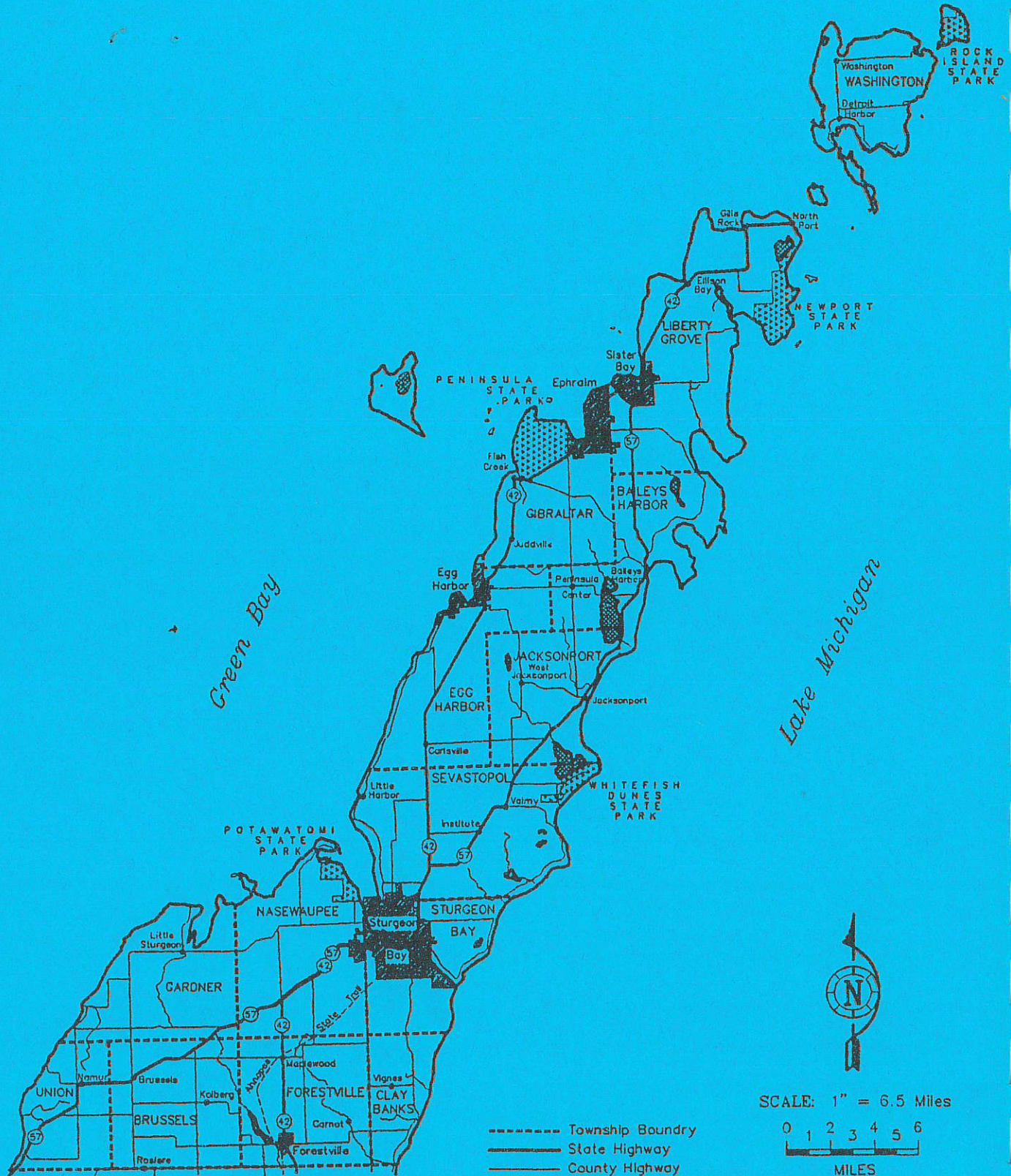


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DOOR COUNTY DEVELOPMENT PLAN



Door County, Wisconsin



RESOLUTION NO. 10 - 95

REGARDING PROPOSED DOOR COUNTY DEVELOPMENT PLAN

TO THE DOOR COUNTY BOARD OF SUPERVISORS:

1 WHEREAS, Door County does not have a current county development plan to help guide the
 2 county's development, and,
 3
 4 WHEREAS, the Door County Board of Supervisors did direct, by adoption of Resolution #61-85,
 5 the Resource Planning Committee to prepare a new county development plan as a guide to future
 6 development of Door County; and,
 7
 8 WHEREAS, after considerable effort involving members of the Ad hoc County Planning
 9 Organization, which was formed by the Door County Board of Supervisors to ensure public participation
 10 in the planning process; town boards, town planning committees; professional planners; and many
 11 individual citizens of the county; and,
 12
 13 WHEREAS, the attached proposed Door County Development Plan has been prepared in response
 14 to the county board's directive; and,
 15
 16 WHEREAS, the Resource Planning Committee has reviewed the proposed plan and believes it
 17 represents a sound program for the future development of the county; and,
 18
 19 WHEREAS, the Resource Planning Committee recommends to the Door County Board of
 20 Supervisors approval of the proposed plan.
 21
 22 NOW THEREFORE BE IT RESOLVED, that the Door County Board of Supervisors does hereby adopt
 23 the proposed Door County Development Plan as a guide to future development of Door County.

SUBMITTED BY:
 RESOURCE PLANNING COMMITTEE

Charles Jarman
 Charles Jarman, Chairman

Russell Wagner
 Russell Wagner

Colin Sacotte
 Colin Sacotte

Leo Zipperer

James Sargent
 James Sargent

CERTIFICATION:

I, Nancy A. Bemmman, Clerk of Door County, hereby certify that the above is a true and correct copy of a resolution that was adopted on the 28th day of March, 1995, by the Door County Board of Supervisors.

Nancy A. Bemmman
 Nancy A. Bemmman
 County Clerk, Door County

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As of March 28, 1995

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Adopted: March 28, 1995

ACKNOWLEDGEMENTS

The principal authors and editors of this document are Martin Olejniczak and Robert Florence of the Door County Planning Department. Planning staff was also responsible for the compilation and dissemination of much of the background data for this document, including the Door County Land Use Inventory. The work of planning consultants hired by the county was also used heavily, both directly and indirectly. Their work was instrumental in formulating the goals and objectives, as well as the recommendations, contained in this plan.

Fariye Sancar of the University of Wisconsin-Madison, along with assistant Robert Cook, conducted a series of workshops throughout the county in order to facilitate the gathering of public perceptions about the planning issues facing Door County. The results of their work helped form the scope of this Development Plan and enabled the county to determine what areas or issues needed additional background study.

Lane Kendig, Inc., the principal planning consultant to Door County, performed background studies on Visual Resources and Community Character, Resource Protection, Growth Management, and Economic Development. Kendig also supplied the county with a draft development plan and drafts of a zoning ordinance and subdivision ordinance. Though the Kendig draft plan was never adopted, many of the ideas contained therein were incorporated into this document, particularly in regards to resource protection, economic development, and implementation.

Prof. James Zimmerman of the University of Wisconsin, but working for Door County as a private consultant, performed background studies on Door County's natural resources. His work included a compilation (including maps) of the county's natural resource areas. He also produced a series of "Natural Resource Maintenance Guidelines Papers". These guideline papers provided the basis for the analysis and recommendations contained in Chapter 5, Natural Resources.

James M. Murray of the University of Wisconsin-Green Bay was contracted by the Door County Economic Development Corporation and the National Coastal Research Institute to conduct a study of economic development problems and opportunities for Door County. In addition to Lane Kendig's contribution, much of the material presented in Chapter 7, Economic Development, was taken from Murray's resulting report, "Responding to the Changing Character of Door County's Economy".

Steven F. John, an environmental planner, provided the background information and analysis for wastewater management in Door County. Several of the recommendations contained in Chapter

9, Wastewater Treatment and Management, were based upon the Steven John report, "Wastewater Management in Unsewered Areas of Door County, Wisconsin".

In addition to the work completed by the planning consultants, acknowledgement is given to several other agencies and individuals. Specific materials and information were provided by: University of Wisconsin-Extension (Jeff Kratz, Dennis Skahen), Door County Economic Development Corporation (William Chaudoir), Door County Soil and Water Conservation Department (Tom Sweeney, William Schuster), the Door County Sanitarian's Office (John Teichler), Agricultural Stabilization and Conservation Service, Wisconsin Department of Transportation, Bay Lake Regional Planning Commission, Door County Highway Department (Harvey Malzahn), Door County Chamber of Commerce (Robert Hastings), and Door County Data Processing Department (Todd Halverson, Tom Haight).

The Door County Resource Planning Committee provided oversight for this project and diligently attended numerous meetings while offering critical insights and direction. The time and effort put forth by the members is greatly appreciated.

Recognition must also be given to the many members of the County Planning Organization (CPO). This committee was instrumental in forming the goals and objectives of the Plan and acted as a sounding board for the ideas and recommendations contained within. In particular, acknowledgement is given to Thomas Herlache and Susan Kohout, each of whom served as Chair of the CPO.

Special recognition is extended to former Door County Planning Department planning staff members Mark Schroeder, William Chaudoir, and Todd Andrews for their work in the planning process.

Considerable input was received from the many concerned citizens of Door County. The help that these individuals provided for the completion of this Plan is greatly appreciated.

Finally, appreciation is extended to the staff of the Door County Planning Department who aided the production of this document. Suzanne Bromley produced and formatted most of the tables and figures found throughout the Plan. Jeanne Kasten was the primary typist and also aided the formatting of the text. Additional typing was done by Wendy Birmingham, Sonya Jorns, and Sharon Welch.

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Introduction

Chapter One

CHAPTER 1

INTRODUCTION

Door County, located on a long, tapering peninsula separating the waters of Green Bay from Lake Michigan, has long been known for its miles of beautiful shoreline, picturesque bays and islands, and majestic escarpments, as well as a host of other natural and scenic resources. Indeed, the area's climate, scenery, and amenities has fostered a strong tourism industry and an increasing number of seasonal homes. For some time, Door County has enjoyed a prominence found nowhere else in Wisconsin or the Midwest.

Door County's prominent position is threatened by continued development, however. As more and more areas succumb to insensitive, unplanned, undesirable, or overly large developments, the valued characteristics of the county are threatened. The citizens of Door County, through initiating this planning effort, have recognized that haphazard, disorderly growth can destroy the unique qualities that initially attracted the region's residents and visitors. Undesirable or unplanned growth, in addition to its negative impacts on the county's natural and scenic resources, can also hamper the viability of Door County's agricultural and tourism industries. The county and its various towns are affected through costly extensions of municipal services such as fire/police protection, road construction, or the creation or expansion of utility facilities. Problems with pollution, particularly groundwater contamination, are also a possible threat from careless development.

This document, the Door County Development Plan, is designed to address the impacts of continued development within the county. This plan is the culmination of a process undertaken by the county beginning in 1985. Input came from a wide array of individuals, including planning consultants, town officials, county planning officials, and, of course, the citizens of Door County.

The majority of the materials and recommendations in this plan pertain to the unincorporated parts of Door County. However, many of the issues and suggested guidelines are valid throughout the county, including the city and villages, and, hence, this document should be regarded as a county-wide plan.

Purpose and Intent

The primary purposes of this plan are to generate the goals and objectives for attaining a desirable development pattern and to devise the strategies the county can follow to achieve them. It is intended that the recommendations set forth strike a proper balance

between additional growth or development and the preservation of the county's desirable visual, natural, economic, and cultural resources. The focus is on guiding growth, not preventing it, and on maintaining flexibility so that the county, towns, and landowners have options for meeting the goals and objectives for Door County.

This development plan should be used by Door County and its various municipalities when revising and interpreting zoning and subdivision ordinances or other land use controls. It should be the basis for developers and municipalities when siting new developments and creating or extending public services. In short, it is designed to be a guiding force behind land use decisions such that there is a consistent policy to follow and a clear vision of the future for the people of Door County.

Development Issues

The scope of this development plan was formulated largely through an issues identification process. A public perceptions process was conducted, involving a series of meetings at which citizens were provided the opportunity to identify land use and development issues of concern. A summary of the development concerns for each region of Door County is presented in Table 1.1. For more information and greater detail about the perceptions of Door County's citizens, it is advisable to consult the project report entitled Report on Phase I of the Door County Comprehensive Planning Project, dated March 7, 1986.

It is clear that the county-wide concerns center on the negative impacts which a continuance of development activities could have on the county. A general perception of crowding and congestion is evident. Issues of water quality and inadequate sanitary waste treatment demonstrate the concern over potential adverse impacts on the environment. Visual resources are also perceived as an important development impact issue across the county. Development impacts are also reflected in the issues of retaining the character of the county and avoiding overcommercialization.

Given the concerns listed above, it is no surprise that issues dealing with the control of development also were prevalent. Greater zoning enforcement, adoption of growth controls, and controlling the quality of development are examples of the perception that controlling development should be a major goal for the county. While some areas would like to continue promoting tourism because of the associated economic benefits, it is realized that a balance must be struck between such promotion and protecting the overall quality of life in the county.

TABLE 1.1

LIST OF IMPORTANT ISSUES IN THE FIVE REGIONS OF DOOR COUNTY

	2. Northern Door County	3. Central Door County	4. City of Surgeon Bay	5. Southern Door County
1. Washington Island	Amount of Land Development	Supply of Clean Water	Supply of Clean Water	Adequacy of Sanitary Waste Treatment Facilities
1. Congestion	Supply of Clean Groundwater	Density of Development	Adoption of Growth Controls	Preservation of Environmental Resources
2. Supply of Clean Groundwater	Preservation of Environmental Resources	Quality of Scenery	Preservation of Environment Resources	Availability of Boating Facilities
3. Controls Over Quality of Development	Density of Population	Preservation of Environmental Resources	Quality of Planning Decision-making	Adoption of Growth Controls
4. Controls to Ensure Clean Water	Supply of Clean Surface Water	Control of Billboard Advertising	Enforcement of Clean Water Standards	Amount of Residential Development
5. Adequacy of Wastewater Treatment Facilities	Enforcement of Zoning and Other Land Use Regulation	Public Officials Knowledge of Land Use Practices	Conversion of Agricultural Land	Control of Billboard Advertising
6. Quality of Scenery	Support for Cultural Resources	Congestion	Level of Tourism Development	Supply of Clean Water
7. Dollars Spent on Road Construction	Community Appearance	Value of Land	Control of Billboard Advertising	Density of Population
8. Year-Round Employment	Adequacy of Sewage Treatment Practices	Availability of Environmental Education Programs	Commercialization of Door County	Number of Tourists
9. Amount of Land Subdividing Activity	Quality of Scenery	Zoning Enforcement	Facilities for Performing Arts	Level of Involvement in Community Affairs
10. Zoning Enforcement				

Note: The order of the listed issues does not necessarily indicate ranking.

Sources: Report on Phase I of the Door County Comprehensive Planning Project, March 7, 1986; Door County Planning Department

While several themes can be generalized for the whole county, attention should also be given to the differences that exist for the various geographical regions. The five areas all appear to vary in some respects and the plan needs to explore and address this regionalization. It must be noted, however, that the regional differences are tempered by the fact that many are actually interrelated. For instance, the control of billboard advertising can be looked upon as a regional issue as this theme ranked high in the central, southern, and Sturgeon Bay regions, but not in northern Door County or Washington Island. But often billboards located in southern and central Door County are the result of businesses operating further north. Thus, control of billboard advertising affects northern business just as growth controls in the north might affect billboard advertising in the other regions.

In addition to the public perceptions process, a citizens' advisory planning board, the County Planning Organization (CPO), conducted its own issues identification process. The CPO was comprised of individuals representing all subareas of Door County. Many of the issues identified by the CPO correspond closely to those developed through the public perceptions process. Development impact issues ranked high, particularly the need to protect natural and scenic resources. While the CPO reiterated many issues that were already established, they also identified several new issues. Assessing the limitations of possible development sites, clustering of new development, strip commercial development along highway corridors, directing development toward existing communities, and compatibility/conflicts among rural land uses were the primary new issues cited. Thus, these issues also require attention in the plan.

Taken together, the major themes compiled through the issues identification process form the scope of this development plan. The primary emphasis is on land use issues, particularly where and how development in Door County should occur. In addition, related issues are discussed, including natural resource protection, agricultural preservation, economic development, transportation issues, and sewage treatment facilities.

Goals and Objectives

Chapter Two

CHAPTER 2

GOALS AND OBJECTIVES

Introduction

The county's overall goals and objectives form the basis for this development plan. They are intended to provide a clear vision of what Door County expects to achieve through the use of sound planning policies. The materials and recommendations contained in subsequent chapters of this plan should all relate to and support these goals so that this vision is realized.

Preliminary goals and objectives, based upon the perceptions and concerns uncovered during the issues identification process, were formulated by planning staff, the Resource Planning Committee and the County Planning Organization. These goals and objectives were the driving force behind the various topics covered in this plan; the gathering of background information; and the formulating of development strategies and recommendations. Once the issues and topics became clearer, these preliminary goals and objectives were reexamined and put into final form. They are presented below.

In general, the goals and objectives relate to a central theme: That Door County should strive to guide and shape future growth and development such that the qualities that make the county a special place to live or visit are not destroyed. Achieving the vision established by these goals and objectives should be the underlying impetus for the county's future decisions and actions regarding land use and development.

Goals and Objectives

GOAL I - To guide future use of the county's land resources in recognition of inherent environmental limitations.

Objective 1 - By emphasizing wise land use choices and proper site selection rather than technical measures as a means of (1) limiting disruption to the environment and (2) limiting the costs of future maintenance and enforcement of technical solutions.

Objective 2 - By preventing or limiting development in very sensitive environmental areas such as water drainage and filtering areas, wetlands, bedrock outcrops, etc.

GOAL II - To conserve and enhance the county's distinctive natural amenities.

Objective 1 - By promoting public and private efforts to protect and maintain habitats for diverse native wild plant and animal life.

Objective 2 - By recognizing the special attractiveness of the county's distinctive natural landscapes, and by protecting their scenic value.

Objective 3 - By promoting and protecting the county's expansive water amenities, particularly by maintaining public access to the waterfront.

GOAL III - To protect and improve the quality of the county's groundwater and surface water.

Objective 1 - By preventing the introduction of new contaminants into the county's ground and surface water systems, while reducing and possibly eliminating existing sources of contamination.

Objective 2 - By discouraging land use practices which are in conflict with the county's limited capacity to buffer sources of contamination.

Objective 3 - By establishing wastewater treatment practices based upon effectiveness and reliability of treatment, access to collection and treatment systems, long-term availability of treatment methods, ease of maintenance and affordability to users and governmental units.

GOAL IV - To conserve the county's rural and open landscape character.

Objective 1 - By recognizing the public value of high quality rural and open landscape scenery, and by maintaining and enhancing those scenes.

Objective 2 - By promoting the preservation of the county's important agricultural areas.

Objective 3 - By maintaining open space and rural visual character of nonagricultural development in rural areas.

Objective 4 - By promoting and protecting views to and from the county's important natural features.

GOAL V - To provide sufficient economic development activity to achieve a diversified, well-balanced economy without adversely affecting the quality of the natural and man-made environment.

Objective 1 - By encouraging diversified economic development to achieve and maintain a balanced tax base and stable employment levels and to reduce dependence on any single industry.

Objective 2 - By exploring the economic development opportunities made possible by the county's intrinsic geographic, cultural, and economic features.

Objective 3 - By ensuring that new economic development minimizes conflicts between land uses and is compatible with the natural and man-made environments of Door County.

Objective 4 - By providing needed public infrastructure and services to adequately support present and desired future economic activity.

GOAL VI - To guide future development of existing incorporated and unincorporated communities within defined community service limits in an efficient, sequential, and orderly manner.

Objective 1 - By encouraging city, village, and town plans for development that are consistent with or do not conflict with county goals and objectives.

Objective 2 - By encouraging the centralization of commerce, entertainment and employment activities so as to create identifiable and vigorous community centers.

Objective 3 - By maintaining high quality living environments in exclusively residential neighborhoods by directing nonresidential uses away from such neighborhoods.

