Focus on Michigan Land Use Changes, Aerial Photography – A Space Age Tool for Planning Effective Land Use Change
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IN THIS DAY OF DRAMATIC CHANGE, few things are changing more rapidly than our landscape. And, few of us even realize how drastically land use has changed in the past few years, or how much our use of land can effect our lives and those of our children.

The picture, left, depicts several different uses of a small segment of land, many of which have happened almost over-night. The sewage disposal and water plant (center), school (foreground), junk yard (left), subdivision (upper left), water impoundment with mobile home park (upper center), commercial area (upper right), railroad, road ways and open areas — all represent the multiple demands we make of our land.

This folder probes some of these land uses and suggests ways in which aerial photography can lead to wiser, long-term land use planning.

The aerial photograph, left, was taken with infra-red colored film. Since it is false color, green plants and deciduous trees appear red. Variations could mean that the plant is in distress. Notice that infra-red photography makes exposed soil more evident. Infra-red photography is a new area of study in agriculture, forestry, water pollution and community development. Its application could help us better understand present land use and plan for the future.

Focus on Michigan

LAND USE CHANGES

Aerial Photography — A Space-Age Tool for Planning Effective Land Use Change

FOREWORD

EVERYWHERE in Michigan, there is growing concern about the quality of our environment. Residents show increasing concern for clean water, pure air, open space, and quiet, pleasant, attractive communities. At the same time, they are concerned about rapid transportation, new employment opportunities – preferably at a short distance from their homes – and in keeping taxes down and government from becoming too big.

A key consideration in community planning is to make sure that homes, factories, highways, airports, parks and all the other features of a desirable community are properly located relative to each other. Once a factory is established in a residential area, the problems of noise, odor, dirt and traffic may irritate those who seek relaxation and comfort in nearby homes and yards.

A basic factor in a quality environment is the use of land. Land use is taken for granted by many, since during much of our relatively recent history, there were no major problems concerned with it. Almost suddenly, through expanded human mobility and an exploding population, the problems of land use have become huge.

But, there are still many who do not see the problem at all. They are unable to recognize incompatibilities of uses and the trends which indicate irreversible land uses. At the same time, too few recognize that local people can have a profound influence in the quality of their communities – through good use of education, legislation and proper land use controls. The need for cooperative

efforts among all levels of government is grossly underestimated.

This publication portrays the rapidly changing land use picture in Michigan. The trite, old statement, "It is impossible to see the trees because of the forest," is appropriate. Busy citizens often do not see these important land use changes in their communities. On the other hand, many people suddenly become aware of the great impact of a new factory, residential area, shopping center, or mobile home park and cannot see it in perspective with other changes.

This publication also attempts to show how aerial photographs can be used to comprehensively review land use change. It is hoped that this collection of aerial photos, taken in Michigan, will demonstrate a technique that is readily available for use by groups of any size in the community. Small planes are accessible in most communities to make it possible to easily take aerial photos with minimum cost equipment. (See section near end on "Aerial Photography Technique.")

This publication does not attempt to portray all the land use changes that are underway, nor the conflicts that are developing. It does, however, focus heavily upon problems which increasingly concern far-sighted citizens.

In the long range, it is hoped that new awareness might result from this publication which could make it possible for more Michigan citizens to become more active in the solution of community land use problems.

TRANSPORTATION

With increasing population and ever-increasing mobility, every mode of transportation is changing. The desire and ability to constantly increase the speed of travel causes changes in transportation routes and facilities. Do present transportation systems provide best land use or might rapid transit systems represent wiser use of land and a more efficient manner of travel?

Cutaways for new highways are obvious everywhere and frequently expose soil to the ravages of surface erosion.

Note the super-highway construction, rail-yarding and an expanded airport in this single view. As transportation changes, many other changes will follow. This photo suggests that sufficient planning was involved to provide for access and exit for the new travel forms and the increasing numbers of people who will use them.

PUBLIC FACILITIES

Modern man is no longer satisfied with the one-room country school or primitive town hall. Nor, is he willing to build a several story brick skyscraper in a crowded city or village. Beautiful new buildings and grounds, at some distances from crowded population centers, reflect the priorities given to appropriate public services and facilities.

