. The perception of anticipated tax revenue on potentially developable land has been a strong incentive for local communities to allow sprawl to occur. Several studies have demonstrated that sprawl, in reality, is costly to communities, especially in the cost of services (Arend *et al.*, 1996; Burchell, 1996). Too often it seems that communities' planning goals and zoning are only as fixed and determined as the next accommodation requested by a development interest. The temporary nature of many communities' zoning plans is further exacerbated by the ever-changing composition of local government planning officials and planning boards. Though individual decisions and behaviors can be seen as the ultimate causes of sprawl, federal, state and local policies and programs can facilitate or retard urban sprawl.

Effects of Sprawl

The costs of sprawl are multidimensional — environmental, economic and social. Because sprawl is land consumptive, one environmental impact of sprawl is landscape fragmentation. Other environmental impacts of sprawl include increased air pollution from increased automobile traffic, changes in the natural hydrology due to increased impervious surfaces and decreased infiltration rates, and decreased water quality due to runoff that carries sediments, oil, grease, trace metals, chlorides and other toxic chemicals to surface and groundwater. Aquatic and human communities have both been destroyed as a result of sprawl. The aquatic communities are affected when reduced watershed infiltration rates result in the stream becoming "flashy" — most of the rainfall reaches the streams in a short time period. Additionally, the temperature of runoff water that travels over paved surfaces is higher; when such water reaches a stream, it can be highly destructive to aquatic organisms. Human communities are affected when streams become flashy and cause flooding of downstream areas. Because sprawl disperses people and communities away from existing infrastructure, the costs of providing these scattered and outlying areas with water, sewer, police, fire, emergency rescue and other municipal services is excessive. In fact, several experts point out that the costs of providing municipal services in such developments outweigh any tax revenue created by such developments (van den Brink, 1997; Daniels and Bowers, 1997; Arend *et al.*, 1996; Burchell, 1996;). Furthermore, the segregation of the urban poor has been exacerbated by urban sprawl as jobs, commercial opportunities and investment dollars leave for the exurbs. The impacts of sprawl on the resource base of rural and fringe areas include consumption of agricultural and open lands; deterioration/loss of wetlands, woodlands and associated habitats; impacts on surface water; increases in air pollution; and construction and associated cost of infrastructure establishment (MUCC, 1993).

Growth Management: Methods for addressing sprawl

Though the effects of sprawl are increasingly apparent across the nation, government efforts to control the pattern of low-density growth in rural areas have been limited (Daniels and Bowers, 1997). Traditional methods of land use control such as zoning have proven inadequate for managing the rapid growth that is occurring in many communities. Alternatively, growth management practices are proactive and may be defined as conscious government programs intended to influence the rate, amount, type, location and/or quality of future development (Mandelker, 1990). Growth management techniques offer an opportunity to address land use issues in an integrated manner. Growth management focuses on a balance between the equally legitimate needs to protect natural systems and to provide for population growth and economic development (Degrove, 1996). Such approaches encourage and support growth that enhances local quality of life (MDEQ, 1995).

Zoning

In all states, zoning has been the traditional method for controlling the use of land. In part, this is because of the traditional legal regimen and legal precedents that legitimize zoning as a proper exercise of states' police power. Zoning is the division of the land in a community into districts or zones and the establishment of regulations (including permitted and proscribed activities) for each district or zone. These regulations govern the use, placement, spacing and size of lots of land as well as buildings on the land (Wyckoff, 1997). Zoning as a legitimate means of governmental control of private land use was affirmed in the U.S. Supreme Court decision in *Village of Euclid vs. Ambler Realty Co.* (272 U.S. 365 [1926]). The court held in *Euclid* that land use zoning, in its general aspects, does not violate the 14th Amendment's due process clause (Mandelker, 1990). As a result of this landmark case, the traditional zoning system is called Euclidean zoning. This system of zoning divides the community into districts in which land uses are allowed as a right of land ownership. However, the existence and use of Euclidean zoning in many communities have failed to result in organized patterns of development.