Objective 4 - By providing redevelopment opportunities in applicable community areas.

Objective 5 - By coordinating the expansion of community development areas with the availability of public infrastructure and services.

Objective 6 - By promoting growth patterns that result in compact, distinct, and separate communities rather than continuous linear strips of development.

Objective 7 - By encouraging the clustering of development to assure conservation of land, the efficient provision of public infrastructure and services, and accessibility and convenience to users.

GOAL VII - To provide a safe, efficient, inviting and convenient transportation system for the movement of persons and goods and

which minimizes environmental and social disruption.

Objective 1 - By ensuring that development patterns adjacent to arterial and collector roads do not hinder the operating efficiency of those roads.

Objective 2 - By encouraging improvements in the road system to improve safety and operating efficiency, to lessen vehicular congestion and to minimize vehicular and pedestrian conflicts.

Objective 3 - By controlling land uses and development characteristics adjacent to airports in order to minimize conflicts between airport operations and neighboring properties.

Objective 4 - By utilizing the road system to improve scenic viewing opportunities.

Population and Housing

Chapter Three

CHAPTER 3

POPULATION AND HOUSING

Introduction

Population has a significant impact on development factors such as land use, economy, and transportation. Thus, it is important to create a picture of existing and future population in Door County, both in numbers and in demographic characteristics. The purpose of this section is to discover population trends by examining the historic and current population of not only the entire county, but also the various regions within the county.

In addition, certain characteristics of Door County's population will be examined. By understanding individual demographic characteristics and pinpointing trends in the overall population, an informed assessment of the development issues can be made.

Population projections are also important and are presented in this section. The projections, by giving informed estimates of future population, enable planners and policy makers to accommodate or attempt to alter projected future growth.

Finally, housing and seasonal population data has significant meaning for Door County. Because of the seasonal nature of population evident in most parts of the county, overall housing and seasonal population trends may play an even bigger role than permanent population in determining and preparing for future development impacts.

Historic Population

Figure 3.1 graphically illustrates the historic population of Door County. The period from 1860 to 1900 was characterized by a rapid increase in population as the county was being settled. By 1900, however, the growth rate slowed considerably and the population remained fairly stable from 1900 to 1990 with the exception of the second growth spurt that occurred during the 1970's. The population rose by 24.5% in that decade. That period of high population growth appears to be short-lived, however, as the most recent census, 1990, documented only a modest population increase of 2.6% (661 persons) since 1980. The total 1990 Door County population of 25,690 represents a 43.6% increase of population since 1900. By comparison, the State of Wisconsin experienced a 136.4% population increase over the same 1900-1990 period.

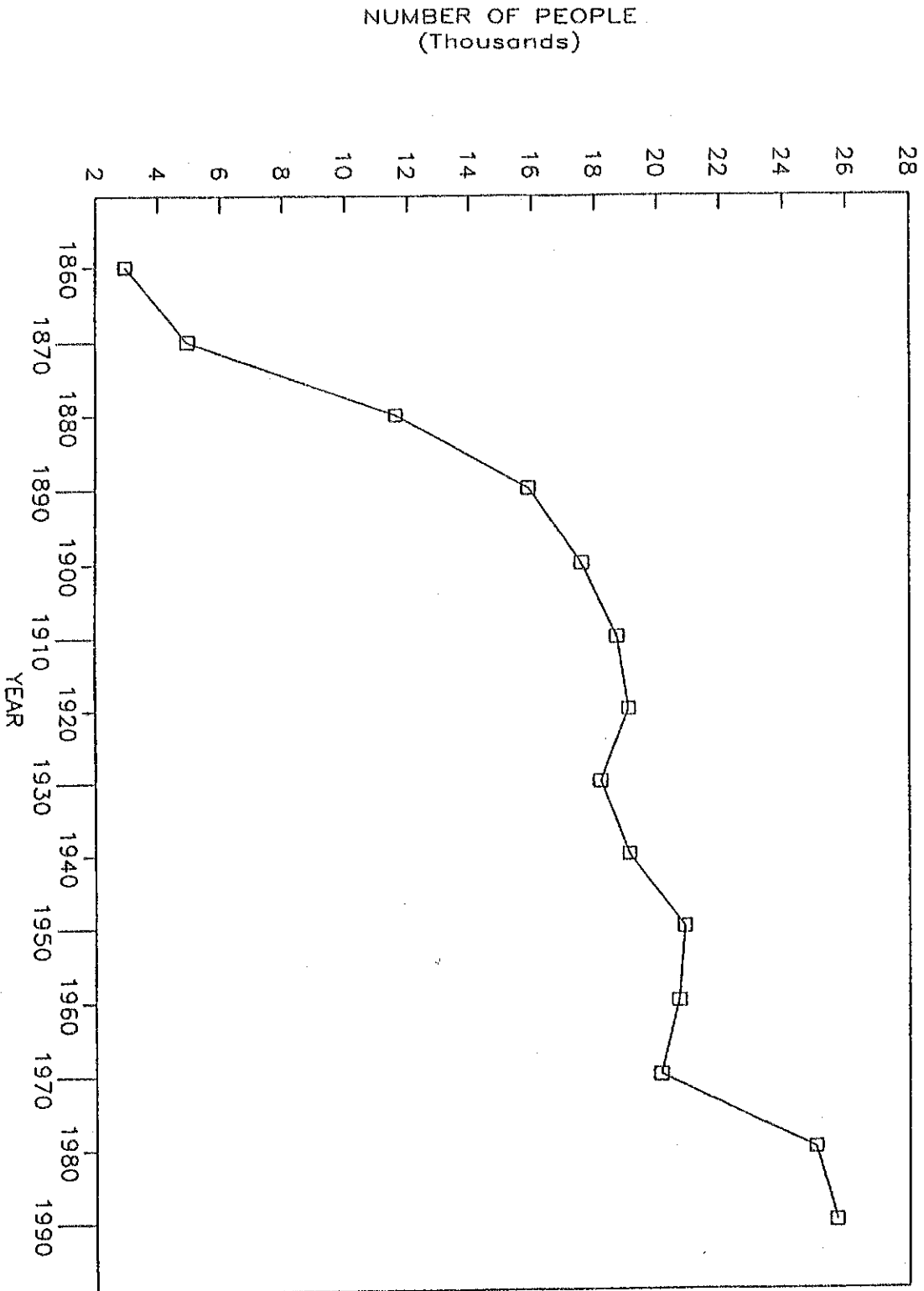


FIGURE 3.1

Table 3.1 shows the population of each municipality in Door County for the last 5 censuses. Figure 3.2 shows the percent change in population from 1950 to 1990. From these data a few interesting patterns can be discerned:

- The towns of the northern part of the county generally show fairly rapid population declines during the 1950's and 1960's followed by relatively rapid population increases during the next two decades.
- The towns located on the Green Bay side of the peninsula tended to grow more rapidly than those on the Lake Michigan side.
- The three towns surrounding the City of Sturgeon Bay (Nasewaupee, Sturgeon Bay, and Sevastopol) had three of the fastest growth rates in the county, undoubtedly reflecting residential growth spurred by the proximity of these towns to the county's main employment center.
- The latest census, 1990, shows a declining population in all of the southern municipalities (except for the Village of Forestville), while the majority of the northern municipalities gained during the same period.

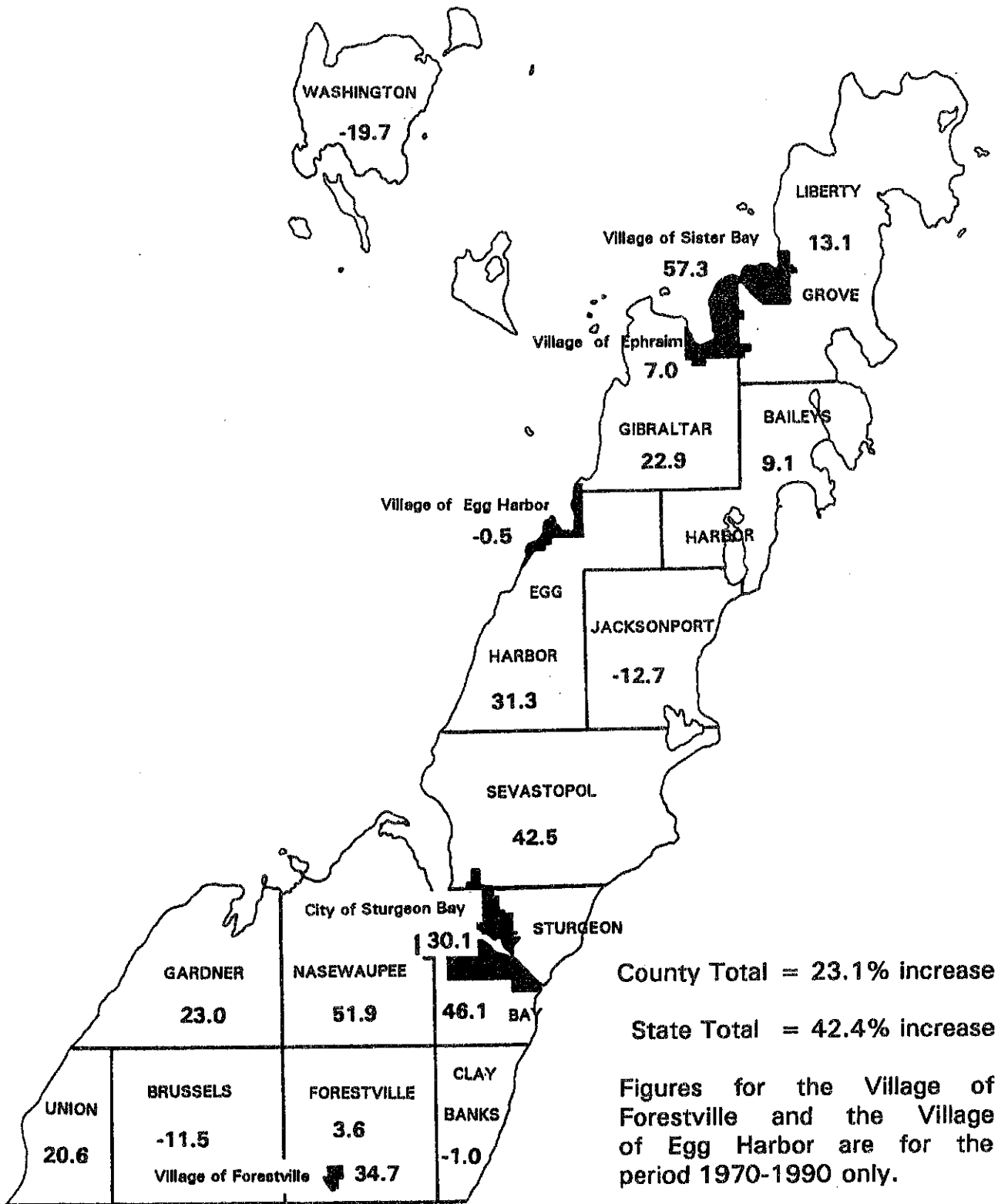
TABLE 3.1

HISTORIC POPULATION OF DOOR COUNTY: 1950 TO 1990

<u>Municipality</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1990</u>
T. Baileys Harbor	715	654	615	799	780
T. Brussels	1,177	1,139	1,050	1,097	1,042
T. Clay Banks	383	373	345	409	379
T. Egg Harbor	916	852	693	825	1,019
T. Forestville	1,301	1,256	902	1,035	999
T. Gardner	833	847	875	1,084	1,025
T. Gibraltar	764	606	590	742	939
T. Jacksonport	789	707	622	707	689
T. Liberty Grove	1,332	1,190	1,174	1,313	1,506
T. Nasewaupee	1,184	1,319	1,470	1,899	1,798
T. Sevastopol	1,791	1,950	2,035	2,520	2,552
T. Sturgeon Bay	584	502	641	863	853
T. Union	598	586	620	755	721
T. Washington	776	610	446	558	623
V. Egg Harbor	---	---	184	238	183
V. Ephraim	244	221	236	319	261
V. Forestville	---	---	349	455	470
V. Sister Bay	429	520	483	564	675
C. Sturgeon Bay	7,054	7,353	6,776	8,847	9,176
County Totals	20,870	20,685	20,106	25,029	25,690
State Totals	3,434,575	3,951,777	4,417,821	4,705,335	4,891,769

Source: U.S. Bureau of Census

Figure 3.2
DOOR COUNTY
Percentage Population Change 1950-1990



Source: Door County Planning Department

Population Characteristics

1. Urban v. Rural Population - Between 1950 and 1990 the City of Sturgeon Bay's population increased by 2,122 while population for the rest of the county increased by 2,598. However, the city's share of the county's overall population has increased slightly, rising from 33.8% in 1950 to 35.7% in 1990. It is expected that while the city will continue to increase its share of the population in the coming decades, the rural part of the county will retain the majority and also will continue to receive a good portion of the future population growth. That the county continues to add to its rural population demonstrates a continuing market for rural living in Door County, a situation that bears directly on one of the appealing aspects of the county - its rural landscape and character.
2. Rural Nonfarm v. Rural Farm Population - A major planning issue is the increase of nonagricultural uses developing in the rural areas. An examination of the rural nonfarm population bears this out. The census data shows a steady and rapid increase in rural nonfarm population, rising from 7,023 (52.7% of the rural population) in 1950 to 14,834 (89.8%) in 1990. This pattern could have a significant impact on maintenance of the natural resources and rural character.
3. Migration - Door County has experienced a net migration loss over the last four decades as described in Table 3.2. But when the migration is broken down into age categories, two separate trends are revealed. The migration rate for ages 60 and over has been positive each of the last four decades. Meanwhile, the 15- to 24-year old age bracket has had severe outmigration except during the high growth period of the 1970s. This data supports the conclusion that the county's population is getting older through the influx of older retired residents and the outflow of young adults just entering the work force.
4. Population By Age - After examining the migration trends, it is no surprise that age characteristics also point to an older population (see Table 3.3). Perhaps the most telling statistic here is the fact that the 65 and over age group increased steadily from 12.8% of the population to 17.7% during the last three decades. Increased longevity plays a role in this increase, but the migration trend is probably the primary factor as discussed earlier. Likewise, the proportion of the population 24 and under decreased from 42.8% in 1960 to 32.3% in 1990. This augments the conclusion that the population in Door County is aging. As the "baby boomer generation" gets older, the overall population will continue to age in the coming decades.

TABLE 3.2

DOOR COUNTY - MIGRATION RATES

A. NET MIGRATION		B. MIGRATION RATES (PERCENT)			
<u>Decade</u>	<u>Migration</u>	<u>Decade</u>	<u>15-24</u>	<u>60 & Over</u>	<u>All Ages</u>
1950-60	-2609	1950-60	-33.7	2.7	-12.5
1960-70	-1531	1960-70	-32.0	5.3	-7.4
1970-80	4271	1970-80	9.3	13.6*	21.2
<u>1980-90</u>	<u>- 419</u>	1980-90	-23.3	1.7*	- 1.7
1950-90	- 288 (-1.4%)				

*This figure represents ages 65 and over.

Sources: Applied Population Laboratory, UW-Madison; Bay-Lake RPC; Wisconsin's Minority Population: Changes in Size and Distribution, May 1981, Wis. Dept. of Admin.; Net Migration For Wisconsin Counties 1960-1980, Steven Tordella, Applied Population Laboratory, UW-Madison; Demographic Services Center, Wis. Dept. of Admin.; and Door Co. Planning Dept.

TABLE 3.3

POPULATION DISTRIBUTION BY AGE GROUP - DOOR COUNTY

<u>AGE GROUP</u>	<u>1960</u>		<u>1970</u>		<u>1980</u>		<u>1990</u>	
	Total	% Total	Total	% Total	Total	% Total	Total	% Total
Under 5	2,125	10.27	1,507	7.50	1,976	7.89	1,725	6.71
5-14	4,247	20.53	3,981	19.80	3,592	14.35	3,916	15.24
15-24	2,482	12.00	2,911	14.48	4,323	17.27	2,683	10.44
25-34	1,924	9.30	1,866	9.28	3,768	15.05	3,911	15.22
35-44	2,548	12.32	1,928	9.59	2,498	9.98	3,884	15.12
45-54	2,620	12.67	2,408	11.98	2,170	8.67	2,602	10.13
55-64	2,094	10.12	2,520	12.53	2,699	10.78	2,410	9.38
65 & Over	2,645	12.79	2,985	14.84	4,003	15.99	4,559	17.75
Total	20,685	100.00	20,106	100.00	25,029	99.98	25,690	99.99

Source: U.S. Census, Door County Planning Department

5. Density Of Population - This population characteristic was identified by some to be a concern for several regions of Door County. The densities listed in Table 3.4 show that each town has fewer than 50 persons per square mile. These density figures also demonstrate that the population is fairly evenly distributed throughout the county. Hence, it is clear that the unincorporated part of the county has not reached urban densities yet. However, this data only takes into consideration the permanent population. During the summer months the influx of tourists and part-time residents swells the population density.

TABLE 3.4

POPULATION DENSITY

<u>Municipality</u>	<u>Persons per Sq. Mi.</u>
T. Baileys Harbor	26.4
T. Brussels	28.9
T. Clay Banks	25.4
T. Egg Harbor	27.8
T. Forestville	28.2
T. Gardner	29.9
T. Gibraltar	27.7
T. Jacksonport	23.8
T. Liberty Grove	28.1
T. Nasewaupée	41.7
T. Sevastopol	49.2
T. Sturgeon Bay	44.0
T. Union	34.0
T. Washington	24.4
V. Egg Harbor	101.7
V. Ephraim	66.9
V. Forestville	940.0
V. Sister Bay	259.6
C. Sturgeon Bay	955.8
Door County	53.2

Source: U.S. Bureau of Census

Population Projections

Estimates of the number of people expected to live in Door County in the future are essential to planning. Future population will influence to a great degree the demand for public services, including parks, roads, schools, and other facilities. Economic

TABLE 3.5

PROJECTED YEAR-ROUND POPULATION IN DOOR COUNTY, 1990-2015

Municipality	1990 Census		Projections					Percent Change 1990-2015	Number Change 1990-2015
	1990	1995	2000	2005	2010	2015			
T. Baileys Harbor	780	817	833	844	853	858	10.0	78	
T. Brussels	1,042	1,097	1,111	1,119	1,127	1,127	8.2	85	
T. Clay Banks	379	371	362	353	346	334	-11.9	-45	
T. Egg Harbor	1,019	1,051	1,068	1,078	1,086	1,089	6.9	70	
T. Forestville	999	1,029	1,034	1,033	1,033	1,025	2.6	26	
T. Gardner	1,025	1,017	999	978	961	935	-8.8	-90	
T. Gibraltar	939	1,002	1,039	1,070	1,094	1,116	18.8	177	
T. Jacksonport	689	688	678	664	654	638	-7.4	-51	
T. Liberty Grove	1,506	1,591	1,631	1,661	1,685	1,703	13.1	197	
T. Nasewaupée	1,798	1,820	1,816	1,803	1,793	1,770	-1.6	-28	
T. Sevastopol	2,552	2,619	2,637	2,640	2,645	2,632	3.1	80	
T. Sturgeon Bay	853	887	903	913	921	925	8.4	72	
T. Union	721	725	719	709	702	689	-4.4	-32	
T. Washington	623	675	704	728	747	764	22.6	141	
V. Egg Harbor	183	194	197	199	201	202	10.4	19	
V. Ephraim	261	275	280	284	287	288	10.3	27	
V. Forestville	470	470	467	462	458	450	-4.3	-20	
V. Sister Bay	675	739	770	796	817	836	23.9	161	
C. Sturgeon Bay	9,176	9,458	9,574	9,636	9,691	9,689	5.6	513	
County Total	25,690	26,525	26,821	26,967	27,101	27,070	5.4	1,380	

Source: Wisconsin Department of Administration, Demographic Services Center; Official Municipal Population Projections, 1990-2015; and Bay-Lake Regional Planning, 1993.

considerations, such as tax revenue, also will depend largely on future populations. Thus, it is important to examine population projections for future increases or decreases. Such forecasts will aid in formulating realistic policies to either accept and plan for future increases or declines or to attempt to alter such trends.