This view of a new high school indicates architectural innovativeness, preservation of natural attractions and open space for utility and beauty. A mobile teenage culture is obvious from the number of private automobiles parked in the area.

Consistent with good planning, other public services are frequently located in close proximity — note the health unit and golf course in the background.

This attractive scene reflects considerable forethought and land use guidance. Frequently, however, incompatible uses are found in close proximity. Imagine a large, noisy, and smoky industrial complex across the street from the school.

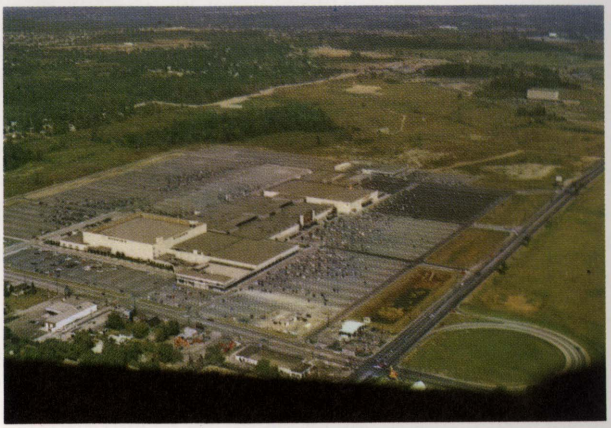
Think also about such public facilities which are located so that the school children must cross the most treacherous highways to get to and from school everyday.

Aerial photographs, particularly infra-red, can show that the soil is not suitable for the foot traffic and drain field needs of such large facilities which are not serviced by metropolitan water and sewage systems.

SHOPPING CENTERS

One of the most recent urban innovations is the shopping center. It is sprouting in nearly every Michigan community. Shopping centers include everything from the large supermarket to the tiny, unique, retail outlet. They are usually located on relatively flat land which is in large blocks, and was previously unoccupied by urban development. Thus, low-cost, single-story buildings and large parking lots can be economically provided. Shopping center owners carefully check markets for a rapidly developing new subdivision. When several units are built on the same independent market information, trouble may lie ahead.

While the suburban area is mushrooming, old shopping areas in downtown communities face stiff new competition primarily because of distance, limited parking and older facilities. Failure to make adjustments results in a great many empty store fronts in downtown areas. Often, the whole community suffers as the property eventually decays.



NEW SUB-DIVISIONS

An increasing population and demands for more residences make new sub-divisions a part of most communities. The "grid system" of development (laying-out streets at right angles) has lost its appeal. Imagination by the developer has resulted in unique road and layout patterns. Efforts are made to avoid monotonous duplication. But, interesting arrangements, individual designs and variation in lot shapes are innovations that the traditional developer often overlooks or avoids.

Apartment dwelling has become increasingly acceptable for Michigan residents of all ages and income levels. Attractive recreational areas with large swimming pools are a drawing feature of such apartment complexes.

Providing appropriate services for a mixed population at fair tax rates is a major problem in a neighborhood such as this. Too often, huge sub-divisions are formed with little advanced planning for the number of school-age children, the elderly, or the number of passenger cars. Residents of these units suddenly find that a second car is necessary because no supplies or services are available within walking distance. Units are often located too close to each other in an attempt to get the maximum number of dwellings in a subdivision.

SANITARY LAND FILLS

The old "township dump" no longer meets today's needs for solid waste disposal. State and local laws make sanitary land fills necessary for the prevention of vermin and disease. Old excavations, such as this gravel pit, are sometimes adapted for such waste disposal. It appears that they are operating very effectively. With increasing demands for water frontage, it seems wise to ask, "Is this the best use of this water-filled, sandy area which is not far from a major metropolitan community?" Likewise, what effect does this kind of dump have on groundwater?

MOBILE HOME PARKS

The presence of mobile homes is increasing everywhere in Michigan. They are being used both as permanent residences and seasonal homes because of lower cost, lower taxes and increased mobility.