All too often, zoning has been incredibly transitory or reactionary, with developers receiving approvals for variances or rezonings to develop different types of uses and at different intensities than those previously allowed. "One of the causes of sprawl is the tendency to rely only on 'regulations' such as zoning as a technique for implementing plans. However, land use decisions are 'economic decisions'. Zoning is a development tool and is not capable of permanent natural resource protection, long term plan implementation or growth management. These programs are economic and policy determinative" (Hayward, 1998). Zoning as a technique for managing growth is limited by the strength of a community's zoning ordinance and, most importantly, by the strength and resolve of the zoning officials. If planning and zoning officials do not support and uphold the integrity of the zoning ordinance, the power to manage growth through zoning is limited.

Sliding Scale Zoning

In addition to Euclidean zoning, there are some innovative forms of zoning, including quarter/quarter and sliding scale zoning, that some communities have tried to use to preserve agricultural lands while permitting some residential development. Quarter/quarter zoning systems allow limited non-farm residential uses to be either scattered or concentrated on non-prime agricultural land. Sliding scale zoning permits proportionally more splits of agricultural land for non-farm residences on smaller parcels than large ones because of the increased economic viability of larger parcels with prime farm soils. In Michigan, Alpine Township in northern Kent County has effectively used sliding scale zoning, permitting only one split for every 10 to 20 acres, two splits for every 20 to 40 acres, three splits for every 40 to 80 acres and only four splits for parcels over 80 acres.

Like zoning, quarter/quarter and sliding scale zoning rely on planning officials to uphold these development methods over time. If variances are granted, these techniques are limited in their ability to guide

development as originally planned. Limits of zoning tend to be transitory as pressures to rezone mount and the legal concept of “legal non-conforming use” prevents the reversal of bad zoning decisions (Hayward, 1998). Sliding scale zoning may be perceived as unfair because the number of splits is not proportional. For this reason, sliding scale and quarter/quarter zoning are techniques most appropriate in communities where agricultural preservation is a primary goal.

Open Space Zoning

Open space zoning is another innovative form of zoning. It permits residential development while striving to maintain a strong sense of rural community character and preserve environmental resources. Though open space zoning initially looks like traditional planned unit development (PUD), its emphasis on open space is quite different. Under PUDs, development priority is given to the clustering of dwelling units around common areas to minimize infrastructure costs; the provision of open space is sometimes not even a secondary consideration. Under open space zoning, the maximum preservation of open space is the primary consideration. Open space zoning establishes the protection of open space as the primary site development objective. Under open space zoning, a significant portion of the “developed” site is permanently protected as open space, and dwelling units or lots are clustered. The resultant permanent open space is restricted to non-developmental uses and protected from environmental disturbance in perpetuity through legally binding agreements.

Open space zoning encourages non-traditional developments and is unfamiliar to many builders, developers and municipal officials. This lack of familiarity has limited adoption of open space zoning. Communities must integrate open space zoning into their zoning regimes and master plans to encourage its use. Hamburg Township in Livingston County, Mich., has an open space component (section 14) in its zoning ordinance. This policy was adopted in 1992 and amended in 1996. Unlike traditional development, where the requirements are specifically defined in the zoning ordinance, open space developments provides the township with regulatory flexibility by allowing township officials final approval. Although private roads are included in the calculations of open space,

currently only 10 percent of the resultant open space is attributed to such roads. Since 1992, 36 of the 38 developments in Hamburg Township have been open space plans. This has resulted in the preservation of 1,061 acres of open space land (not including private roads) (Meyers, 1999).