Projections of permanent population prepared by the Wisconsin Department of Administration are presented in Table 3.5. The figures show only modest population growth in Door County, as just 1,380 additional year-round residents are expected over 25 years. The projected increase gets smaller for each successive 5 year period and a population decline is actually projected for the period 2010-2015.

On a municipality basis the largest percentage increases are projected for the Towns of Gibraltar (18.8%) and Washington (22.6%) and the Village of Sister Bay (23.9%). The largest percentage decreases are projected for the Towns of Clay Banks (-11.9%), Gardner (-8.8%) and Jacksonport (-7.4%). These percentages show that, on the whole, drastic population changes are not projected for any Door County municipality.

The projections generally are based upon past and present demographic patterns such as birth rates and death rates, age characteristics, and migration patterns. If major social, economic, or political changes occur that affect these trends, the actual populations could vary considerably. For instance, if State Highway 57 is upgraded to 4 lanes between Door County and Green Bay, as proposed, travel time along this route would be lessened. This travel time reduction, coupled with continued growth of the Green Bay metropolitan area, could spur residential development in the Town of Union. If this happens, the future population in Union might increase rather than decline, as projected. Thus, while population projections can be quite useful, it is important to remember that other factors can influence their accuracy.

Housing and Part-Time Population

The number of housing units in Door County has risen much faster than the population. By way of illustration, the total number of housing units in the county rose by 42.2% between 1970 and 1980 and by 17.7% between 1980 and 1990. In contrast, population increases during these two periods were just 24.5% and 2.6%, respectively. Housing units have increased in all Door County municipalities (Table 3.6).

The reason for the faster rate of housing growth is twofold. First, the average household size in Door County has been declining through the years. In 1950 there were 3.45 persons for each household, but by 1990 this figure had dropped to 2.52 persons per household. As household size gets smaller, more housing units are required to shelter the population.

TABLE 3.6
TOTAL HOUSING UNITS - 1970 - 1990

Municipality	1970	1980	% Change 1970-80	1990	% Change 1980-90
T. Baileys Harbor	475	857	80.4	954	11.3
T. Brussels	313	373	19.2	398	6.7
T. Clay Banks	149	190	41.0	231	21.6
T. Egg Harbor	366	498	36.1	690	38.6
T. Forestville	279	354	26.9	363	2.5
T. Gardner	561	912	62.6	1007	10.4
T. Gibraltar	470	721	53.4	1049	45.5
T. Jacksonport	435	556	27.8	693	24.6
T. Liberty Grove	1136	1463	28.8	1750	19.6
T. Nasewaupée	857	1202	40.3	1263	5.1
T. Sevastopol	1006	1308	30.0	1427	9.1
T. Sturgeon Bay	474	525	10.8	546	4.0
T. Union	377	575	52.5	593	3.1
T. Washington	453	628	38.6	808	28.7
V. Egg Harbor	174	361	107.5	451	24.9
V. Ephraim	338	506	49.7	705	39.3
V. Forestville	117	172	47.0	201	16.9
V. Sister Bay	292	493	68.8	859	74.2
C. Sturgeon Bay	2507	3630	44.8	4049	11.5
Door County	10779	15324	42.2	18037	17.7

Source: U. S. Census of Population and Housing (1970, 1980, 1990).

TABLE 3.7

SEASONAL HOUSING UNITS - 1970 - 1990

Municipality	1970		1980		1990	
	Number	% of Total Units	Number	% of Total Units	Number	% of Total Units
T. Baileys Harbor	232	48.8	513	59.9	537	56.3
T. Brussels	0	0.0	7	1.9	12	3.0
T. Clay Banks	38	25.5	42	22.1	62	26.8
T. Egg Harbor	130	35.5	202	40.6	273	39.6
T. Forestville	2	0.7	15	4.2	13	3.6
T. Gardner	273	48.7	519	56.9	520	51.6
T. Gibraltar	229	48.7	407	56.4	572	54.5
T. Jacksonport	222	51.0	239	43.0	360	51.9
T. Liberty Grove	504	44.4	806	55.1	975	55.7
T. Nasewaupsee	355	41.4	450	37.4	489	38.7
T. Sevastopol	309	30.7	381	29.1	457	32.0
T. Sturgeon Bay	206	43.5	223	42.5	194	35.5
T. Union	193	51.2	335	58.3	320	54.0
T. Washington	256	56.5	354	56.4	487	60.2
V. Egg Harbor	100	57.5	246	68.1	328	72.7
V. Ephraim	245	72.5	343	67.8	245	34.7
V. Forestville	0	0.0	0	0.0	4	2.0
V. Sister Bay	85	29.1	211	42.8	443	51.6
C. Sturgeon Bay	69	2.8	73	2.0	101	2.5
Door County	3235	30.0	5366	35.0	6392	35.4

Source: U. S. Census of Population and Housing (1970, 1980, 1990).

The second reason manifests itself in Table 3.7 - Seasonal Housing Units. Seasonal units comprise over one-third of all housing units in Door County and this ratio has been rising. In about half of the municipalities, there are more seasonal units than year-round units. Thus, the number of housing units can continue to rise sharply without greatly affecting permanent population statistics.

The seasonal nature of the housing stock has significant implications for development and planning in Door County. While the permanent population projections do not show sizable increases, the summer part-time population could continue to rise sharply. Future land use decisions and policies, therefore, must consider anticipated part-time population and development patterns. This can be difficult since vacation and seasonal housing trends are usually less dependent upon local economic and demographic considerations and more dependent upon overall regional and national economic and demographic trends.

An estimate of the part-time population of Door County was derived by contrasting the percentage of seasonal housing units in Door County with that of neighboring counties that do not have sizeable amounts of seasonal units. This methodology is described in Appendix A. The estimate produced using the 1990 census data is a part-time population of 16,728.

The transient population (short term stays in hotels and campgrounds) is also an important component of the total number of people in Door County. Wisconsin Department of Health and Social Services figures indicate that in 1992 there were 5,565 rooms and 3,213 campsites available for accommodation in Door County. Assuming 2 occupants for each room and 3 occupants for each campsite, the transient population during the peak tourist season (100% occupancy) would reach 20,769.

Finally, an estimate of the average population was computed using retail sales data. By comparing the total retail sales for Door County with the average per capita retail sales for the State of Wisconsin, Door County's population would be 34,630. Thus, while the combined permanent, part-time, and transient population during the peak tourist season would exceed 60,000, the annual average population for the county is approximately 35,000.

Summary

The permanent population of Door County has been fairly stable for several decades. In addition, population projections indicate that such stable population will continue. Because of the expected stable population, drastic housing and land use changes will be unnecessary. However, the amount of seasonal housing (and seasonal population) has risen dramatically in recent decades and the demand for seasonal, or second home, housing is expected to continue to increase. Due to the significant development impacts such housing has on Door County, the

policies and guidelines in the Land Use Plan portion of this document must be geared toward limiting any potential adverse impacts such housing development might have.

Existing Land Use and Development

**Chapter
Four**

CHAPTER 4

EXISTING LAND USE AND DEVELOPMENT

Introduction

Land use and development patterns play a significant role in determining future plans and policies. The way in which land is used today will surely influence development patterns of the future. This section details existing land uses for the unincorporated parts of the county. Inventories of existing land use are used to identify the location and characteristics of developed and undeveloped land, thereby serving as an indicator of the state of the county. Likewise, individual categories of land use (such as woodland or industrial use) can be examined for trends by comparing data between towns and data from previous land use surveys.

Land Use Survey

In 1992 a comprehensive land use inventory was completed for all of the unincorporated areas of Door County. Aerial photographs, coupled with field inspections, were used to identify and classify various developed and undeveloped land uses. Land use maps for each town were then compiled using coded colors to show each type of land use. Once the spatial data were complete, the total acreage for each category of land use was computed. The land use data can be used to compare land uses within each town and also to compare data between towns.

The land use inventory classified land uses into separate categories, including categories for both developed and undeveloped land. The categories are as follows:

Residential - all types of residential uses including farmsteads, single family and multi-family dwellings, manufactured home parks, and residential condominiums.

Commercial - all retail sales and service; offices; home occupations; trade and contractors establishments; resorts and lodging facilities; commercial junkyards and storage facilities; and similar businesses.

Industrial/Extractive - manufacturing and food processing uses; wholesaling; waste disposal/recycling operations; salvaging facilities; gravel pits, quarries, and other extractive operations.

Government/Institutional - schools and other educational facilities; town halls and community centers; public libraries and museums; churches, cemeteries, and religious retreat centers;

police/fire/rescue facilities; day care facilities; military institutions; and other public or semi-public institutions.

Communications/Utilities - communication towers; telephone buildings; electrical transformer substations; wastewater treatment facilities. Utility right-of-way lines or easements are not included.

Landfills/Dumps - town/county operated landfills and dumps.

Transportation Related - airports and landing strips; ferry docks; and public highway garages. Public road right-of-ways were treated as a separate land use category.

Public Recreation - state, county, and town parks, trails, and recreational facilities. State wildlife areas were identified but not included in the acreage totals for this category.

Private Recreation - campgrounds; shooting ranges; riding stables; golf courses; institutional recreation camps; marinas; and other privately owned recreation facilities.

Cropland (Active) - cultivated lands and pasture lands.

Orchards (Active) - cherry and apple orchards. Specialty crops such as landscaping plants are also included in this category.

Idle Cropland and Orchards - orchards and farmland that were formerly cultivated, but are now out of production.

Plantation-Type Forests - planted forests, whether for commercial purposes or not.

Woodland - all undeveloped wooded areas except for plantation-type forests and woodlands within parks.

Other Natural Areas - undeveloped areas that are nonagricultural and nonwooded such as grasslands, marshes, beaches, and meadows. This category also includes former cropland that has been idle for so long that the land is reverting back to a natural state.

Vacant Lots - within established communities, recorded lots that have not yet been developed are included within this category.

Inland Bodies of Water - inland bodies of water (lakes/ponds), though technically not "land uses," were deemed significant physical features worthy of its own category.

The results of the 1992 land use survey are expressed in total acreage in Table 4.1 and in percentage in Table 4.2. From the data

TABLE 4.1

DOOR COUNTY LAND USE INVENTORY - 1992 (Acres)

TOWN	LAND USE CATEGORY																		TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL/EXTRACTIVE	GOVERNMENTAL/ INSTITUTIONAL	COMMUNICATIONS/ UTILITIES	LANDFILLS/DUMPS	TRANSPORTATION RELATED (NOT INCL. ROADS)	PUBLIC RECREATION	PRIVATE RECREATION	PUBLIC ROAD RIGHT-OF-WAY	CROPLAND ACTIVE	ORCHARDS (ACTIVE)	IDLE CROPLAND AND ORCHARDS	PLANTATION FORESTS	WOODLAND (NOT INCL. PARKLAND)	OTHER NATURAL LANDS	VACANT LOTS (COMMUNITIES ONLY)	INLAND BODIES OF WATER	
Baileys Harbor	834.3	100.1	115.3	25.9	2.5	11.5	19.7	56.1	252.7	526.5	2228.0	333.3	2323.5	412.6	10643.4	794.4	13.5	1086.1	19779.4
Brussels	448.9	30.6	26.9	11.1	4.7	5.1	4.3	6.1	4.2	714.0	15473.4	173.3	1881.2	63.7	3633.9	564.5	6.8	0.0	23052.7
Clay Banks	253.8	2.9	30.9	4.2	0.0	0.0	0.0	81.4	0.0	314.6	5610.2	45.4	675.2	48.1	2039.2	344.9	N/A	0.0	9450.8
Egg Harbor	991.2	79.8	47.6	10.5	0.4	6.9	9.9	21.3	375.3	706.0	9414.6	970.6	2343.1	234.9	7942.9	293.9	N/A	0.0	23448.9
Forestville	433.8	19.5	28.9	17.6	5.2	0.0	0.0	121.6	0.0	616.4	13049.2	263.4	1775.0	78.1	5508.8	682.1	3.4	100.4	22703.4
Gardner	846.9	28.6	8.3	86.3	0.1	0.0	0.0	41.9	44.3	588.2	10463.7	189.9	2072.8	28.4	6847.7	970.7	N/A	15.6	22233.4
Gibraltar	774.1	164.8	93.5	46.7	24.9	0.0	229.1	3509.2	10.8	548.7	2593.5	388.7	2678.2	399.1	8578.2	1338.8	100.1	363.4	21841.8
Jacksonport	766.9	40.8	84.0	27.3	0.2	0.0	0.0	142.4	26.9	586.1	7855.3	211.1	1703.5	248.9	6212.3	463.1	21.1	785.2	19175.1
Liberty Grove	1740.6	178.5	260.0	34.4	6.4	2.5	0.3	2700.6	113.0	1025.0	2882.4	1160.2	8329.0	771.9	13594.8	1126.9	119.3	411.4	34457.2
Nasewaupée	960.2	91.2	145.6	20.9	2.5	27.3	394.5	1048.4	316.9	890.1	11714.3	273.4	2696.5	377.7	7438.7	945.0	92.4	22.8	27458.4
Sevastopol	1665.5	76.0	252.1	69.5	35.4	12.6	0.0	852.6	229.7	1075.3	14014.2	1447.4	2806.7	417.7	8725.0	1310.4	31.5	598.8	33620.4
Sturgeon Bay	736.7	28.4	243.9	6.9	1.3	0.0	0.0	123.2	76.0	394.2	3284.2	794.7	1159.7	47.1	5181.4	299.4	N/A	34.4	12411.5
Union	472.1	15.0	96.9	11.9	0.0	4.6	0.0	5.0	28.2	489.1	8081.1	10.3	720.4	35.1	3287.5	329.1	N/A	0.0	13586.3
Washington	926.8	113.4	45.6	55.8	3.7	9.4	93.5	958.4	127.9	580.6	1092.7	0.0	2418.6	381.0	8966.3	288.7	23.1	92.9	16178.4
Door County	11851.8	969.6	1479.5	429.0	87.3	79.9	751.3	9668.2	1605.9	9054.8	107756.8	6261.7	33583.4	3544.3	98600.1	9751.9	411.2	3511.0	299397.7

Source: Door County Planning Department

Note: Door County totals do not include incorporated villages or City of Sturgeon Bay

TABLE 4.2

DOOR COUNTY LAND USE INVENTORY - 1992 (PERCENT OF TOWN)

TOWN	LAND USE CATEGORY																	
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL/EXTRACTIVE	GOVERNMENTAL/ INSTITUTIONAL	COMMUNICATIONS/ UTILITIES	LANDFILLS/DUMPS	TRANSPORTATION RELATED (NOT INCL. ROADS)	PUBLIC RECREATION	PRIVATE RECREATION	PUBLIC ROAD RIGHT-OF-WAY	CROPLAND (ACTIVE)	ORCHARDS (ACTIVE)	IDLE CROPLAND AND ORCHARDS	PLANTATION FORESTS	WOODLAND (NOT INCL. PARKLAND)	OTHER NATURAL LANDS	VACANT LOTS (COMMUNITIES ONLY)	INLAND BODIES OF WATER
Baileys Harbor	4.2	0.5	0.6	0.1	<0.1	0.1	0.1	0.3	1.3	2.7	11.3	1.7	11.7	2.1	53.8	4.0	0.1	5.5
Brussels	1.9	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.1	67.1	0.8	8.2	0.3	15.8	2.4	<0.1	0.0
Clay Banks	2.7	<0.1	0.3	<0.1	0.0	0.0	0.0	0.9	0.0	3.3	59.4	0.5	7.1	0.5	21.6	3.6	N/A	0.0
Egg Harbor	4.2	0.3	0.2	<0.1	<0.1	<0.1	<0.1	0.1	1.6	3.0	40.1	4.1	10.0	1.0	33.9	1.3	N/A	0.0
Forestville	1.9	0.1	0.1	0.1	<0.1	0.0	0.0	0.5	0.0	2.7	57.5	1.2	7.8	0.3	24.3	3.0	<0.1	0.4
Gardner	3.8	0.1	<0.1	0.4	<0.1	0.0	0.0	0.2	0.2	2.6	47.1	0.9	9.3	0.1	30.8	4.4	N/A	0.1
Gibraltar	3.5	0.8	0.4	0.2	0.1	0.0	1.0	16.1	<0.1	2.5	11.9	1.8	12.3	1.8	39.3	6.1	0.5	1.7
Jacksonport	4.0	0.2	0.4	0.1	<0.1	0.0	0.0	0.7	0.1	3.1	41.0	1.1	8.9	1.3	32.4	2.4	0.1	4.1
Liberty Grove	5.1	0.5	0.8	0.1	<0.1	<0.1	<0.1	7.8	0.3	3.0	8.4	3.4	24.2	2.2	39.5	3.3	0.3	1.2
Nasewaupée	3.5	0.3	0.5	0.1	<0.1	0.1	1.4	3.8	1.2	3.2	42.7	1.0	9.8	1.4	27.1	3.4	0.3	0.1
Sevastopol	5.0	0.2	0.8	0.2	0.1	<0.1	0.0	2.5	0.7	3.2	41.7	4.3	8.3	1.2	26.0	3.9	0.1	1.8
Sturgeon Bay	5.9	0.2	2.0	0.1	<0.1	0.0	0.0	1.0	0.6	3.2	26.5	6.4	9.3	0.4	41.7	2.4	N/A	0.3
Union	3.5	0.1	0.7	0.1	0.0	<0.1	0.0	<0.1	0.2	3.6	59.5	0.1	5.3	0.3	24.2	2.4	N/A	0.0
Washington	5.7	0.7	0.3	0.3	<0.1	0.1	0.6	5.9	0.8	3.6	6.8	0.0	15.0	2.4	55.4	1.8	0.1	0.6
Door County	4.0	0.3	0.5	0.1	<0.1	<0.1	0.3	3.2	0.5	3.0	36.0	2.1	11.2	1.2	32.9	3.3	0.1	1.2

Source: Door County Planning Department

Note: Door County totals do not include incorporated villages and the City of Sturgeon Bay

and from an examination of the town land use maps, several observations about land uses in the unincorporated parts of Door County can be made:

- Not surprisingly, the majority of the unincorporated areas of Door County remain undeveloped. For the purposes of this chapter, undeveloped land includes agricultural land (active or idle), woodlands, and other natural areas. Approximately 12% of the land is classified under one of the developed land use categories (including roads). This figure drops to 8.8% if the public recreation lands, which are mostly undeveloped woodlands, are not included.

- Approximately half of the land is agricultural, either active or idle cropland and orchards. In southern Door County this figure is even greater, with the Town of Brussels topping the scale with 75% of its land classified under one of the agricultural categories.

- Idle farmland comprises a sizable portion of the county (11.2%). Examining each town's ratio of active cropland and orchards to idle lands yields interesting results regarding the viability of agriculture in northern Door County compared to the south. For example, the Town of Union has 11.2 acres of active farmland for each acre of idle farmland, while Liberty Grove has a mere one-half acre of active farmland for every acre of idle farmland.

- Over one-third of the land is classified as woodland and other natural lands. Generally the prevalence of woodland is greater in the northern part of the county (e.g. Washington - 55.4%, Baileys Harbor - 53.8%) than in the southern towns (e.g. Brussels - 15.8%, Clay Banks - 21.6%).

- Residential land is situated along most of the shoreline in Door County. This is evidenced by the fact that the two interior towns (Brussels, Forestville) have considerably lower percentages of residential land than the other towns. Nearly the entire shoreline of the county is built up with residences, except for public lands and a few other isolated areas. Several inland areas are developing residentially, particularly areas near the City of Sturgeon Bay and along the bluffs on the Green Bay side of the peninsula. Farmsteads and isolated homes are scattered throughout the county.

- The greatest concentration of commercial uses is located in the northern towns. Fueled by tourist businesses such as gift shops and motels, towns such as Gibraltar, Liberty Grove, Baileys Harbor, and Washington have far greater amounts of commercial land than southern towns like Union, Forestville, and Clay Banks. In general, commercial uses tend to be concentrated in the county's resort communities like Ellison

Bay and Fish Creek or in rural centers like Maplewood and Brussels. In addition, commercial uses are increasingly found along the major highway corridors. Isolated home-based businesses are scattered throughout Door County.