Land use controls provided by state and local government units now frequently require carefully planned mobile parks, such as this one. Note the interesting pattern in their arrangements, the attractive water recreation area in the foreground, the sewage disposal lagoon in the background, and the close proximity of the lagoon system to the nearby river.

Historically, mobile homes generally have a negative image. New design, improved features and more attractive arrangements have made them more acceptable. Local governmental units are forced to provide for them — but where?

Of all the factors concerned with community development, the use of mobile homes may be among those needing the most research. A frequently-asked question is: "Are mobile homes paying their fair share of the taxes for supporting the services they demand?" Mobile homes appear to be here to stay, but adequate planning is needed to properly accommodate them.

AGRICULTURAL EXPANSION

Increased mechanization is the greatest single contributor to farm mergers; many smaller farms have been combined into large, highly productive units. Larger fields, fewer fence rows and fewer homesteads are evident everywhere in Michigan as a result of these changes.

In isolated rural areas, abandoned farmsteads are common. Near metropolitan areas, they are often converted to multiple, non-farm residences.

Good agricultural land, well managed, can produce food and fiber for thousands. It is difficult to assess the future need for agricultural land with technology making such rapid advances. Current estimates indicate that several hundred acres of farm land are being absorbed for non-farm uses in southern Michigan each day. Should farm land move to non-farm uses without good guidance? Shouldn't we consider converting less-productive lands to non-farm uses?

URBAN RENEWAL

Downtown urban decay is a problem facing nearly all communities. To help cope with this problem, governmental programs provide financial assistance for making downtown changes. "Urban Renewal," "Model Cities," "demonstration areas," and "redevelopment" are terms commonly associated with removing old downtown eyesores. While these terms are usually connected with large metropolitan development, this view is of a small community, downtown-renewal program. All of its central business area will be removed and/or rebuilt.

Often the interpretation of the effectiveness of these programs is politically determined. The appropriateness of such complete renewal is frequently debated by those whose life-time savings are in a building which is not providing income in a period of change or which is forcibly removed. The difficulties in continuing a reasonable taxing program during such transition plague local governments everywhere.

Residents of progressive, small communities frequently resent the proportion of federal assistance in metropolitan renewal programs. This is especially true when their own effective renewal programs involve the cooperation of private enterprise, civic organizations and all governmental levels. But, without outside assistance, big renewal jobs don't get done.

WATER RECREATION

Northern Michigan has the image of an endless supply of fresh, clear water and scenic forests. All over northern Michigan, there is a great demand for wooded, waterfront lots whether on streams, rivers or lakes. Many are successful in finding weekend retreats from crowded urban areas, especially those who get there first.

It is obvious that the area depicted has drawing power, but how many of the values which drew the people originally still exist? It appears that there has been complete disregard for retaining natural beauty while taking advantage of every square inch near the water. Note, too, the "outdoor privies" or "sentry houses" at the back of each cottage which indicate new pollution potentials. Heavy foot traffic on the shore has almost completely destroyed all vegetation. Will this northern recreation slum continue?

STRIP-CITY DEVELOPMENT

The city dweller is drawn into rural residence for numerous reasons. To live in an open area outside the more crowded community, to obtain larger lots at lower cost, lower taxes — these are the most popular reasons. Often, new residences are built just outside the city limits. Where one is built, there is soon another and another, and thus the strip-cities are formed. When there are only a few scattered residences, each can easily provide its own fresh water supply and ample sewage disposal unit. Soon, however, septic tank drain fields and wells practically touch each other. The highway which amply provided for the first suburban settlers, becomes a traffic bottle-neck when every strip-city automobile backs onto it.

Imagine the situation with a dairy farmer, poultry rancher, beef or hog producer with a large number of animals directly across the road from these attractive dwellings. Many farmers in Michigan are being pressured out of business by sprawling non-farm rural developments. Fair taxation of rural lands in this situation is nearly impossible. And, public service demands for water, sewage and police protection may suddenly boost taxes so that the reasons for coming in the first place are entirely wiped out. In addition, other residents of the area frequently carry a larger proportionate share of strip-city development.

COUNTY DRAINS OR OPEN SEWERS?