Agricultural Preservation

Eastern states such as Maryland, Pennsylvania, New Jersey and New York, which have been experiencing urbanization for the longest time, have been battling the loss of agricultural lands with a variety of preservation techniques, including agricultural districting, use value assessment and conservation easements. **Agricultural districting** recognizes the incompatibility of residential and agricultural uses of land and prohibits non-farm residences in agriculturally zoned areas. The use of agricultural districting seems best suited in areas with large continuous tracts of prime agricultural land and low development pressure, and in areas primarily dependent on agriculture for income and jobs (Wyckoff, 1997). **Use value assessment** is a technique that establishes the value of a property for tax purposes by reference only to its current or designated use, rather than to its maximum possible economic use (i.e., its “highest and best use”). This departure from the traditional method for determining property taxes shields farmers from escalating property taxes associated with the transformation of a region's landscape from agricultural to a mix of agricultural, residential and commercial uses. A **conservation easement** is a legal agreement in which the landowner retains ownership of private property but conveys certain specifically identified rights in the land (e.g., restriction on future use of the land) to a land conservation organization or public body (MDEQ, 1995). Michigan's Public Act No. 197 of 1980, the Conservation and Historic Preservation Easement Act (M.C.L.A 399.251 *et seq.*) authorized the creation and transfer of voluntary conservation easements in land. Conservation easements can be used to transfer certain rights and privileges concerning the use of land or a body of water to a non-profit organization, governmental body or other legal entity without transferring title to the land. The transferred interest can be in the form of a restriction, easement, covenant or condition contained in a deed, will or other instrument.

Purchase of Development Rights

Under purchase of development rights (PDR) programs, development rights in a parcel are purchased, typically by a governmental unit or land conservancy or trust, and an easement is placed on the property and spelled out in a set of deed restrictions. For this reason, PDR programs are sometimes referred to as development easement or conservation easement programs. PDR programs are being used in 18 states, including Michigan, though 46 states have passed legislation allowing state or local governments to acquire development rights to private property (Daniels and Bowers, 1997). PDR programs firmly establish the concept of severing development rights from land ownership (Coughlin, 1981). Under PDR programs, development rights are severed from a parcel of land through the public purchase and retirement of that parcel's development potential. An

advantage to PDR is the ability of public entities to target areas to be preserved in perpetuity. A disadvantage of PDR programs is the public financing of the cost of the preservation programs. PDR as a growth management technique is limited because there must be public support for the program to initiate it, and the ability to preserve land is limited by the amount of public money available. However, purchase of development rights is a valuable growth management technique when it is used in combination with other techniques.

Michigan began its statewide PDR program when Public Act 233 was signed into law on June 5, 1996. Changes occurred to the PDR portion of the Farmland and Open Space Preservation Program, formerly known as P.A. 116 of 1974. Section 3611B of Act 233 authorizes the state to protect valuable farmland from future development by purchasing development rights. When property is selected, the state pays the

Peninsula Township: A Unique Setting

The development climate of Old Mission Peninsula (Peninsula Township) is obvious from the scattering of parcels for sale in the peninsula's orchards. One of those signs belongs to 57-year-old Russell J. Holmes, who is asking \$434,000 for his 79 acres with its spectacular view of the Grand Traverse Bay. Peninsula Township had estimated the cost of \$1,800 an acre for the purchase of development rights on the cherry farms of the peninsula. Using those figures, Mr. Holmes would receive approximately \$140,000 if he accepted a development right purchase payment from the township and retained ownership of the land and the right to farm it. Mr. Holmes believes that the preservation program is too little too late, citing that there are already too many people who have moved to the peninsula. Cheryl Kroupa bought Holmes' property and in turn divided the parcel into two parts. On one part, the development rights were sold at a cost of \$243,500 or \$3,000 per acre. This price is approximately 50 percent higher than the township's anticipated cost. Meanwhile, opponents of the township PDR program are aggravated that their taxes are going up to pay for a program they do not support. However, the majority of people, like Walter Johnson, voted in favor of the township's PDR program. As Johnson pointed out, the program adds income to owners from the land without requiring them to give up ownership or farming. Johnson, a 71-year-old cherry farmer whose family settled on the



Peninsula Township

peninsula approximately 100 years ago, said that the development rights on 185 acres of his family's 410-acre farm could yield \$336,500. While Johnson recognizes that he could sell those 185 acres to a developer for as much as \$650,000, he asserts that he is not interested in getting rich. Rather, he would like to receive some retirement income and allow his sons to continue to farm. He is hopeful that the availability of the purchase of development rights on the peninsula will permit the area to stay the same for generations to come. While Johnson's sale of PDRs may be philanthropic in nature, his sons have more economic interests in the sale of PDRs (Hayward, 1998).