- Residential development in the towns is far greater than commercial development. In all towns, the sheer amount of residential acreage was considerably more than for other categories of developed land.

- Industrial land uses in unincorporated parts of the county are mostly active or idle quarries and sand/gravel pits. The greatest concentrations of these uses are in the towns of Sturgeon Bay, Sevastopol, and Liberty Grove.

Land Use Changes

At least three other land use surveys have been completed for the unincorporated parts of Door County in the past. One was done as part of the county's original 1964 Comprehensive Plan. Another was completed in 1975 by Bay Lake Regional Planning Commission. In 1979, a third previous land use survey was compiled, as part of the Door County Farmland Preservation Plan. Each of the land use surveys had varying purposes, used different methodologies, and had differing classifications. Thus, comparisons between the 1992 land use inventory and previous ones are difficult to make. Nevertheless, the data and the land use maps from previous studies do reveal some basic trends and ideas. A few selected land use categories are compared in Table 4.3. These figures are approximate because of the differences in each survey's methodology, but they do enable general trends to be observed.

The total percentage of developed land in the unincorporated part of Door County rose steadily in each subsequent land use survey. This development was fueled primarily by residential growth and the creation of additional state parks. Additional shoreline development, development along the inland bluffs, and rural subdivision growth all contributed to the trend of rising residential land use. Total amounts of farmland decreased over the course of these land use surveys. In addition, from 1979 to 1992, the ratio of idle farmland to active farmland rose.

Shoreline development is examined in Table 4.4. The table lists the percent of the length of the shoreline that is privately developed (unincorporated); within the city or the villages; publicly owned; and undeveloped. Considerable shoreline development took place from 1964 to 1992, but the table also shows that the amount of shore frontage under public ownerships increased significantly, particularly for the inland lakes due to the establishment of Newport and Whitefish Dunes State Parks on parts of Europe and Clark Lake, respectively. Hence, major sections of the shore were spared from private development.

TABLE 4.3

DOOR COUNTY LAND USE CHANGES*

Selected Category	<u>Percent of Total Area</u>			
	<u>1964</u>	<u>1975</u>	<u>1979</u>	<u>1992</u>
Residential	1.5	2.2	3.6	4.0
Cropland(active)	N.A.	N.A.	40.8	36.0
Idle Farmland	N.A.	N.A.	9.2	11.2
Combined Active/ Idle Farmland	N.A.	51.5	50.0	47.2
Orchards	N.A.	2.3	2.3	2.1
Woodland	N.A.	34.2	33.1	32.9
Total Developed (incl. roads, parks)	7.4	8.4	10.9	12.0
Total Natural/ Agricultural Uses (incl. inland bodies of water)	92.6	91.8	89.1	88.0

* These figures are approximate. They are meant to show general trends only.

Sources: Door County Comprehensive Planning Program (1964); BayLake Regional Planning Commission (1975); Door County Farmland Preservation Plan - 1982 (1979); Door County Planning Department (1992).

TABLE 4.4

DOOR COUNTY SHORELINE DEVELOPMENT

-----Lake Michigan and Green Bay shoreline (mainland and Washington Island only)-----

	<u>Private Development</u>	<u>Incorporated</u>	<u>Public</u>	<u>Undeveloped</u>
1964	29.6	7.0	7.3	56.1
1992	48.4	10.3	14.7	26.6

-----Inland lakes shoreline (Clark, Kangaroo, and Europe Lakes)-----

1964	32.8	---	0.5	66.7
1992	56.1	---	8.6	35.3

Note: Figures indicate percent of total shore frontage.

Sources: Door County Comprehensive Planning Program (1964); Door County Planning Department(1992).

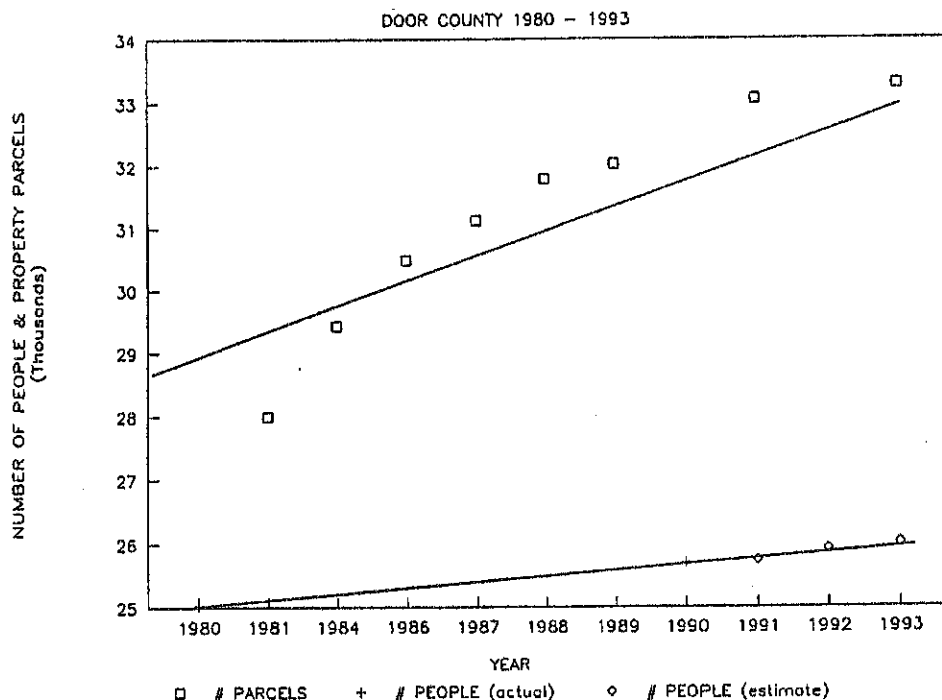
It is also apparent that considerable undeveloped land still exists on the shoreline. A good portion of this remaining land is under protective ownership by private and public entities dedicated to maintaining properties in a natural condition, or is unlikely to ever develop because of wetland designation or other development constraints.

The limited amounts of remaining developable shore frontage has had significant indirect impacts on recent land use patterns. Development pressure has shifted to inland locations such as bluff property. Most of the bluff areas had virtually no development in 1964, but considerable development has taken place in recent times. Though some shoreline infill development and redevelopment is sure to occur, the greatest impacts from development during this planning period are likely to occur in inland rural areas.

The erosion of open space and potential loss of rural character were identified as county concerns. The data presented above seems to bear out this threat. The sizeable increases of residential acreage, the increase in rural nonfarm population, and the spread of development to inland areas are all examples. In addition, Figure 4.1 shows that the number of land parcels has risen dramatically, far outpacing population growth. This parcelization of Door County must also be considered a threat to the county's rural character.

Though the county remains mostly undeveloped, the trends point to increased development and a potential loss of open space. If maintaining the county's rural and open landscape character is to remain a viable goal, then considerable planning attention must be given to this concern and the recommendations of the land use plan need to be aimed at achieving that goal.

FIGURE 4.1
POPULATION & PROPERTY PARCELS



Natural Resources

Chapter Five

CHAPTER 5

NATURAL RESOURCES

Introduction

Without a doubt the character of Door County is tied to its natural resource base. The many natural resource features, including the various lakes and waterways, the miles of shoreline, the undeveloped areas occupied by wetlands and woodlands, and the various geologic features all contribute to this unique character. Maintaining these resources is central to the policies embodied in this Development Plan.

The rationale for protecting and maintaining Door County's resource base is well documented (see Zimmerman, Rationale Paper, 1989 on file at the Door County Planning Department). It is clear that the health and welfare of Door County depends on protection of its natural resources. A full array of healthy and diverse natural resources is vital to the county's recreation, tourism, and residential development industries. A second consideration for maintaining natural resources is the danger and great cost of improper natural resource protection, as demonstrated by previous cases of severe groundwater contamination. Finally, the issues identification stage of this planning process, described in Chapter 1, points to the belief held by Door County's residents that protection of natural resources is a high priority item for the planning effort.

As a result of this rationale, several goals and objectives aimed at maintaining the county's natural resources were formulated. Substantive environmental analysis was undertaken by a planning consultant, Dr. James H. Zimmerman, resulting in an inventory of 69 Natural Resource Districts located throughout the county as well as accompanying "Natural Resource Maintenance Guidelines Papers".

This chapter outlines many of Door County's natural resources and offers recommendations designed to implement the natural resource guidelines and to maintain the county's resources in general. Achieving the goals the county has set forth will require initiatives from both the private and public sectors. That the public sector should assert itself in natural resource protection efforts stems from the viewpoint that protection of such resources is in the public interest. Guidelines are needed that will enable the county, when reviewing development proposals, to make environmentally sensitive decisions that are consistent and rational.

A major portion of the materials and recommendations presented

in this chapter is derived from the "Natural Resource Maintenance Guidelines Papers" produced by the county's consultant, Dr. Zimmerman. For a more in-depth analysis, it is advisable to examine those documents.

Air

The availability of clean air is essential in Door County both because of its impact on human health and because air quality affects the remainder of Door County's natural resources. Presently, the quality of the air in Door County is good, but several threats do exist.

Threats - Levels of ozone pose a potential problem. High levels of this eye and lung irritant are found in the Milwaukee metropolitan region and in other urban areas south of Door County along the coast of Lake Michigan. Southerly winds on hot summer days have the effect of transporting ozone pollution to Door County. This transported ozone, coupled with local levels, has caused the Department of Natural Resources to designate Door County as a marginal nonattainment area for ozone for state air quality planning purposes.

Wisconsin has imposed ozone pollution prevention measures in many counties, depending upon the severity of the pollution problem. The only requirement for Door County so far has been an inventory of all sources of emissions which are precursors for ozone, but counties south of Door County have a more stringent set of requirements. Hopefully, these measures will alleviate the problem so that air quality is maintained and expensive control measures for Door County are avoided.

Pollution from automobile exhaust is also a source of localized air quality problems, particularly in the villages where seasonal traffic congestion exists. Alleviating the congestion should help to reduce pollution levels. The transportation section of this plan discusses ways to control traffic congestion.

Other types of air pollution stem from the overuse and/or misuse of pesticides and other chemicals used for farming or lawn care. There may be some localized problems, but these are not serious threats to county-wide air quality.

Guidelines - The county should monitor statewide efforts to control ozone pollution in Wisconsin, particularly the DNR's State Implementation Plan. The ozone control measures have mostly been directed at counties south of Door County where ozone is more of a problem. Failure to control this pollution could lead to air quality problems throughout the state which could require imposition of far reaching control measures that could affect Door County.

The county should monitor the siting of new power plants within the region, particularly recent proposals for Oconto County sites for possible new coal-fired power plants. Door County would lie directly in the path of any airborne pollutants, including fly ash, discharged by such a plant. The county board should work with the state to oppose this plant and any other new power plants that might threaten air quality in Door County.

One of the most important elements in the maintenance of air quality is the presence of trees. They are natural purifiers of air. In this respect, standards in the Door County Zoning Ordinance should be devised and enforced to protect air quality by protecting woodlands.

Groundwater

Groundwater is vital to the health of Door County because it is the primary source of drinking water. It is also used for a variety of industrial and agricultural uses. The important sources of groundwater in Door County are aquifers. An aquifer is an underground formation of either rock or soil that can store or transmit water. Proper maintenance and care to preserve and protect these sensitive aquifers will play a big role in keeping Door County's groundwater pure.

Threats - According to Zimmerman there are two key threats to groundwater in Door County: pollution and hydraulic alteration. Pollution occurs when the groundwater is contaminated. Sources of groundwater contamination include failing septic systems, leaking underground holding tanks, waste from farm animals, toxic seepage from active or abandoned dumps and landfills, and toxic chemicals (lead and arsenic) from former pesticide mixing sites and other industrial sites.

Door County is particularly susceptible to groundwater pollution because of two main factors. The first factor is shallow soils. Soil acts as a natural filter as water flows downward through it. Without sufficient soil depth, there is little opportunity to filter out impurities, particularly bacteria. According to the Nonpoint Source Control Plan for the Upper Door Priority Watershed, 22 percent of Door County has a soil depth of less than 18 inches over bedrock. By way of comparison, Wisconsin sanitary code requires at least 36 inches of natural soil from the bottom of a drainage field to bedrock or the water table for a conventional septic tank/drainage field wastewater disposal system. The other factor is the underlying bedrock geology. Door County's bedrock is dolomite limestone, a fragile rock that is prone to cracking. This cracking leads to formation of sinkholes and horizontal and vertical crevices. These features allow contaminated surface water to reach the underlying groundwater without adequate filtration and allow for the easy spread of

contaminants throughout the groundwater system.

The second key threat to groundwater is hydraulic alteration. Reducing groundwater input or increasing groundwater output can affect the hydraulic balance. This may lead to reduced groundwater storage or, according to Zimmerman, "...invite water to move in faster from another place which could be a pollution source."

At present, hydraulic alteration has not been a major cause of concern. However, because of the potential for increased groundwater pollution, this potential problem should be monitored and studied further.

Guidelines - There are a number of methods to protect Door County's groundwater quality and supply. In addition to the recommendations outlined in Chapter 9, Wastewater Treatment and Management, several measures can be implemented. First, the county should continue the strategy employed in the Nonpoint Source Control Plan for the Upper Door Priority Watershed Project. This project was developed by the Wisconsin Department of Natural Resources (DNR) and the Door County Soil and Water Conservation Department as part of the Wisconsin DNR's statewide nonpoint source water pollution abatement program. The primary strategy for upper Door has been the construction of manure storage facilities to prevent groundwater contamination from barnyard runoff. Through 1993, 63 farms have built facilities using cost-shared dollars from the Wisconsin DNR. A second priority watershed, the Red River/Sturgeon Bay watershed, covers a sizeable portion of Southern Door County. This priority watershed was announced in late 1992, with planning phases occurring during 1993 and 1994. The county should continue to support this program, both in planning and implementation.

Secondly, the county should utilize the Groundwater Pollution Potential and Pollution Attenuation Potential Maps, developed by the Door County Soil and Water Conservation Department and the University of Wisconsin-Green Bay for the Upper Door Priority Watershed Project, when evaluating development proposals and when designating growth areas through rezoning. The maps should be used to assess groundwater impacts of development and could serve as a guide for mapping various zoning districts. As maps for the southern towns become available, they should be similarly used.

The county should adopt and encourage cluster development provisions within its zoning and subdivision ordinances. Such cluster development would be helpful in areas not served by central sewer because the development units could be grouped and placed in areas which have soils of good attenuation potential. Thus, groundwater is protected by avoiding pollution problems from failing septic systems.

The county needs to develop and enforce sinkhole protection

measures. Because water flowing into sinkholes passes directly into the groundwater supply with virtually no filtering, the potential for contamination is high. Therefore, either development should be sited away from sinkholes and sinkhole channels or other protection measures should be implemented to prevent contaminants contained in runoff water from directly reaching the groundwater supply through such sinkholes.

Municipalities with public water supply facilities (currently the Village of Sister Bay and the City of Sturgeon Bay) should develop and implement a Wellhead Protection Program. Such a program would safeguard the water supply by identifying and minimizing potential contamination sources. The Wisconsin DNR has developed Technical Assistance Documents to help communities develop an effective plan.

Monitoring of wells and landfill sites should continue with the results examined for possible problem locations. Because measures designed to correct groundwater quality problems are difficult and costly, it is important to detect these locations before they become widespread.

Finally, Door County and its various communities need to further examine and seek long-term solutions to maintain its groundwater quality. Because of the precariousness of Door County's groundwater situation, there is a constant threat of regional problems, as evidenced by previous water-related health issues and by the recent Wisconsin DNR water boil advisory for Ephraim. Thus, full-scale planning efforts should be undertaken now so that communities are prepared to handle future problems or are able to implement necessary measures to prevent future problems. Public water supply facilities were recommended by the Door County Comprehensive Sewer and Water Plan (1972); planning efforts should once again evaluate this possibility.

Surface Water

Surface water comprises one of Door County's most important natural resources. Door County's approximately 250 miles of shoreline on Lake Michigan and Green Bay, as well as numerous inland lakes and streams, make it a prime destination for vacationers and sportsmen, while providing habitat for wildlife. The surface waters are important for recreation, as fisheries, as habitat for water birds, and as a scenic resource.

The inland lakes of Door County are listed in Appendix B-1. Major streams are listed in Appendix B-2. The water quality of Door County's lakes and streams is generally good as reported by the Nonpoint Source Control Plan for the Upper Door Priority Watershed Project for streams in northern Door County and by the Twin - Kewaunee River Basin Areawide Water Quality Management Plan

for the Ahnapee River. Table 5.1 shows results of biotic index testing on selected streams. The biotic index measures organic pollution with a low index indicating better water quality. In addition, water sampling data obtained in the early 1980's showed that water quality was high for the county's four largest lakes: Kangaroo, Clark, Mackaysee, and Europe.

TABLE 5.1
BIOTIC INDEX SAMPLING RESULTS IN THE UPPER DOOR PROJECT

<u>CREEK</u>	<u>SAMPLING SITE</u>	<u>DATE</u>	<u>BIOTIC INDEX</u>	<u>WATER QUALITY CATEGORY</u>
Shivering Sands	Co. Hwy. T	5/7/85	4.39	V. Good
	Lake Michigan Dr.	5/1/86	4.69	Good
Riebolts	Co. Hwy. Q	4/21/86	6.54	Fair
Whitefish Bay	Cave Point Rd.	5/7/85	7.50	Poor
Heins	St. Hwy. 57	5/7/85	6.25	Fair
Hibbards	St. Hwy. 57	5/7/85	4.25	V. Good
Three Springs	Co. Hwy. ZZ	5/1/86	6.23	Fair
Donlans (Maple)	Haberli Rd.	5/7/85	6.22	Fair
Fish	St. Hwy. 42	5/7/85	6.55	Fair
Logan	St. Hwy. 57	5/7/85	4.05	V. Good
Lilly Bay	Co. Hwy. T	5/7/85	3.83	V. Good
Ephraim	St. Hwy. 42	4/21/86	5.01	Good

Source: A Nonpoint Source Control Plan for the Upper Door Priority Watershed Project, 1987.

Threats - Threats to surface water quality in Door County come mainly from nonpoint sources of pollution. This includes siltation caused by erosion from agricultural lands and areas undergoing development. Increases of nutrients from fertilizers, road salt, and faulty wastewater treatment systems is another hazard for water quality. At present, the threats do exist and great care must be taken to prevent these water quality threats from becoming a crisis.

Guidelines - Many of the guidelines for maintaining high quality groundwater also pertain to surface waters. Thus, the recommendations cited below are in addition to those cited for groundwater concerns.

To protect against siltation caused by construction site erosion, the county should continue to enforce construction setbacks from all waterways and should maintain stringent safeguards against the removal of vegetation within these setbacks. Wisconsin Statutes and Administrative Code require counties to enforce a 75 foot setback from the water for buildings and structures and also limit removal of vegetation within 35 feet of the water. Both these provisions help erosion materials from reaching surface waters and, in addition, help maintain scenic resources. The county should also encourage or, if necessary, require best management practices be adhered to for development sites in order to minimize any construction site erosion.

The county should develop and enforce limitation on the amount of impervious surfaces within a development to protect against pollution and erosion problems caused by stormwater runoff. By maintaining part of a development in grass or other open space, a buffer is created to help filter out pollutants carried by runoff from roofed or paved surfaces before the runoff water reaches lakes or streams. Large projects should be reviewed for their effects upon stormwater runoff volumes and patterns.

The Red River/Sturgeon Bay Priority Watershed includes the City of Sturgeon Bay. In the city, surface water pollution often occurs from lawn care fertilizers, grass clippings, leaf debris, and other contaminants entering the waters of Sturgeon Bay through the storm sewers. The excessive amount of water weed growth is an indicator of water quality problems. Through the priority watershed program, the city of Sturgeon Bay has begun to educate its residents about urban surface water runoff and reduce this form of nonpoint source pollution. These efforts should be continued.