Rural residents must of necessity provide their own sewage systems. A septic tank and drain field are expensive. This aerial view of new home construction indicates that some have found an inexpensive shortcut to sewage disposal. It appears that the sewer runs directly into the country drain. Certainly, this is a major contribution to lake and stream deterioration.

Would an aerial review of your community reveal such gross violations? Is your community control system adequate?

MANUFACTURING

The immense space under many roofs in one manufacturing complex indicates the large investment and important tax base from Michigan manufacturing. A mobile labor force is indicated by the great expanse of parking. Modern highways, rail routes and airports are essential. They can be magnets for attracting factories, or vice versa.

Without proper planning, transportation is severely curtailed by such an establishment. Imagine the intersection at the upper center at the change of shifts.

Water has unique magnetic qualities. Waterfront property values have sky-rocketed in recent years because people put high priority on water recreation. Everywhere, there are attempts to increase the availability of water frontage.

These channels in eastern Michigan are an extreme commercial effort to maximize waterfront footage. It has been said "One can't fall out of a boat and drown in this area; he will be polluted to death first." Each residence has its own septic tank system and the water table is just below the surface.

New Michigan laws would likely discourage this lowland reclamation, but a constant vigil is required to provide water-related recreation activities without water pollution consequences.

WATER ATTRACTION

In rural areas, super highways invite new employment patterns. Rural residents can now travel great distances to scattered factories and metropolitan employment centers. Parked cars at country crossroads are evidence of car pools for reduced transportation costs. Those who use pools frequently keep their rural residence and are involved in part-time farming.

Commercial build-up nearly always occurs at busy intersections, whether country or urban. Note the number of cars and the closeness of the commercial establishment to this highway. Without good land use control and close cooperation between governmental units, are we not assuring ourselves of traffic congestion and death-traps at each of these points?

MOBILE LABOR FORCE

WATER POLLUTION

At first glance, this appears to be a very serene, rural, lakefront community. Examine more closely the beautiful blue of the lake at the top of the picture. Compare it to the dirty, meandering stream at the bottom. How can we hope to preserve the natural attractiveness of our lakes and streams and permit them to be our drains?

FOR FURTHER HELP

If you are interested in more detailed information about the use of aerial photography in studying land use change, contact your County Extension Director. He has assistance available through District Extension Leaders in Resource Development who serve each area of Michigan, and through land use specialists from the Michigan State University campus.

You may also be interested in contacting your local government office to see what land use activities your community has undertaken. You may be interested in attending a planning and/or zoning meeting in your area. Most municipalities, townships and counties have land use guidance programs underway — or you may help them move in this direction.

It is only through informed, active citizens that democracy can function to guide land use for the long-range benefit of all.

AERIAL PHOTOGRAPHY TECHNIQUE

The technique for taking aerial pictures is rather simple. All that is needed is a small airplane with the wings on "top," a 35 mm. camera with a haze or skylight filter, and 35 mm. film — ASA 64, or faster.

A mapped route of the flight should be prepared in advance to make best use of time and simplify picture orientation later. The slides shown in this publication provide good examples. Other views might include urban degeneration or renewal areas, parks and recreation areas, drainage patterns, air pollution, compatible and incompatible uses in close proximity, attractive, low-income housing and unattractive community surroundings.

Pictures should be taken at no greater angle than 45 degrees. Vertical pictures are best — avoid shooting the horizon. Positioning one person on each side of the airplane results in greatest return on the investment. One or two hours is usually enough time to fly over a county in Michigan.

It is best to take pictures between 800 and 1000 feet. Light-meter readings, taken periodically throughout the flight, will help maintain correct exposure. Mid-morning till noon flight pictures have the least amount of haze and shadows. Most of the pictures shown here were taken in the fall and winter months, since lack of foliage makes changes in land use more evident.

Slide film is inexpensive, so plenty of pictures should be taken — we suggest 100 to 150. Purchasing 36-exposure rolls will be more economical and will require less frequent film changes.

In simplest terms, the cost of three rolls of film and an hour's flight, which should result in 50 or more "good" slides, would probably not exceed $40.

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