Marion Township, Livingston County: Addressing Concurrency in its Comprehensive Plan

The bedroom community of Marion Township is located within commuting distance from Ann Arbor, Detroit, Lansing and Flint. The township's historically rural setting has made it an attractive place to settle. Though the township is rural, agricultural land uses are now secondary to residential uses in number of parcels and tax base. Though the shift from agricultural to rural residential has been gradual, residents and township officials voiced concern about the future of the township. Their vision statement states, "Township services will reflect a rural lifestyle. Roadways will remain largely unimproved and will not be overburdened with traffic or an excessive number of access points. Property taxes will not be expended to run public water and sewer lines in low density areas." Furthermore, Marion Township's comprehensive plan includes a public services strategy based on new development occurring concurrent with or after the public services necessary to serve it are in place. The intent of this strategy is to minimize the opportunities for urban sprawl

and leapfrogging of urban development into rural residential and agricultural areas of the township. Specifically, the comprehensive plan divides the township into three districts: a rural services district for low-density development, a partial service district as a transitional area and an urban services district, which contains public facilities to allow opportunities for urban development. Furthermore, the plan advises no new development requiring any new public infrastructure within the rural services district. The public services strategy represents a form of concurrency. Additionally, the Marion Township zoning ordinance includes an infrastructure and concurrency standards section (6.17), which states that no new land uses, except for unplatted single-family homes, or development requiring site plan review shall be permitted that will reduce the quality of service on adjacent roadways below the level of service as identified in the comprehensive plan.

owner for that portion of the property's value representing the right to develop that property, with up to a \$5,000 per acre cap. After the parcel's development rights are purchased, the land is restricted to agricultural uses and cannot be developed in the future. The state buys the right to develop the property to keep the land from being developed and to permanently preserve it for future agricultural use. Michigan maintains a PDR Fund that is funded from the repayment of tax credits when Farmland Development Rights Agreements are terminated. As of December 1998, 10 easements totaling 1,090 acres were purchased. An additional 69 easements were pending that would preserve an additional 15,000 acres. At that time, there was approximately \$14 million in the Purchase of Development Rights Fund, with outstanding liens totaling approximately \$17 million.

Urban Growth Boundaries

Urban growth boundaries (UGB) are also referred to as an "urban service area." Communities adopt a service area or growth boundary line that determines the

geographic limits of urban growth to be allowed in the community. This growth management technique specifically recognizes that growth and services need to be closely coordinated. The use of urban growth boundaries allows communities to confine new development to fixed growth areas that contain the available land and the needed infrastructure to support future development within a given time horizon (Gottsegen, 1992). Typically, areas outside the UGB are designated for non-development uses, such as agriculture, forestry or open space. The community's growth boundaries are then revisited over time and expanded, if necessary. The result of this planning scheme is that development tends to occur in concentric ring patterns. Some of the limitations of UGB as a growth management technique include problems of economic windfalls to landowners inside the UGB and wipeouts to those outside the UGB. Also, this approach by itself does not ensure that land in need of protection is permanently preserved, nor does it establish a maximum level of acceptable growth.