Finally, the county should continue to monitor the water quality of its lakes and streams. These surface waters are a prime economic asset of the county and early detection of water quality problems is vital so that proper steps can be taken to maintain these important resources.

Wetlands

Wetlands are recognized by water at or near the ground surface, by the presence of wetland-adapted vegetation, or by soils exhibiting physical or chemical characteristics of water logging. In Door County there is an abundance of wetlands. They are found throughout the county and in every township.

Wetlands have an important set of natural functions which make them particularly valuable. Wetlands enhance water quality. Aquatic plants change inorganic nutrients such as phosphorous and nitrogen into organic material, storing it in their leaves or the peat which is composed of their remains. The stems, leaves, and

roots of these plants also slow the flow of water through a wetland, allowing suspended solids and related water pollutants to settle out. Thus, destruction of wetlands will likely adversely affect the quality of surface waters in the area. Wetlands regulate surface water runoff, storing water during periods of flood flows to release such water during periods of drier weather. Thus, wetlands help to stabilize stream flows. Wetlands provide essential breeding, nesting, resting, and feeding grounds and predator escape cover for many forms of wildlife, including some endangered species. They therefore contribute to the overall ecological health and quality of the environment of the area, as well as providing recreational, research, and educational opportunities and adding to the aesthetic quality of the community.

For the reasons stated, wetlands should be protected. The county has a history of protecting its wetland resources through zoning regulations. In addition, regulations at both the state (DNR) and federal (Army Corps of Engineers) levels exist for further protection. Finally, Wisconsin Supreme Court decisions have shown that regulations protecting wetlands are clearly within the bounds of local governmental power, especially *Just vs. Marinette* (56 Wis. 2d 7; 1972) and *M & I Bank vs. Town of Somers* (141 Wis. 2d 271; 1987).

Threats - There are several threats to wetlands. Alterations in water levels, either through draining or through additional stormwater flows, can have serious impacts. If the wetlands balance is changed because it is either too wet or too dry, wetland flora will be killed and the habitat of certain water birds and other wildlife will be disturbed.

Siltation from erosion or the introduction of pollutants from upland uses can cause eutrophication and destruction of the wetland. Of course, outright filling would destroy the wetland as well as lead to possible flood problems elsewhere.

Impounding wetlands, or otherwise altering their flow, can also cause problems. Areas downstream could dry up or flood and flood storage capability would be diminished. Road construction without allowing for water to pass through is an example of altering the flow of water through a wetland.

Guidelines - The chief potential threat to wetlands is filling. To protect against widespread filling of wetlands, the county should continue to utilize zoning regulations to prohibit development of wetlands. The basis for mapping wetland zoning districts should be the most recent wetland inventory maps compiled by the Wisconsin Department of Natural Resources.

Several of the county's wetland areas are currently owned by entities dedicated to the maintenance of the wetland resource. Examples include the Wisconsin DNR's Gardner and Mud Lake Wildlife

Areas, the Ridges Sanctuary, and The Nature Conservancy lands around the Mink River. The county should encourage this type of stewardship and educate other land owners of the importance of maintaining their wetland properties.

Road construction across wetlands should be avoided, but any construction that does occur should be bridged or provided with culverts to allow for water and animal passage.

Woodlands

Door County has a considerable amount of forest coverage. The 1992 land use survey shows that approximately one-third of the unincorporated part of the county is undeveloped woodland. The land use maps show that the natural Door County woodlands are interspersed well throughout the county. Large uninterrupted coastal and crossing corridors are intact. A good diversity of tree species is also present. It is clear that woodland comprises a major component of Door County's land cover.

In general the woodlands of Door County can be broken down into four categories - Mesic, Xeric, Lowland and Boreal Forests. Because of these different categories, the county is blessed with a wide array of tree species. Table 5.2 summarizes these tree species of Door County. It also roughly indicates their shade tolerances, which is of importance to management strategies for renewal by natural reproduction.

Of the many important functions that woodlands perform, perhaps the scenic values of trees and forests are most prominent. According to Zimmermann, "...next to water, trees are the most conspicuous and attractive landscape feature in the relatively flat terrain of Door County. They soften and counteract the monotonous straightness of most roads, and provide important settings, backdrops and screens for dwellings, farms, winding roads, and shorelines, while creating diverse types of architectural spaces." These landscape aspects, coupled with the seasonal patterns of color and texture, make the scenic function of woodlands especially vital to both the attractiveness and economy of Door County.

Woodlands also have important roles in many of the biological cycles, including the energy, oxygen, nitrogen, and carbon cycles. They provide essential habitats for numerous varieties of plants and animals and serve as important moderators against the destructive affects of erosion, pollution, and severe weather. Finally, the woodlands are important for the valuable tree products that can be harvested.

Threats - Door County is not in eminent danger of losing its woodlands to widespread clearing. In fact, many former agricultural fields and orchards are slowly reverting to young

TABLE 5.2

DOOR COUNTY TREES AND TALL SHRUBS

SHADE TOLERANCE	COMMON SPECIES		UNCOMMON SPECIES	
	BROAD-LEAVED	CONIFERS	BROAD-LEAVED	CONIFERS
High	Beech Sugar Maple Ironwood White Ash Green Ash*	Hemlock Balsam Fir White Cedar*	(Norway Maple) Blue Beech Witch Hazel Elms-American -Slippery -Rock	
Medium	Basswood Mountain Maple Box Elder Red Maple* Yellow Birch Big Leaf Dogwood Shadbush	White Pine	Butternut	(Norway Spruce) (Colorado Spruce)
Low	Red Oak Bigtooth Aspen Quaking Aspen Balsam Poplar Black Ash** White Birch Alder**	White Spruce Black Spruce** Tamarack**	Black Cherry Pin Cherry Chokecherry Mountain Ash Cottonwood* Staghorn Sumac White & Burr Oaks (Chinese Elm) (Lombardy Poplar) (Apple) (Sour Cherry) (Silver Poplar) (Walnut) Willows - several species (Black Locust)	Red Pine Jack Pine (Scots Pine) (Red Cedar)

* May occur in Wetland
 ** Always in Wetland
 () Alien Species (planted)

Source: James Zimmerman.

woodlands as agricultural activity diminishes, especially in the northern part of the county.

Threats to the vitality of Door County's woodlands do exist, however. According to Zimmerman, unbroken blocks and corridors of woodlands must be present in order to provide enough refuge, passage, food, and shelter for Door County's abundant wildlife. While blocks and corridors presently exist, they can be disrupted by roads and insensitive or intensive development.

Residential development, if it is not sensitively planned, can also damage or destroy scenic values, especially on shores, bluffs, and forest edges. Tree removal for views or septic fields is the usual cause.

Improper management, including the underharvesting or overharvesting of trees, can also impact woodlands. The economic resources of woodlands can be captured without diminishing scenic or other woodland values. Proper harvesting and management would ensure that the scenic beauty of the woodlands is maintained while still providing for economic value to be realized. Likewise, improper wildlife management can create deer overpopulation which threatens woodlands. Zimmerman claims that deer population threatens survival and/or regeneration of several tree species, including the American Yew, hemlock, white cedar, and sugar maple. Sound management would ensure that the woodlands remain a diversified and self-renewing resource.

Another threat to the county's scenic tree resources is haphazard utility and road work or maintenance. Unnecessary tree cutting along scenic roads is a problem that can be avoided with careful road construction guidelines, and sensitive siting of utilities, particularly by limiting utility right-of-ways to only one side of any road.

The introduction of alien tree species may be considered a threat to the county's natural woodlands. Alien species, such as the Norway Maple, can replace native trees by invading natural forests. The eradication of Norway Maple seedlings or other alien species might become a significant part of woodland management.

Guidelines - Several recommendations for maintaining the county's woodland resource are set forth. Zoning and subdivision ordinances should be used to ensure that the integrity of the blocks and corridors of woodlands is not threatened. The Natural Resource Maps could be the basis for delineating lower density zoning districts in areas that should remain wooded. Zimmerman states that an ideal goal would be lot sizes of 5 to 10 acres.

Clustering of buildings should be encouraged by the zoning and subdivision ordinances to promote conservation of larger blocks of woodland while still allowing for some development. Utility and

road corridors would then be limited, the residents could still enjoy privacy and the forest amenities, and a block of woodland could be maintained to ensure its viability.

Restrictions on clearing should be enforced to prevent major loss of woodlands to other uses. In most cases, extreme clearing of woodlands will not be likely. However, threshold clearing limits should be set that would allow selective or minor clearing for views, buildings, and driveways, but which would prevent wholesale clearing of woodlands. Zimmerman states that, generally, leaving 50-80% of the forest in its natural state is desirable for maintenance of most amenities. Such provisions, however, should not interfere with the careful harvesting of wood products nor other proper woodland management techniques.

Residential development within woodland areas should be encouraged to occur at the edge of the woodland. For both practical and aesthetic reasons, development on the forest edge would best be able to balance the competing interests of forest regeneration, wildlife, development, and visual resources of both the public and the landowner.

Educational programs should be developed to advise woodland owners how to achieve successful woodland maintenance and management. Perhaps a county-wide woodland stewardship conference could be used to raise interest levels as well as bring together all affected parties (landowner interests, public interests, government officials). In addition, a county forester of the Department of Natural Resources is stationed in Sturgeon Bay and should be utilized to help with woodland management considerations in the county.

Woodlands along the shores and bluffs are especially conspicuous and add considerably to the scenic values of the county. For these areas, tree removal limitations should be provided to protect the visual resources of these woodlands.

Finally, the extent of woodland coverage and woodland vitality should be monitored through the periodic updating of land use maps and natural resource maps. Air photos could be used to tell how well the woodlands of the county are faring.

Topographic Features

The major topographic features of Door County are mainly products of the underlying Niagara Escarpment and overlying glacial drift. The topography varies from level to gently rolling and rolling, the northern part of the peninsula has the more rolling terrain. Several specific topographic features exist which contribute to the county's scenic quality as well as pose significant development considerations. The following is a summary

of these topographic features:

1) The line of limestone bluffs which run along the west side of the peninsula and Washington Island. These bluffs rise to heights exceeding 150 feet in some locations and are easily observable, especially when viewed from the water or in instances where the bluff is situated inland.

The value of the majestic scenery afforded by these topographic formations is evidenced by the fact that several of the most prominent bluff areas are located in public parks. Death's Door Bluff and Ellison Bay Bluff are protected as county parks, while Government Bluffs and Eagle Bluff are protected by Potawatomi and Peninsula State Parks, respectively.

2) Steep slopes and high hills. In addition to the limestone bluffs along the west side of the peninsula, several other steep slopes and interesting hills exist. A prime example is the steep slope in the southeast corner of the county, an ancient shoreline of Lake Michigan. High hills include Brussels Hill northeast of the community of Brussels and The Mountain on Washington Island. Both of these hills, as well as other slopes and hills, offer exceptional views.

3) Dunes. These are mounds or ridges of sand that were piled by wind and wave action. They occur at places along Lake Michigan. The most spectacular dunes, reaching heights of 50 feet or more, are located in Whitefish Dunes State Park between Clark Lake and Whitefish Bay. Another important dune system, though not as dramatic, exists at the south end of Kangaroo Lake.

4) Ridges and swales. This is a related form of dune structure created by a series of parallel ridges and wetlands built up at the mouth of what used to be a shallow bay. This feature is found at several locations along the Lake Michigan coast with the most renowned ridge and swale area being the Ridges Sanctuary in the Town of Baileys Harbor.

5) Glacial deposits - drumlins and eskers. Glacial deposits from retreating and melting ice sheets resulted in many natural and topographic features, of which drumlins and eskers are Door County's most significant natural glacial features. Drumlins are smooth, streamlined hills composed of glacial till with a blunt nose and a gently sloping tail oriented in the direction of the glacier movement. Drumlins are found in other areas of the county, but the biggest concentration is a group of drumlins located in Liberty Grove along County Highway ZZ. Drumlins are not rare elsewhere in Wisconsin, but they are so in Door County. They are important physical assets to Door County's unusual geological features and they provide an interesting change in topography.

Eskers are ridges of sand and gravel which were deposited from

meltwater running in tunnels below or inside the glaciers. The only major esker in Door County is found in the Town of Union in the southern part of the county. This esker has been heavily altered due to the mining of sand and gravel.

Guidelines - The guidelines for topographic features are generally aimed at preserving the visual integrity and historic value of these features. In most cases, this can be accomplished through low density developments and design criteria. However, in some cases, outright prohibition of development or protective ownership should be considered. The following recommendations are made:

The bluff areas along the west side of the peninsula should be protected by modifying the development that occurs there. In general, these areas should be zoned for lower density residential development and clustering of homes should be encouraged. Provision for proper septic systems should be considered before development is approved. Height restrictions tied to the height of the surrounding vegetation should be imposed. Finally, selective thinning regulations are needed both on the escarpment slope and on top of the bluff in order to guard against erosion and to further protect the visual integrity of this natural feature. Ideally, the restrictions would be such that landowners would be permitted limited development and a view, but the building exposures and clearing of trees would be kept to a minimum.

The spectacular dunes at Whitefish Bay should remain in public ownership. To protect the visual integrity and intactness of other large dunes, only limited development should be permitted and mining of dunes should be prohibited.

Only limited development should be permitted in the upland portion of ridges and swale areas. A restrictive zoning designation should be utilized to protect their unique character. In addition, if development is to occur, careful precautions should be enforced to prevent filling of the swale areas and development should only take place on the upland portion of ridges. Protective ownership, such as in the case of the Ridges Sanctuary, should be maintained and expanded in critical areas.

Drumlins should be protected by limiting the intensity of development on them. A number of drumlins have been damaged by road construction. Thus, future construction of roads or driveways should be routed and raised such that road cuts are minimized and the integrity of the drumlin is maintained. Mining should be prohibited.

Natural Areas

The natural resources discussed in this chapter often result

in areas of special natural importance. Within Door County there are many blocks or corridors of natural resources. Maps of the Natural Resource Areas have been compiled, with various natural areas (typically centered on woodlands and wetlands) identified and named. Hence, the county, in addition to the preservation of individual natural resources, can focus on the designation and conservation of entire natural resource areas.

There are several methods of maintaining the county's important natural resource areas. First, the county Zoning Ordinance should include zoning districts designed for these locations. For wetlands within natural areas, a zoning district that prohibits development should be utilized in order to protect the function of the wetlands. For natural areas that are not wetlands, a special Natural Area Zoning District should be established. Such a district would restrict development to a low density and would permit only uses that are compatible with the maintenance and enjoyment of the natural area. This district could also be used to buffer major wetland areas from the more intensive zoning districts.

The county zoning ordinance could also help maintain natural areas through the use of agricultural or otherwise rural zoning districts. Because farm fields and other open areas can serve as connectors between different natural areas, agricultural or rural zoning districts can be used to enhance natural areas or serve as corridors or buffers.

A second major method of maintaining natural areas is through responsible stewardship. Door County has historically been very successful in this regard. Several of the lands identified on the Natural Resource Maps are already state, federal, or county owned and are maintained as parks or preserves. In addition, private agencies and foundations have also been active in maintaining several natural areas throughout the county. Finally, there are instances of exemplary stewardship by private individuals or homeowners associations. Despite past successes, however, continued growth puts remaining unprotected natural areas at risk and continued protection efforts are necessary.

The conservation of the county's resources will depend to a large degree on a continued and increased private stewardship effort. By educating landowners of their valuable resource, and by providing them with land management options, such as conservation easements, property owners will hopefully have the desire and incentive to exercise land stewardship.

While the county should provide encouragement to private initiatives, active involvement may be required in some situations. Lands that are vital in maintaining the integrity of blocks or corridors of natural areas, and where private action is lacking, should be protected by the county either through purchasing

easements or outright acquisition. If possible, such critical areas should be prioritized to ensure judicious public involvement and to limit public costs. It is recommended that the county also support and/or work with other public or private conservation agencies that are striving to protect the county's prime natural areas. An inventory of existing programs and available funding sources, including grants, should be conducted.

Other ways that Door County should become actively involved in protecting natural areas include purchase of development rights, purchase of scenic easements, and land banking efforts. Land banking involves purchasing property with the intention of reselling all or part of the property only after assurances are made that use of the property will protect its prized characteristics. Door County should also attempt to obtain land containing important natural areas through in rem proceedings involving tax delinquent lands. Finally, Door County should support or initiate legislative changes that would facilitate private or public natural area protection efforts.

Agricultural Preservation

**Chapter
Six**

CHAPTER 6

AGRICULTURAL PRESERVATION

Background On Farming Activities in Door County

Agriculture historically has been and remains the dominant land use activity in Door County. It is also a major contributor to the county's economy.

However, the dominance of agriculture as a land use activity has been steadily eroding with much farmland taken out of production. Table 6.1 illustrates this. From this table, we see that there were less than half as many farms in 1990 as there were 50 years ago. Simultaneously, despite the steady increase in the average size of the farms, total farm acreage decreased by 36 percent during the same period. The decrease in total farm acreage actually started as far back as 1920, according to Census of Agriculture figures.

TABLE 6.1

NUMBER OF FARMS AND FARM ACREAGE IN DOOR COUNTY

<u>Year</u>	<u>Number of Farms</u>	<u>Average Farm Size (Acres)</u>	<u>Total Farm Acreage</u>
1940	2253	107.8	242,800
1950	2085	114.5	238,700
1959	1847	122.3	226,000
1969	1278	139.2	177,900
1980	1160	150.4	174,500
1990	980	158.2	155,000

Sources: U.S. Dept. of Commerce, Bureau of the Census, Census of Agriculture, for years 1940, 1950, 1959, and 1969;

Wisconsin Agriculture Reporting Service, Wisconsin Agricultural Statistics, for years 1980 and 1990.

The decline in farm acreage in Door County is consistent with the nationwide trend of declining farm acreage. Factors specific to Door County, such as distance from farms to markets or supplies and poor soil conditions, help to further explain Door County's situation.

Despite the apparent declining state of agriculture in Door County, it remains an important part of the economy and still

comprises the largest segment of the county's land use with roughly 38% of the county's land in active agricultural production. In some towns the percentage of active agricultural land is even higher, such as 68% in the Town of Brussels. Figure 6.1 lists additional facts that show the importance and substantiveness of agriculture in Door County.

Figure 6.1

IMPORTANCE OF DOOR COUNTY AGRICULTURE

- Total cash receipts from farm marketings reached \$42.1 million in 1991.
- There are 274 dairy herds in the county (13,300 milk cows). Total county milk production is over 198 million pounds of milk.
- In 1992, Door County farmers produced 29,400 acres of alfalfa, 19,400 acres of corn, 13,400 acres of oats, 1,050 acres of barley, 2,700 acres of wheat, 1,200 acres of soybeans, 3,200 acres of canning peas, 100 acres of sweet corn and 2,200 acres of snap beans.
- There were 1,800 hogs, 350 sheep, and 1,200 laying hens on Door County farms in 1992.
- Using the 1990 figure of \$865 per acre for agricultural land sales, including buildings and improvements, the value of the 155,000 acres in farms in Door County would total about \$134 million.
- Potential gross dollars generated back into the local economy from farm cash receipts = \$41.8 million x 4 (assumes each dollar changes hands four times) = \$167 million.
- In 1992, Door County had 153 farms with orchards, either with apples or tart cherries.
- County fruit production in 1992 included over 8.8 million pounds of apples and 8.4 million pounds of tart cherries.

Sources: U.S. Census of Agriculture, 1987, U.S. Dept. of Commerce;
Wisconsin Agriculture Statistics, 1992, U.S. Dept. of Agriculture;
Door County Agriculture - An Overview, Jeff Kratz (Door County Agricultural Agent), May 1994.

Thus, the role that agriculture plays in Door County's economy and land use pattern is considerable. Furthermore, farming activity is significant in creating the open and rural landscape character of the county. Maintaining this character has been recognized by the county's residents as an important goal of this Development Plan.

Rationale for Maintaining the County's Agricultural Resources

As stated above, one of the goals of Door County is the maintenance of an open and rural landscape character. An important objective in reaching this goal is the preservation of agricultural areas. Clearly, maintaining farmland helps preserve the scenic landscapes and views that make Door County attractive. Aside from promoting rural character, the preservation of farmland has several other benefits. Some of these benefits are presented here.

As aforementioned, agriculture functions as a large part of the county's economic base. Despite recent declines, farming is still a major employer in the county. The 1990 U.S. Census reports that 918 individuals, 7.7 percent of the labor force, had an agricultural occupation. Additionally, one can assume that many others benefit from farming as a second job or as a hobby. One of the goals of this development plan is to achieve a diversified, well balanced economy. By maintaining and enhancing agricultural activity, the county is closer to achieving that goal.

Farming brings with it the need for goods and services and, hence, further enhances the county's economic base by promoting other businesses such as farm implement dealers and mechanics, grain storage facilities, fertilizer and seed stores, food processing plants, trucking services, and veterinarian services. A decline in farming not only affects the farmers themselves, but impacts the agricultural support services by threatening the critical mass needed to maintain these businesses. As support services vanish from the community, the remaining farmers will find it increasingly difficult and more expensive to farm their land. This multiplier effect of farm losses can drastically impact both the local and county economies.

Farmland preservation efforts can benefit the farming community by limiting land use conflicts between the farming activities and scattered suburban or rural residential development. Land use conflicts such as complaints over farm odors and noise, dust, chemical and pesticide spraying, increased traffic, and trespassing can be annoying and expensive for farmers, home owners and local government. By preserving prime agricultural land and protecting it from scattered development, these land use conflicts can be avoided as well as the associated costs of resolving them.

Finally, the farms and farm products in Door County relate

well to and support the tourist segment of the economy. Many Door County visitors are attracted to the cherry and apple blossoms in the spring and the ability to select fresh produce in the summer and fall. By preserving farmland this segment of the tourist industry is retained and the rich agricultural tradition of Door County is continued.

State Farmland Preservation Program

The Wisconsin Farmland Preservation program began in 1977. Its purpose is to encourage the preservation of the state's farmland. As stated in Chapter 91 of Wisconsin Statutes, the program involves the preparation of county farmland preservation plans and the grant of state income tax credits for the maintenance of farmlands in preservation areas delineated by the county farmland preservation plans. Income tax credits, used as a means to offset farmers' property taxes, are available if farmland is located in an Exclusive Agricultural zoning district, or if a farmer enters into an agreement not to use the land for nonfarm purposes.

Door County presently has a Farmland Preservation Plan (adopted in 1982) and has incorporated an Exclusive Agricultural Zoning District into its zoning ordinance (adopted in 1984). To date, only the Town of Clay Banks has utilized this Exclusive Agricultural zoning district. Clay Banks farmers are eligible for 100% of the tax credit allowed by the farmland preservation law. Eligible farmers elsewhere in Door County may still receive 70% of the potential tax credit by signing a preservation agreement. Through 1993, 83 of these farmland preservation agreements were recorded for Door County, involving a total of 10,724 acres.

Table 6.2 illustrates data for farmland preservation credits claimed in Door County. In 1992, there were 88 farmland preservation credits claimed for a total credit of \$71,296, or \$810 per claim. This total credit equates to an income tax offset of 2.3% of all the agricultural property taxes in the county. These figures are below the statewide averages of \$1,188 per credit and 8.4% for income tax offset as a percentage of agricultural property taxes. This is not too surprising given the fact that only farmers in the Town of Clay Banks have been eligible for 100% of the potential tax credits.

Door County's low figure for tax relief as a percent of agricultural property taxes is mainly the result of its low overall participation rate, estimated at 15.4% for 1992. As a comparison, neighboring Kewaunee County had a much higher participation rate (78.8%), and was able to offset 20% of its agricultural property taxes. In general, these figures indicate that, while there is an interest in agricultural preservation, the Wisconsin Farmland Preservation Program has not been widely used in Door County.

TABLE 6.2

WISCONSIN FARMLAND PRESERVATION CREDITS - 1992
(selected counties)

<u>County</u>	<u>Number of Claims</u>	<u>Total Credit</u>	<u>Average Credit</u>	<u>Total Agricultural Property Taxes in County</u>	<u>Relief as a % of Property Taxes</u>	<u>Est. FPC Participation Rate</u>
Door	88	\$71,296	\$810	\$3,059,808	2.3%	15.4%
Kewaunee	758	\$792,999	\$1,046	\$4,073,789	19.5%	78.8%
St. Total	25,004	\$29,710,717	\$1,188	\$353,882,211	8.4%	39.2%

Source: Wisconsin Dept. of Revenue.

Agricultural Preservation Recommendations

As cited earlier in this chapter, there are several reasons for Door County to promote and maintain its agricultural base. Strategies for preserving the county's agricultural land should attempt to achieve the desired open landscapes, coherent land use patterns, and economic diversity while recognizing the inherent geographical and economical problems facing Door County's farmers. In addition to the recommendations contained in Chapter 7, Economic Development, that relate to agriculture, the following recommendations are suggested:

1. The Door County Farmland Preservation Plan should be reviewed and updated. Such an update will allow for the county to gain additional knowledge of the changing agricultural situation. In addition, the designated preservation areas and transition areas should be remapped where necessary. An updated plan would be a useful tool in promoting proper zoning and development decisions. The Farmland Preservation Plan then should continue to be updated periodically to aid in the continuing search for innovative farmland preservation measures.
2. The adoption of Exclusive Agricultural Zoning should be encouraged for towns containing Primary Farmland Preservation areas. Exclusive Agricultural Zoning allows farm owners to receive the maximum tax credit benefits, while protecting farmland from intrusion by non-agricultural development.
3. In towns where Exclusive Agricultural Zoning is not acceptable or practical, other types of zoning policies that promote rural character and agricultural land should be implemented. A residential development option that allows for planned or clustered development should be included in zoning districts

for rural areas. This development type would allow for the residences to be sited on only certain areas of the farm parcel, while the remaining land can continue in agricultural use. Thus, the viability of the farm is maintained while the farm owner is still able to receive development benefit. The requiring of larger lot sizes in rural areas can also protect rural character and lead to fewer development conflicts with remaining farmland.

4. Door County should investigate the use of other means of preserving agricultural land, such as a Transferable Development Rights (TDR) program or a Purchase of Development Rights program. A TDR program would allow for farm owners to sell their development rights. A restrictive easement disallowing future development would be placed on the land from which development rights are sold and transferred. The purchaser of these development rights could then transfer them to develop other property. In this way, farmland is preserved, yet the farm owner can still enjoy economic benefits. A Purchase of Development Rights program is similar to a TDR program except that the purchased development rights are not transferred to other property. Rather, the development rights are purchased by units of government or conservation agencies to conserve the land. The money must be raised through taxes, donations, fees, or other means. Such a program was recently adopted for Michigan's Old Mission Peninsula, an area with many similarities to Door County. Of course, these and other innovative protection measures must be studied carefully since they tend to be fairly complicated and might not be appropriate in all areas.
5. The county should attempt to steer new development into existing nodes of development. Through the use of zoning and the judicious placement of infrastructure facilities, scattered development can be prevented from threatening the continued existence of agricultural land. By locating development in and around the existing built-up areas, development pressure may be reduced in the agricultural lands.
6. The county should encourage increased participation in the Wisconsin Farmland Preservation Program through education and publicity campaigns.
7. The county should support efforts to strengthen the Wisconsin Farmland Preservation Program in order to make it more enticing to farmers. There have been several legislative attempts to revise the program and to increase the tax relief benefits. The county should monitor these legislative attempts and voice support for those that would benefit Door County farmers.

Economic Development

Chapter Seven

CHAPTER 7

ECONOMIC DEVELOPMENT

Introduction

This chapter summarizes some of the major economic issues and presents some suggestions and strategies for promoting economic development. Economic development will not occur as a result of wishful thinking or rezoning. A successful economic development program requires analysis, coordination, and careful planning.

Ultimately, any economic development strategy for Door County should be guided by the notion of a single county economy with three major structural segments: industry, tourism, and agriculture. Viewing the economy otherwise ignores the interrelationships and linkages between the three major sectors of Door County's economy. In fact, the relationship between different sectors of the economy represents an opportunity that should be considered an asset to be employed on the county's behalf.

Any economic strategy developed for Door County must deal with the county's physical and economic constraints, while at the same time taking advantage of its many inherent assets. Some constraints simply cannot be directly affected by public policy. For example, Door County is situated on a peninsula in northern Wisconsin, located a long way from most major markets. Any attempt to attract new industry and jobs to the county must recognize and accommodate this reality. However, Door County's many assets--scenic living environment, cultural heritage, etc.--can be used to market the county in a positive fashion.

The Economy

The economy of Door County has historically been centered on three major sectors: manufacturing, tourism, and agriculture. Each of these three important sectors has its own specific traits, problems, and opportunities. A brief description of these sectors is presented here.

Manufacturing Sector - The county's manufacturing activity is concentrated in Sturgeon Bay. Historically, a very high proportion of the total work force has been concentrated in the shipbuilding industry. Other types of manufacturing have also been large employers, particularly manufacturing of electrical machinery. The dangers of over-concentration in any one sector leaves the overall economy vulnerable to drastic shifts in employment, structural changes in the national economy, and changing consumer preferences. Thus, diversification of Door County's industrial employment is

certainly a wise economic development strategy.

A large portion of Door County's total employment is in manufacturing. In the 1980s, manufacturing jobs averaged from 30 to 35 percent of the total wage and salary employment in Door County, while the national average was only 20 to 25 percent during the same period. Because of the larger proportion of Door County residents who are manufacturing employees, the national decline in manufacturing jobs is causing a greater than normal impact on Door County's economy.

Tourism Sector - Tourism activities are generally located in the northern portion of the county and along the shoreline throughout the county. Tourism is a growing industry in Door County. Tourists and seasonal residents, which number approximately 40,000 per day during the peak months, can be classified into four categories:

1. Seasonal homeowners -- persons who own home in the county that serve as their second residence.
2. Transient lodgers -- persons who occupy overnight accommodations at resorts, motels, cottages, etc.
3. Overnight campers -- persons staying at either public or private campgrounds for one night or more.
4. Day-trippers -- persons visiting the county during the day, but not staying overnight.

Data from the Door County Summer Guest Survey (1986), compiled by the Door County Chamber of Commerce, revealed that the tourists who contribute the most to the local economy, both from the standpoint of dollar inputs and multiplier potential, are the lodgers, followed by seasonal homeowners, then campers and day-trippers. Seasonal homeowners, while contributing less on a daily basis, contribute more to the basic businesses of the county -- construction, retail food outlets, hardware stores, and other business that also serve the permanent population. Their dollars, therefore, have more lasting impact on the local economy.

Promoting this industry's growth in ways that will have the greatest impact on the local economy is important. Development strategies will need to target those tourism activities that will most benefit the county. In addition, strategies must focus on lengthening the tourist season and maintaining or enhancing the characteristics of the county that are driving the tourism economy.

Agriculture Sector - As described in Chapter 6, Agricultural Preservation, agriculture is a stressed industry, both in Door County and across the nation. Agriculture suffers from weather and market fluctuations, price shifts, and cost increases for farm

supplies and equipment. Unlike other economic sectors, however, agricultural businesses are much slower to react to fluctuations and economic trends and, therefore, generally do not follow normal economic cycles.

Agriculture as a whole, including food processing, makes a larger contribution to the county's economy than does farming alone. But, reduced employment in the canning industry, and a smaller job multiplier due to a comparatively low wage structure, cause agriculture to have a comparatively lesser impact on the county's economy. Despite this, agriculture has some growth potential. Bolstering this sector is important for both a healthy economy and for the realization of the county land use plan.

The Changing Character of Door County's Economy

It can be said that Door County's economic experience in the 1980s was similar to that of the nation, but greatly accentuated. Like the nation, Door County experienced a decline in manufacturing employment which was not only the result of a cyclical recession, but also a permanent structural decline in this source of employment.

Again paralleling national patterns, Door County experienced a very rapid growth in employment in the services sector of its economy. In both the nation and the county, the growth in service employment has been enough to offset declines in manufacturing, resulting in continued growth in total nonagricultural private sector employment.

Until the mid 1980s, a very large part of the manufacturing employment in Door County was engaged in building ships for private sector fleets on the Great Lakes. As a result, it would not be unusual for the county to be more sensitive to cyclical downturns and generally have a more volatile employment pattern than the nation.

As dramatic as the loss of a major employer has been in Door County, the growth in the service and trade sectors has been close to spectacular, more than offsetting the direct and indirect employment losses resulting from the termination of the largest shipbuilding operation. The county has long had a comparative advantage in recreation and tourism, but its popularity in the 1980s was accelerated by the rapid growth in the income of the highest income groups. It has been well documented in numerous regional studies and surveys that the typical tourist in Door County is not only from higher income groups generally, but from even higher income groups than those which frequent other regional tourist areas. Many higher income families from Milwaukee and Chicago have long had second homes in Door County, but the 1970s and 1980s have been characterized by tremendous growth in the

number of second homes, condominiums, and recreational boating facilities at what is colloquially referred to as the "high end" of the market (i.e., most expensive).

The Transition from Manufacturing to Tourism

While there continues to be an attempt to retain and attract manufacturing employment, it is clear that Door County's economic base will increasingly be dominated by tourist and recreation related activities. Generally, having the loss of one part of a region's economic base displaced by another at a level which sustains an upward trend in employment would be considered a very healthy adjustment. There are problems associated with this shift in Door County, however, reflecting the difficult structural adjustment which this transition requires.

One example is that while manufacturing employees require both public and private support services, they are inclined to be year-round residents in the region where they are employed. The level of services required, therefore, tends to be dictated by the region's population and the level required does not vary significantly throughout the year. However, both tourists and seasonal second home occupants, as well as many of those who operate the businesses supported by these activities, also need services, but only for a relatively short period of the year. The period when the demand for services rises sharply is too short to justify an appropriate increase in the permanent staffs of private and public sector providers, but too long to be accommodated by temporary help. This would apply to medical services, security and traffic services, waste treatment and disposal services, and others.

Another problem with the shift in the economic base from manufacturing to tourism is associated with differences in the character of the labor force required. While the new economic base is generating jobs fast enough to replace those lost in manufacturing, those losing jobs in manufacturing are not likely to easily make the transition to the types of jobs available in tourism. This is referred to as a structural labor problem which often results in chronic unemployment among displaced manufacturing and mining employees in many parts of the world.

A major concern in this transition relates to the fact that typically employment in tourist related firms pays a lower wage and offers fewer hours per year than manufacturing based jobs, although this is not universally true. For example, wage rates in tourist oriented businesses in northern Door County are currently paying higher rates than those paid in Sturgeon Bay for the same skills.

The rather rapid structural change in the economic base of Door County is, perhaps, best demonstrated by the use of a

technique known as *shift-share analysis*. Shift-share analysis seeks to explain the change in a region's employment by dividing the change into three components. In this analysis, employment growth (or decline) is partly due to overall national growth, partly due to the relative growth (or decline) of employment in the region's industry groups, and partly due to the region gaining (or losing) national shares of employment in each industry group.

1. The National Growth Component: This measure reflects the extent to which an activity in any region has increased or decreased its employment based upon the national growth rate.
2. The Industry Mix Component: Some industry groups are growing more rapidly and some less rapidly than the overall national rate. This measure attempts to determine whether a region should be growing faster or slower than the national average based upon the growth rates of the industries which operate in the region.
3. The Competitive Share Component: This measure attempts to determine whether the region is gaining or losing shares of national markets in each activity.

In the case of Door County, the results of a shift-share analysis clearly document the fact that employers in the county are losing shares of national markets in manufacturing, but gaining shares at a dramatic rate in trade and service activities.

The results of the shift-share analysis are shown in Table 7.1. From 1980 to 1990, Door County increased its employment by 2020 workers. According to the shift-share analysis, 1,922 jobs were due to overall growth in the national economy (24.8%). However, 650 were lost because Door County had a mix of industries that grew slower than the national growth rate. Finally, the county gained 748 jobs by obtaining a larger share of the national markets.

When broken down by industry groups, Door County's structural change in employment is clearly evident. Door County lost 569 manufacturing jobs during the decade, 339 of which are explained by the county losing manufacturing jobs at a greater rate than national trends (competitive share component). This is generally the result of the sizable decline in shipbuilding employment being only partially offset by additional employment in other manufacturing firms.

In contrast, employment in retail trade; finance, insurance, and real estate; and services, grew in Door County at about twice the national rates for these sectors during the 1980s. The largest job growth was in the retail trade sector and services sector, each

with an increase of over 1,000 jobs. Many of these jobs are attributable to increases in Door County's competitive share of national markets, 572 for retail trade and 390 for services. Clearly the increase in competitive shares in these sectors is related to the growth in tourism, but for retail trade it also reflects the expansion of facilities in the City of Sturgeon Bay by major national retail chains responding to what they viewed as an underdeveloped retail sector with clear growth potential.

TABLE 7.1

SHIFT-SHARE ANALYSIS: DOOR COUNTY, WI 1980-1990

Industry	Employment							
	Door County				U.S.			
	1980	1990	Change (80-90)		1980	1990	Change (80-90)	
		%	No.	(000)	(000)	%	No.	(000)
Construction	403	509	26.3	106	4,346	5,205	19.8	859
Manufacturing	3,816	3,247	-14.9	-569	20,285	19,064	-6.0	-1,221
Trans. & Pub. Util.	144	211	46.5	67	5,146	5,838	13.4	692
Wholesale Trade	190	212	11.6	22	5,275	6,276	19.0	1,001
Retail Trade	1,642	2,743	67.1	1,101	15,035	19,875	32.2	4,840
Fin., Ins., Real Est.	210	344	63.8	134	5,160	6,833	32.4	1,673
Services	<u>1,334</u>	<u>2,493</u>	<u>86.9</u>	<u>1,159</u>	<u>17,890</u>	<u>28,209</u>	<u>57.7</u>	<u>10,319</u>
Total	7,739	9,759	26.1	2,020	73,137	91,300	24.8	18,163

Explanation of Employment Changes

Industry	National Growth	Industry Mix	Competitive Share
Construction	100	-20	26
Manufacturing	948	-1,177	-339
Trans. & Pub. Util.	36	-16	48
Wholesale Trade	47	-11	-14
Retail Trade	408	121	572
Fin., Ins., Real Est.	52	16	66
Services	331	438	390
Total	1,992	-650	748

Source: James M. Murray, "Responding to the Changing Character of Door County's Economy", 1992.

Again, this shift in the structure of Door County's economic base from manufacturing to trade and service activities must be viewed as reflecting a resilient economy, especially when the overall net gain in jobs resulting from gains in competitive shares

of national markets (748) is relatively very large (about 10% of 1980 employment levels). However, the rapidity of the change, combined with the fact that a significant portion of the tourism industry is occurring in a different location than where the manufacturing is located, has created structural labor force problems and intracounty regional disparities in the demand for infrastructure (e.g., waste treatment and disposal, employee housing, etc.) and services (e.g., medical care, security, etc.).

The Increasing Seasonal Fluctuations in Door County Employment

The other aspect of the change in the economic base from manufacturing to tourism is related to the increasingly seasonal nature of the resulting employment. This is documented on Figure 7.1 which records the actual total employment covered by unemployment compensation (all employers with one or more employees) for the period from 1980 through 1991.

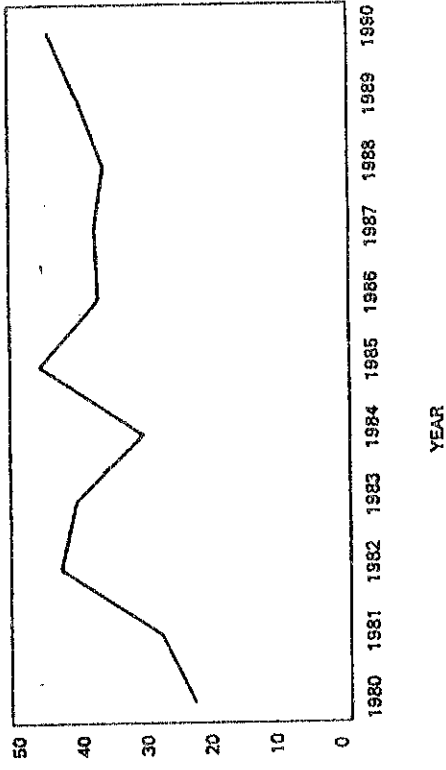
It is clear from Figure 7.1 that employment in Door County has been highly seasonal throughout the decade of the 1980s, as in the past. It is also observed that the degree of seasonality has increased during the decade. This is more clearly documented in Figure 7.2, which reflects the percentage difference in the high and low employment months for Door County in each year from 1980 to 1990. The trend in the variation between the high and low months was clearly upward in these years.