Concurrency

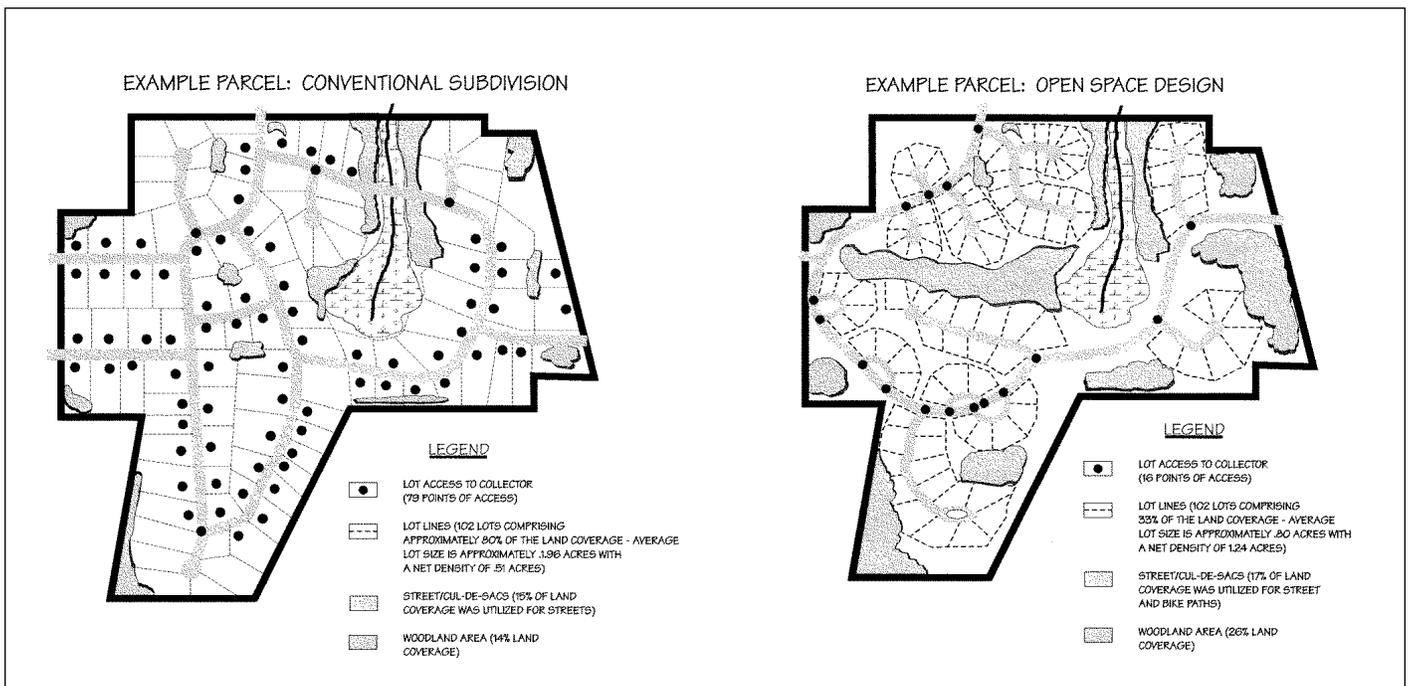
Concurrency is a “pay as you go” approach to economic development. This approach tries to ensure that public facilities and services are available in line with (i.e., concurrent with) the impacts associated with new development (MDEQ, 1995). Concurrency is a process or program implemented by local government to provide for adequacy of infrastructure — such as roads, stormwater management, sewers, potable water, parks, solid waste and mass transit facilities — to serve new development. This approach to growth management requires that all necessary and desired public services be in place in an area before any development can occur. Florida and Oregon have adopted this approach to promote orderly development that will not overburden a community's infrastructure system. This approach includes making developers pay for the construction of needed infrastructure. Requiring developers to take on this cost means that existing residents in the community are not held responsible for the costs of additional development.

Cluster Development

Cluster development approaches to land use control permit a density shift from one portion of an area to another portion of the same site to minimize the impact on the land, maintain the landscape and preserve open space. The legal basis for this technique stems from the separation of development rights from the land and the rearrangement of those rights to reduce the amount of land consumed by development. There are two basic types of cluster development: cluster development as an option using an overlay zone and cluster development as limited development. With the former, any zone that permits development but also falls in the overlay zone can use a clustering technique. In the latter case, cluster development is a form of development.