The observed increase in seasonality in employment is to be expected, given the shift in the economic base to tourism. For that reason, some might suggest that this is the price Door County must pay for its thriving tourist industry. In that context, it is useful to compare seasonality in Door County to that in other tourist oriented counties. Data from the 1980s for Door County was compared with two of Wisconsin's similarly tourist oriented areas, namely, Oneida County and Ashland/Bayfield Counties combined. As noted in Figure 7.3, Door County's employment pattern reflects considerably more seasonality than either of these tourist areas. With a variation of between 30 and 40 per cent in the level of employment from the lowest to the highest month of the year, Door County is almost certainly the most seasonally volatile county in Wisconsin, if not in the entire midwest. Whatever problems are associated with seasonality, Door County will have them to a greater extent, and the seasonality is getting greater as the tourism base grows relative to the other activities in Door County.

SEASONAL: DOOR CO. EMPLOYMENT

Figure 7.2

Spread between High and Low Month

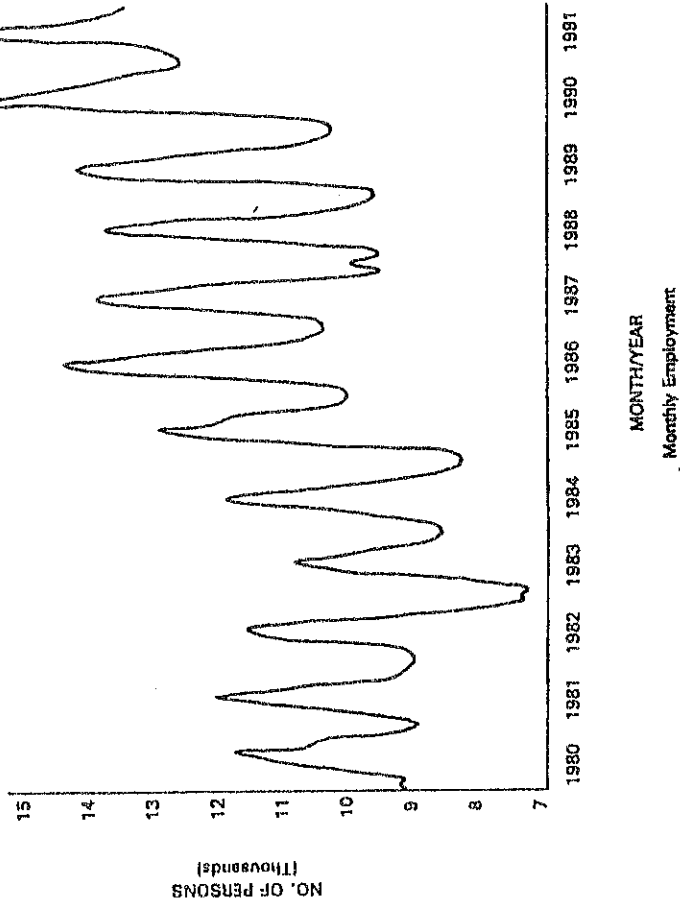


% by which High Month exceeds Low Month

DOOR COUNTY EMPLOYMENT

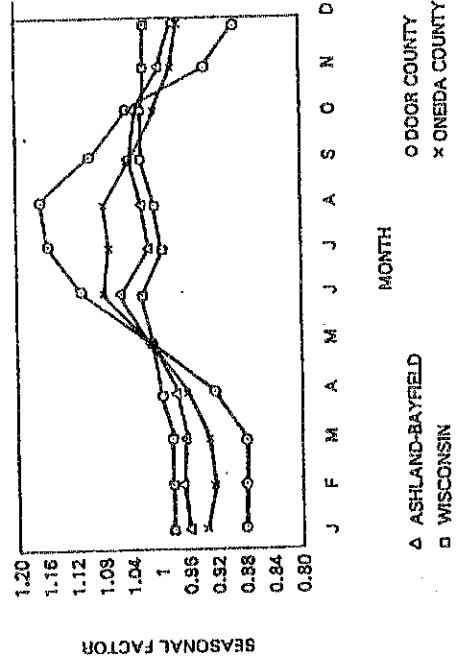
Figure 7.1

(Covered by Unemployment Compensation)



SEASONAL FACTOR WI. EMPLOYMENT

Figure 7.3



ASHLAND-BAYFIELD DOOR COUNTY
 WISCONSIN ONEIDA COUNTY

Other Problems Associated with the Increase in Tourist Based Activity

The situation facing Door County, then, is that this area is supporting a prosperous tourism industry which is growing rapidly, and this would seem to be the logical base for the county's economy into the future. However, both the growth of this industry, and the quality of life in the county will be adversely impacted if certain problems associated with this growth are not addressed.

Having a tourism industry which is heavily oriented to high income groups, combined with the inability to support public infrastructure developments because of the seasonal nature of the demand, has created a serious housing shortage for laborers to serve the tourism industry. Any facility built in the most popular tourism areas in northern Door County can command very high rates from tourists, but these rates are not affordable by persons employed to serve these tourists. Because of the county's shallow soil depths, it is difficult and expensive to install on-site sewer systems. Community systems are also very expensive because such systems are influenced by economies of scale, requiring a significant critical mass to support even the smallest systems. The population in some of the tourism communities grows to several thousand in the summer months, falling to 100 to 200 in the winter months. Some of the systems in these places have been forced to simply pump water through their treatment systems in the winter months to keep them from freezing. The user fees to amortize these systems can be very high.

The problem is that with the high cost of land and construction in the county, including sewer systems, any investor considering the construction of a lodging facility is likely to target tourists, rather than laborers, as potential tenants.

Also, the market process is likely to focus on tourism as Door County's most obvious economic advantage, and the county could become totally dominated by this activity. The problem here is one associated with the lack of diversification. Anything which adversely impacts the tourism industry, be it a recession, oil embargo, high gas prices, etc, can be devastating for a region which is singularly dependent on this industry. Most communities would prefer some diversification to avoid the problems of excessive vulnerability to the ups and downs of a single industry.

These observations would indicate that the major focus of any efforts to modify economic development within Door County should be on reducing the seasonality and increasing the diversification of the local economy. Based upon the above observations regarding the speed and direction of the economic trends in the county, it may be necessary to settle for preventing the county's economy from becoming any more seasonal or any less diversified.

Limitations on Economic Development Strategies

It is necessary to recognize that Door County, like most small coastal counties in the Great Lakes region, faces some barriers to the implementation of economic development programs geared toward increasing the diversification or decreasing the seasonality of its employment. These barriers include the fact that Door County has lost both its waterborne and rail transportation service, and is mostly served with only 2-lane state highways for motor carrier transport. No scheduled commercial air service is available, although the major airport is capable of accommodating private carriers. The lack of access to freight transport systems clearly limits the options available for diversification of the economy.

Another limitation on development, which impacts local market oriented activities, is the fact that coastal communities have trade areas which include large areas of water with no potential customers. Retail trade, wholesale trade, and service industry firms typically rely on their ability to attract customers from their surrounding trade area. In doing so, they compete for customers with other communities located in the parts of the region. Customers tend to be attracted to the nearest location which offers the product or service they seek at a competitive price. Thus, distance becomes a major factor in the customer's selection. Because of the water barrier, coastal communities might be forced to extend their trade areas to compensate. However, potential customers in the extended trade areas may have easier access to other businesses and would have no incentive to travel the extra distance to the coastal community.

This suggests that any coastal community will suffer a disadvantage relative to any inland community, all other things being equal, in the potential for local market oriented activities. This also suggests that in considering what is possible in any coastal community, it is not appropriate to use standards which combine inland and coastal communities. Coastal communities should be compared with other coastal communities, rather than with all communities, for this purpose.

Strategies for Economic Development

Strategies for addressing the changes in Door County's economy were formulated so as to achieve the goals and objectives for economic development in Door County. An important consideration is that the strategies for economic development should be tempered by the protection of natural resources. These natural resources are the county's most important economic asset and, hence, all future strategies should be careful to not adversely impact them. The strategies and recommendations generally relate to a few economic themes:

1. Diversifying the county's economy, particularly by attracting or developing new manufacturing businesses outside of shipbuilding.
2. Creating linkages that economically tie different sectors of the economy together so that they reinforce each other.
3. Extending the tourist season so that it provides a less seasonal economic base.
4. Promoting the type of tourism which does not threaten the natural environment.
5. Supporting economic activities that reduce the county's dependence on out-of-county processors, manufacturers, and marketing agents.
6. Encouraging the development of year-round employment opportunities.

Given these objectives, and considering the county's constraints for development, a number of different economic development strategies could be pursued. Many alternatives are described in this section that are illustrative of the many options. In most cases, a number of variations on each theme are possible. These alternatives are not mutually exclusive and could be employed as part of a larger economic development strategy.

Targeting Underdeveloped Local Market Oriented Activities - A comparative community analysis, focusing on firms which depend upon local markets for their support, was conducted. The objective was to determine whether or not the market has succeeded in encouraging the full development of all of these types of enterprises which the county could support. This procedure uses the experience of similar communities to establish standards for an appropriate level of employment in any local market oriented activity. Thus, if 3 of 4 similar communities are able to support 10 employees for every 100 persons in a particular type of business, but the fourth community is only supporting 5 employees for every 100 persons in that activity, the possibility exists that the fourth community could expand its employment in that activity.

Separate comparative community studies were conducted for the City of Sturgeon Bay, northern Door County, and the total county. It is important to note that in selecting the communities for these studies, only comparable coastal communities in the Great Lakes were used because of the unique nature of the trade areas for such places, as discussed above. Two Wisconsin small cities were used as the base for the Sturgeon Bay comparisons, and one Wisconsin and one Michigan county were used for the northern Door comparisons.

Two Wisconsin and two Michigan counties were used for the total county comparisons. The small number of comparison communities and regions used for these analyses relates to the attempt to use only those that met a rather significant number of criteria for comparability. For example, the two counties used as a basis for comparison with northern Door are both peninsular tourist counties. There are, obviously, very few such counties in the Great Lakes region.

A second technique, threshold analysis, was used to supplement the comparative community analysis in identifying gaps in local market oriented activities within Door County. Like the comparative community analysis, this procedure focuses on the relationship between employment and population, suggesting that there is a certain "threshold" of population required to support one enterprise in a certain activity, and another population threshold to support two, etc. In this analysis, thirty-one Great Lakes coastal counties with populations of less than 50,000, which were not suburban or satellite areas to major metropolitan areas, were used as the basis for establishing thresholds. Once again, the goal was to determine whether or not there is evidence of situations in which the number of businesses in any activity in Door County are below the number predicted, thus suggesting the opportunity for an added enterprise.

The potential local market oriented targets which emerged from these comparisons are:

1. Special Trades Contractors
(Elec. & Plmby. Htg. & A.C.)
- * 2. Trucking and Courier Services
3. Grocery Wholesalers
4. Men/Boys' Clothing
- * 5. Home Furnishing Stores
6. Nonstore Retailing

* Identified in both Analyses

Hence, these businesses should be especially considered when attempting to attract new business development to Door County.

Targeting Nonlocal Market Oriented Enterprises - A second comparative community analysis, for the purpose of identifying non-local market oriented activities which can operate successfully in a small coastal county like Door County, was completed. The same 31 counties used in the threshold analysis were used for this purpose. The concept here is that industrial firms which produce for large regional, national, or international markets, are less likely to locate in small coastal communities which lack the critical raw materials or services they require. Those industrial firms which are currently operating in such counties are apparently

able to function at these locations in spite of these apparent disadvantages. The assumption is that if an industrial activity is occurring in a county which is similar to Door County, it might very well be feasible to have such firms in this county.

As an added consideration, an emphasis was placed upon identifying those activities which were not currently operating in Door County and which would either improve or not aggravate the seasonality of Door County's labor demand. This was in response to the stated desire to diversify the local economy, which presumes that attempts should be made to encourage activities not already present.

Two non-local market oriented activities that the comparative community analysis identified as possibilities for Door County are the production of miscellaneous plastic products, and instruments and related products. Attracting these industries to Door County would help diversify the economy and add year-round employment opportunities. Also, these industries would improve the available labor force for the tourism industry by attracting the second wage earners in the families of the employees of these light industries.

Increased Processing of Local Agricultural Products - Processors and distributors of agricultural products add their costs to the sale price of a product. Economists refer to these added costs and profits as the "value added." Food products that reach the store shelf have value added by the processor and primary marketer. For many products, value added can amount to 50 percent or more of the price of the product. Thus, increasing the local processing and marketing of local agricultural products is an important means of increasing jobs and farm income in the county. Unfortunately, the vast majority of the county's agricultural produce is shipped out-of-county for processing. The potential contribution of added value to the local economy is lost.

Clearly, capturing as much of the value added to a product as possible is in the county's interest. Thus, the county and its organizations should promote enterprises that market products with a Door County label, such as the Cherry De-Lites operation. Similarly, local farmers should try to get contracts to provide as many of the raw materials for county products as possible. As more local products are processed locally, more jobs and added value of these products will be captured by Door County residents.

Marketing Agricultural Products - Just as in-county processing captures added value, so does in-county distribution of goods. A strong link between the tourist economy and the agricultural economy would help recapture the value added of Door County products. Since most agricultural produce ripens during the tourist season, there should be aggressive marketing of local

products. This means more than farm stands along Highways 42 and 57. For example, developing contracts with local restaurants or markets could reduce the producer's dependence on out-of-county processors. This strategy will provide jobs and a higher profit margin for the farmer. An agricultural cooperative could serve as supplier to Door County restaurants so that profits made from the essential distribution function would also be returned to the farm community.

Promoting Niche Agriculture - Many Door County crops and agricultural products compete in a mass market; dairy products, cherries and apples, and row crops are all produced in other areas besides Door County. Niche agriculture provides products for a more specific market. Wisconsin produces masses of cheese, for example. If a specialty cheese could be developed that is marketed to a select group of local restaurants and the tourist trade, then a much better income could be derived. Another example of this would be the production of wool that could be sold along with other weaving products by Sievers Industries on Washington Island or by similar operations.

Promotion of Mail-Order Retail Enterprises - The comparative community analysis uncovered nonstore retail as potential economic activity to be targeted by Door County. Door County catalog sales could be a means of offsetting the decline of direct retail sales once the tourist season ends. A Door County catalog would represent a way in which local businesses can capitalize on the name recognition of Door County. People who shop in Door County in the summer might be attracted to order Christmas gifts and other products throughout the year by catalog. Such a catalog might include fabrics and garments produced from local wool, jams, jellies and preserves, local cheeses, and works by local artists and craftsmen.

The general prospects for the success of a venture of this type are good for several reasons:

1. Mail order sales are growing at twice the rate of over-the-counter retail sales.
2. The return on investment in catalog sales is better than for general retailing.
3. Crafts and foodstuffs, both likely to be included in a Door County catalog, are proven areas of success for catalog sales.

There are constraints as well. A successful operation may have start-up capital costs of \$2 million or more. Setting up a catalog sales operation is not a simple task; most take from 4 to

5 years to generate a positive cash flow. Reducing the initial outlay may be possible by leasing or buying space in an established catalog, such as Figi's in Marshfield or Miles Kimball out of Oshkosh.

Another major element essential to a successful catalog is a management staff that plans the catalog properly, manages the system efficiently, and develops a reliable supplier network. A responsive staff and good customer service are nearly as important as good products.

Industrial/Business Recruitment - Additional nontourist-related businesses, though difficult to attract, would help to balance the county's economy. Door County's geographic isolation and lack of major transportation facilities are at least partially offset by natural and cultural amenities in the county. Thus, as a technique in support of business recruitment (particularly the targeted activities), the procedure initiated by the Door County Economic Development Corporation of contacting business owners and officers who are also second home owners or visitors to Door County is recommended. These people should continue to be encouraged to consider establishing a branch facility, supplier entity, or any other production facility in Door County. The presumed attraction would be that they could be involved in a business activity at a location which would give them rapid access to their desired leisure-time pursuits.

Expansion/Retention of Existing Businesses - An important, yet often overlooked, economic development strategy is the retention and expansion of the county's existing business enterprises. Often it proves far easier to assist expansion of a community's already established businesses than to either lure industries from elsewhere or to start brand-new businesses. In addition, it is clear that, without retaining the county's existing jobs, any new jobs created by new businesses will not result in a net employment gain, but rather only a shift in employment.

A major element under this strategy is helping the county's industries adjust to cutbacks in defense contracts for shipbuilding. Recently, the county was awarded a \$2 million federal economic assistance grant to aid this transition. This grant will allow the Door County Economic Development Corporation to implement its defense conversion plan.

Education Facilities - The University of Wisconsin, working with the Door County Chamber of Commerce, has committed to establishing a program to allow students from the Hotel and Restaurant Management program at UW-Stout to pursue their studies relating to the hospitality industry in Door County. This program would allow

up to 60 students to gain experience through internships with Door County businesses as well as receive additional instruction. The plan also calls for student housing and classrooms with sophisticated electronic communication links to the main UW-Stout campus.

This partnership between Door County and University of Wisconsin will be of great benefit by alleviating the periodic labor shortage for tourist-related industries and by providing another vehicle for year-round activities. The county should continue to support and implement such a program. In addition, the educational facilities could possibly be expanded by working with UW-Green Bay and the Northeast Wisconsin Technical College to also establish Door County programs, such as in the fields of environmental studies or the arts. The resulting mini-campus would be a year-round asset to Door County.

Extended Tourist Season - Extending the tourist season is one way to provide employees with a longer period of employment and the county with a longer period of higher economic activity. Although there will always be a decline in tourism due to the start of school in the fall, marketing can be gradually directed toward retirees as the overall population ages.

Mailings or advertisements that target the spring and fall as a time to visit Door County would help extend the tourist seasons. A second strategy is the use of special events. The Sister Bay Fall Festival is a good example. Fall festivals could be followed by Thanksgiving weekend shopping events and a holiday lights festival. This type of approach requires a commitment by all local businesses to ensure that shops and restaurants are open and well-staffed.

Visual Image - All sectors of the resort and industrial development markets are sensitive to visual amenities. Studies indicate that the selection of a desirable residential location for management is an important factor in the selection of plant locations. While Door County has great natural beauty, land uses need to be attractively designed in order to capture both tourists and those seeking to locate homes or businesses.

Particular attention to visual image is needed in three areas: sign and junk control, areas with quality views, and residential zones. Billboards, junked vehicles, or simply tacky-looking businesses are big negatives in any area. Maintaining visual quality at the entrances of communities is especially important. Visual enhancement along Highways 42/57 in Southern Door County should also be a priority since the visual image along these routes sets the tone for visitors viewing the rest of Door County.

Waterfront Revitalization - In recent years, the City of Sturgeon Bay has approved and started implementation of a Waterfront Redevelopment Plan. This Plan covers the city's downtown waterfront areas and involves the development of new recreational and commercial uses. The primary targets are a hotel and conference center, waterfront restaurant, marina facilities, and additional specialty retail. The Plan also calls for waterfront walkways and other open spaces and, in addition, a location for a new maritime museum has been identified. The city and the county should continue to support these redevelopment activities. Spinoff effects from the waterfront areas would be beneficial to the city and county by attracting additional tourists into the area.

Implementation

Unlike some other issues, economic development is not a matter of selecting one alternative over another. Therefore, one of the first tasks for creating an economic development strategy should be to prioritize the various alternatives. An overall program which incorporates as many of the above strategies as possible should be developed.