Cluster development allows a developer to build on one portion of a parcel at a higher density than is usually permitted in exchange for the developer's retaining the remainder of the parcel as preserved open space. The total number of lots permitted on the

Figure 6: Cluster development



Source: Adapted from Wagoner *et al.*

entire parcel usually remains the same as the number permitted under the traditional zoning scheme. Under the cluster development approach, however, open space and natural areas are preserved. Cluster development usually involves one parcel and is often provided as an option under a conventional large-lot zoning scheme. Cluster development has numerous advantages: it permits efficient and creative land development patterns, preserves valuable natural or agricultural features or resources, is easy to administer, is a familiar technique to many developers and land use planners, and is an accepted alternative to landowners because they retain their property's full development potential. A disadvantage to cluster development is that, as a farmland preservation technique, it is very limited. Rural character is maintained, but preservation of farming or another agricultural use on the "preserved" land under clustered residential development is difficult to achieve. Residential development and agriculture are incompatible land uses. Residents in cluster developments who attempt to preserve an active farm may soon complain of the dust, noise and smells associated with many farming practices.

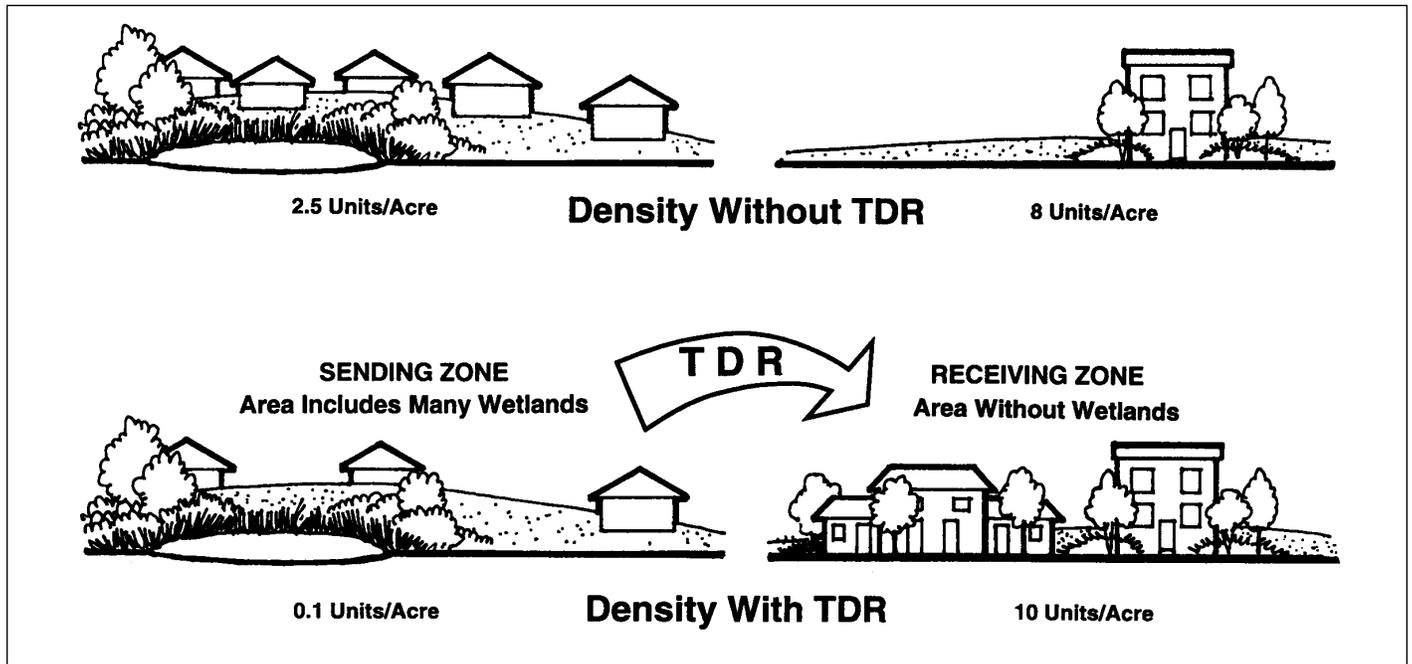
Transfer of Development Rights

Traditional land use control techniques have some effect on communities' growth and patterns of development, but the familiar techniques do not seem to have been particularly effective management growth tools. As discussed above, the traditional growth management methods have proven inadequate in preventing or slowing the encroachment of urban development on rural lands. All too often, zoning changes have been made based on political pressures that fail to take into account bigger socioeconomic and environmental considerations. As a result, there is a demand for new land use planning techniques that recognize the need for an economic and environmental balance, the importance of private property rights, the power of using a market-based approach, and states' particular legal and political structures. One such promising growth management method involves the

use of transferable development rights (TDR). In simplest terms, a TDR regime controls growth and development by focusing land use change in areas targeted by the communities. TDR allows the market transfer of development rights from landowners in areas designated for preservation to landowners and developers in areas deemed appropriate for development. Such a system seems to provide a solid foundation for a successful, equitable and efficient method for controlling growth, balancing equities, and protecting environmental and natural resources (see Figure 7).

In severing development rights from the bundle of rights associated with a parcel of land and by providing for the exchange of these development rights in a market-based system, TDR programs can help communities avoid the significant levels of public expenditure associated with traditional growth management methods. Some techniques that seek to protect lands from development involve fee simple land purchase (e.g., governmental and conservancy purchases). These approaches may result in significant direct costs to local and state governments, especially in those areas where development pressures are most pervasive (Burchell, 1996). Like PDR, TDR programs allow for the exchange of the severable property rights (development rights) without requiring fee simple acquisition. In other words, the farm may remain a farm while the farmer may be able to sell and benefit from the farm's development rights. Unlike PDR, where the rights are retired, in TDR those development rights can be used by the purchaser in another area where development is desired and valued. Under TDR, the actual value of the development rights is established by the market of willing buyers and sellers of such rights. Developers will pay only what they believe to be a fair price for the economic benefits associated with permission to build additional development projects in the designated development zones (Skjaerlund, 1997). TDR programs offer a market-driven and incentive-based approach to land use control which, in conjunction with other land use planning techniques, may lead communities to more economically, environmentally and socially sustainable futures.

Figure 7: Transfer of Development Rights



Source: MDEQ, 1995, produced by Planning and Zoning Center.

Conclusions

Urban sprawl is a national problem that demands local attention. Sprawl is not economically sustainable. The costs to correct past development patterns and maintain infrastructure will be expensive. Though the impacts of sprawl often are felt at the regional, state and national levels, the array of growth management methods for addressing sprawl are found almost exclusively at the local level. Though specific land use issues might be resolved in state and federal courts, at best such actions merely provide a context for regulatory actions that play out at the local level.

The Michigan Environment and Relative Risk Report, issued in 1992, brought formal public recognition to the pervasiveness and severity of urban sprawl in Michigan. Agricultural lands continue to be converted to alternative and often non-reversible uses across the state. The great irony is that sprawl, if allowed to continue unabated, will inevitably degrade the very same attributes that historically have drawn people to the hinterland.

There exists no simple or single solution to the land use problems that our communities find themselves immersed in. It is evident that managing growth and containing sprawl require direct and continual action at the level where the control exists — locally. It is also clear, however, that local capacity and regulatory behavior are significantly influenced by the institutional and policy context created by regional and state actions. What is ultimately needed to address land use issues, especially urban sprawl, is a better understanding of the ramifications of existing and proposed policies and actions at the local level, along with an appreciation of the significant influence of contextual policies that emerge at the state level. It is hoped that a non-partisan agenda will gather momentum and strength and provide a positive context within which local resolve will be able to flourish.

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Footnotes

¹ In this report, Arend *et al.* (1996) examined only agricultural land use, not forest and open space.

² Exurban areas are located outside of the suburban areas of an urban center.



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