Economic development efforts in Door County can be carried out by several cooperating public, quasi-public, and private organizations. Several agencies geared towards the development and retention of business activity already operate within the county. The Door County Economic Development Corporation, the Door County Chamber of Commerce, Bay-Lake Regional Planning Commission, as well as the county and its various municipalities, are some of the major players. These and other groups will all play a role in fostering economic development. Because each organization may have its own area of concentration or expertise, coordination will be a vital component in the ultimate success of the overall program.

State and federal programs and grants are also available to assist communities in economic development. The previously mentioned federal economic assistance grant that was awarded to the county is a prime example. Another good example is the Wisconsin Main Street Program, administered by the Department of Development. This program focuses on revitalizing traditional downtowns through better organization, design improvements, historic preservation, economic restructuring, and increased promotion. The City of Sturgeon Bay, after successfully completing the application process and raising funds to administer the program, has been accepted into the program, thus making the city eligible for three years of free technical assistance. Though the program's main focus is geared toward traditional downtowns, many of its elements of economic revitalization could be applied county-wide.

Establishing citizen advisory committees is another means of effecting the various strategies of this Plan. These committees

should be charged with becoming familiar with the nature of the problem and/or industry they are to be addressing, and to proceed to make the necessary efforts to carry out the economic development strategies.

It is important that the county view itself as a single economic community. Because of the linkages between the various economic sectors, efforts to improve the economic base of the county must consider all economic sectors and all geographic areas of Door County. All too often, the perceived division of the county into southern, northern, and Sturgeon Bay regions, has served to hide the economic bonds that need reinforcement. The county must work decisively to eliminate this form of thinking.

The county must also take great care in monitoring its performance and progress. Monitoring the creation of new manufacturing jobs, new business start-ups, employment reports, and unemployment statistics (local, state, and national) will be crucial. Another important monitoring function is tracking the economic development efforts made each year. Since all of the listed alternatives are possible, there should be a report to the county each year on various efforts and what progress was made. This would permit the county to assess the level of effort going into each economic development strategy and its level of success. Realistic expectations must be set since Door County is not part of a major growth area where measures of success can be more easily evaluated.

Transportation

Chapter Eight

CHAPTER 8

TRANSPORTATION

Introduction

Door County's present and future transportation system will certainly exert influence over development in the county. In addition to the obvious issue of the movement of people and goods, the county's transportation network will affect future land use, economic development, and preservation of natural resources.

Transportation in Door County is heavily dependent upon its network of roads and highways. With no rail service, and with only three small public airports serving the county, nearly all commerce and travel necessarily utilizes the road system. Thus, this chapter focuses primarily on road transportation by examining the characteristics of the road system and discussing the most pressing transportation problem facing the county, that of traffic congestion. The chapter also briefly examines air and ferry transportation.

General Characteristics of the Road System

Door County's public road system is dominated by state Highways 42 and 57. Highway 42 runs the entire length of the peninsula and Highway 57 nearly runs the entire length. Thus, together they form the backbone of the county's road system. A network of county roads is primarily used to either connect various points along the two state highways or connect regions of the county to the state highways. Town roads are primarily used to provide access to individual parcels of land.

The overall road system is evenly distributed throughout the county so that almost no area that can practically be served with a road is lacking a road. Generally, the roads tend to follow section lines or quarter section lines of the Public Land Survey System, thus forming a grid pattern. The major exceptions to this pattern are the state highways and those roads that follow a shoreline.

The county's basic road pattern was established by at least 1899. A comparison of a county road map of today with the Illustrated Atlas of Door County, 1899 (Randall and Williams, Oshkosh, WI. publisher. On file at Door County Real Property Listing Office) shows remarkably little difference in placement or extent of the roads. The major observable differences are as follows:

- Some roads that ended at the edge of swamps in 1899 were subsequently pushed through to connect with roads on the opposite side of the swamps.
- Some of the sharp curves in Highway 57 in southern Door County have been straightened or made into gentle curves.
- A highway bypass of the City of Sturgeon Bay, which includes a second bridge over the waters of Sturgeon Bay, was added.

There are approximately 1,276 miles of public roads in Door County. The length of the road system, broken down by jurisdiction, is shown in Table 8.1 below.

TABLE 8.1
MILES OF ROAD BY JURISDICTION

	<u>Length(in miles)</u>	<u>% of Total</u>
State Highways	101.74	8.0
County Highways	270.61	21.2
Town Roads	757.96	59.4
City Streets	73.88	5.8
Village Streets	40.60	3.2
State Park Roads	<u>31.23</u>	<u>2.4</u>
TOTAL	1,276.02	100.0

Source: City/Village/Town/County Certified Mileage List, Jan. 1, 1990.

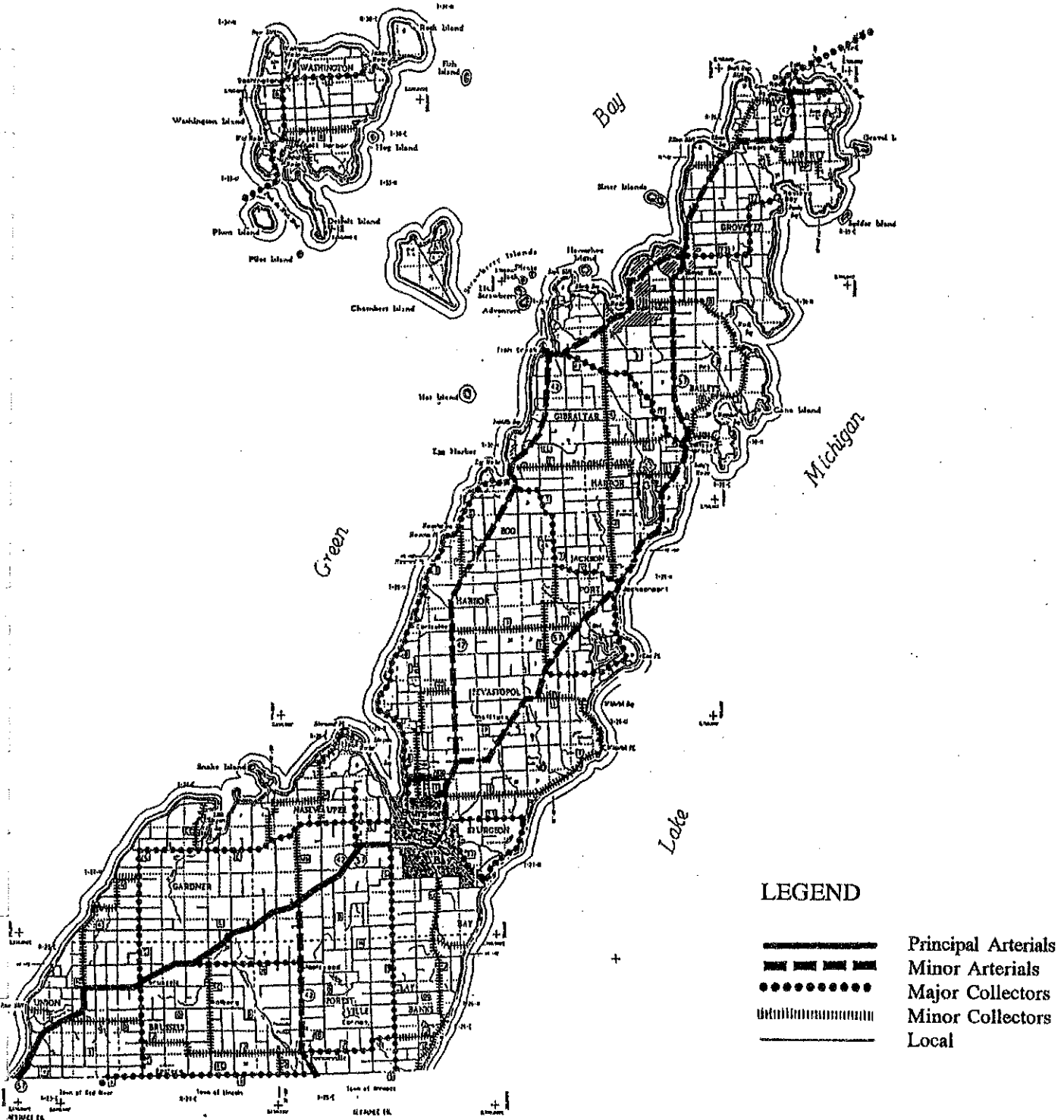
The road network in Door County is also classified by the Wisconsin Department of Transportation (DOT) according to function. The functional classification scheme for Door County is depicted in Figure 8.1. In general the state highways comprise the principal and minor arterials, the county roads are major and minor collector roads, and the town roads are local roads. There are a few deviations from this pattern, however, as seen in Figure 8.1.

Traffic Volumes

Traffic volumes were examined using Wisconsin DOT Annual Average Daily Traffic (AADT) counts. From these traffic count figures it is clear that over the past decades the county's road system has had to accommodate an ever increasing volume of traffic. The bulk of this traffic increase has occurred on the state highways and on County Highway S. Table 8.2 illustrates the increase on these particular highways.

FIGURE 8.1

1995 RURAL FUNCTIONAL SYSTEM
DOOR COUNTY



These figures show that traffic volumes on Highway 42 and 57 have increased dramatically from 1971 to 1989 except for the stretch of Highway 42 in the southern part of the county. However, the rapid traffic increase on County Highway S, which is often used as an alternative to Highway 42, helps to explain this anomaly.

TABLE 8.2

ANNUAL AVERAGE DAILY TRAFFIC COUNTS AT SELECTED LOCATIONS

YEAR	LOCATION						
	1	2	3	4	5	6	7
1971	3,090	1,600	N.A.	3,580	1,320	1,240	1,070
1974	2,700	1,860	4,400	5,760	2,330	1,970	1,290
1977	4,360	1,910	5,700	5,950	3,110	1,970	2,350
1980	3,010	1,550	5,650	5,830	3,450	1,680	1,590
1983	4,870	1,930	8,460	7,110	2,350	1,480	2,220
1986	4,380	1,430	7,880	8,080	4,590	2,640	2,900
1989	6,300	1,920	8,890	9,760	5,240	2,550	2,460
1992	4,860	1,720	7,110	N.A.	N.A.	N.A.	2,780

- Location 1 = Highway 57 just east of Namur
- Location 2 = Highway 42 just south of Maplewood
- Location 3 = Highway 42/57 just east of County Highway O
- Location 4 = Highway 42/57 just north of the City of Sturgeon Bay
- Location 5 = Highway 42 just north of County Highway EE
- Location 6 = Highway 57 just north of Baileys Harbor
- Location 7 = County Highway S just north of County Highway H

Source: Wisconsin Department of Transportation. Periodic annual average daily traffic count data.

The information in Table 8.2 is designed to give an understanding of the total volume of traffic passing over a stretch of road over a one year period. Since AADT figures spread traffic volume over the entire year, seasonal variations should not be observable in AADT information. In Door County, this seasonal variation is considerable. According to Wisconsin DOT data from permanent traffic count stations located on Highway 57 at Dyckesville and Highway 42 at Algoma, there is nearly a three-fold increase in traffic volume from January to July. During the peak period, the DOT's raw traffic count data shows that daily traffic actually approaches or exceeds 10,000 vehicles on some stretches of

state highway, specifically near the communities of Fish Creek, Ephraim, Sister Bay, and Sturgeon Bay. Given that one of the Wisconsin Department of Transportation's design criteria for upgrading a two-lane highway to four lanes is an AADT threshold of 7,000, it is clear that this peak traffic has resulted in seasonal congestion on some two-lane portions of Highway 42, particularly through the communities of Fish Creek, Ephraim, and Sister Bay.

According to Wisconsin DOT data, the network of county highways has also experienced increases in AADT. In addition to County Highway S, rapid traffic volume increases have occurred on County Highways C, F, Q, A, and W. However, the volume of traffic on county roads is still slight when compared to the state highways, and only County Highway S and short segments of C, B, and W exceeded even 2,000 AADT in 1989. Hence, while traffic has increased rapidly in Door County's road network, the large volume and its associated congestion has become a major problem only on certain stretches of State Highway 42 for limited periods of the year.

Highway Improvement Plans

In order to adequately assess possible impacts on Door County's transportation system, anticipated highway projects must be examined. Such an examination might also reveal attempts, if any, to alleviate or solve current traffic problems. The Wisconsin DOT's 1992 to 1997 Six Year Highway Improvement Program lists several highway improvement projects for Door County. These projects are generally resurfacing or reconditioning improvements and are not capacity improvement projects or creation of new travel corridors.

In addition to these individual highway projects, however, the State of Wisconsin's Corridors 2020 Plan calls for Highway 57 to be upgraded to a four-lane highway between Sturgeon Bay and Green Bay. A four-lane segment from Sturgeon Bay to the junction with Highway 42 in Southern Door was completed in 1992. Planning for the segment from Green Bay to the junction with Highway 42 in Southern Door is underway. It is expected that the four-lane highway from Green Bay to Sturgeon Bay will be completed shortly after the turn of the century. This four-lane highway, once fully complete, is expected to increase traffic volume in Door County somewhat.

The Corridors 2020 Plan also calls for construction of a multi-lane east/west highway corridor connecting Green Bay to the Minneapolis/St. Paul metropolitan region (Twin Cities). The resulting ease of travel should stimulate additional visitorship from the Twin Cities and western Wisconsin, likely impacting traffic volume throughout Door County. In fact, it is expected that the Twin Cities to Green Bay multi-lane corridor will likely produce a greater impact on Door County traffic than the Sturgeon

Bay to Green Bay multi-lane corridor.

Hence, there are seemingly no highway plans that would produce major changes or additions to the existing highway pattern. However, the proposed multi-lane highway corridors in the Corridors 2020 Plan, while not altering the basic highway pattern, will increase traffic capacity and will likely cause increased traffic volumes throughout the county.

Congestion

The observable problem situation which is not yet being addressed by current highway improvement plans is the periodic congestion that occurs most frequently on Highway 42 between Egg Harbor and Sister Bay. The Wisconsin DOT's 1989 AADT figures for various points along this stretch of highway already approach or exceed the DOT's 7,000 AADT threshold for consideration of a four-lane highway. Thus, it is clear that the congestion is a genuine concern. The congestion takes the form of very slow, stop-and-go traffic movement within the communities of Egg Harbor, Fish Creek, Ephraim, and Sister Bay, and slow traffic movement between those four communities. It is normally limited to the peak tourist months of July and August, although congestion can also be experienced in June and September. If traffic volumes continue to rise, as they are expected to, the congestion problem will inevitably increase.

The sources of traffic in the congested area are both local and through traffic. A considerable amount of traffic flows between the aforementioned communities. Examination of traffic count data shows that more traffic leaves one of the communities to go to one of the other three communities than leaves to go elsewhere. One envisions a rather continuous flow of traffic by shoppers, business people, delivery and service vehicles, recreationalists, and others traveling back and forth between the four communities. The second major traffic contributor is through traffic: motorists who are simply on their way through the northern part of the county and are utilizing Highway 42 to do so. In doing so, they pass through the four communities.

The two types of traffic reflect the two inherently conflicting functions that Highway 42 serves - traffic movement and access to land. Highway 42 serves as an arterial road accommodating mass movement of through traffic. But, Highway 42 also acts as a main access road for the four communities, providing access to the commercial activities and residences of the area in a similar fashion as a city street or local road. Thus, the trip purposes of the two types of users are different, with each group being a nuisance to the other.

One solution to the congestion problem would be to separate

the through traffic from the local traffic. Bypass routes around each of the communities would allow through traffic to avoid the built-up areas. Bypasses around the Villages of Egg Harbor and Sister Bay appear to be physically possible, but the presence of extreme topography near Fish Creek and a large swamp near Ephraim makes construction of bypasses around those communities seem implausible.

A second bypass option would be to construct a continuous route that would bypass all four communities. A new highway corridor would be designated, utilizing existing right-of-way where possible, which then would carry high-speed through traffic. Access into each of the four communities would be provided by County Highways E, F, A, and Q (see Figure 8.2).

A third bypass option is the upgrading of County Highway A from Jacksonport to Ephraim. As seen in Figure 8.2, this road runs due north and south and offers good connections to Baileys Harbor, Egg Harbor, and Fish Creek via County Highways E, EE, and F. The roadway would most likely have to be extended south from County V to Highway 57 to allow through traffic to bypass the community of Jacksonport. Thus, through traffic would take Highway 57 to County A to Highway 42 in Ephraim.

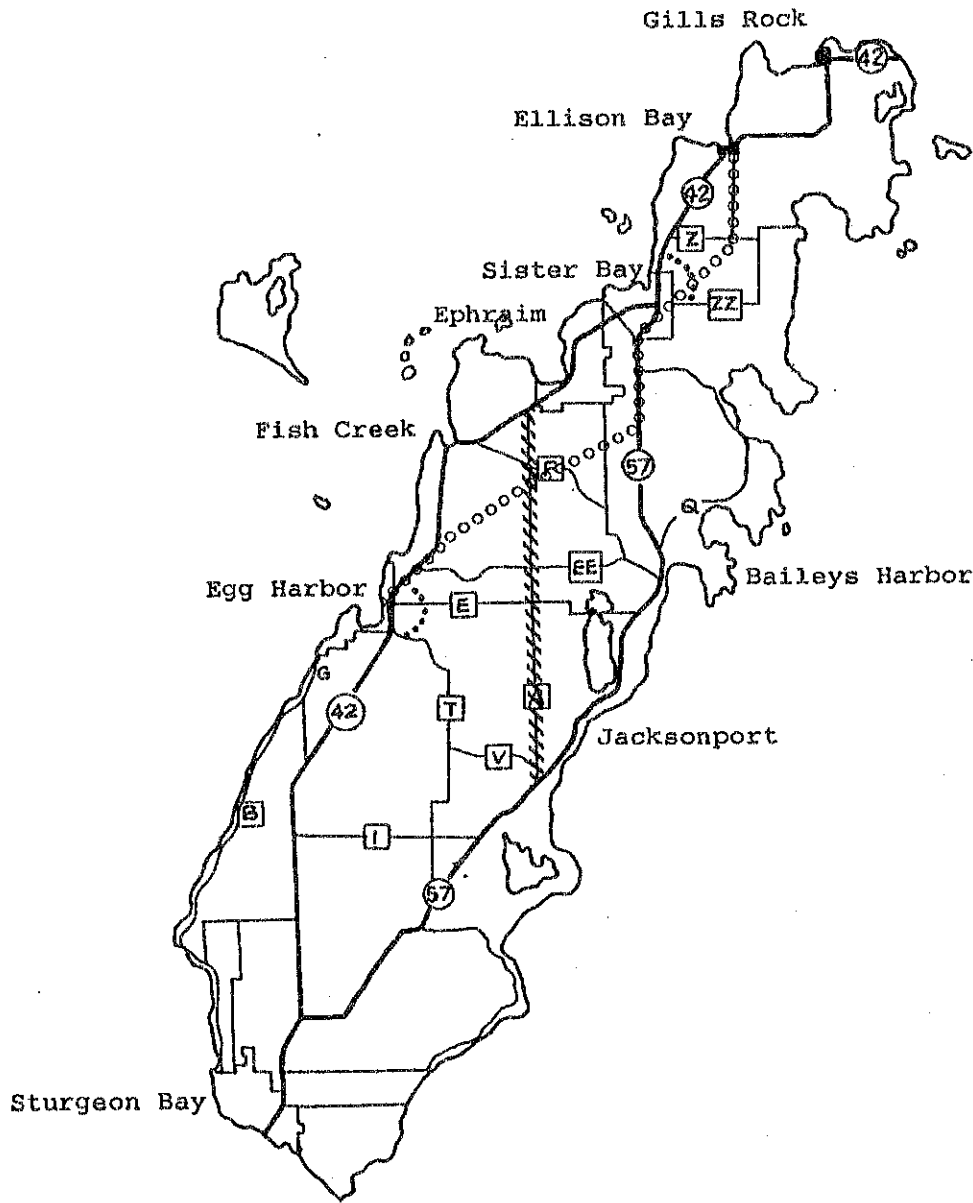
As an alternative to bypasses, the upgrading of the current two-lane Highway 42 into a four-lane highway is a possible solution. This would allow for easier passing and for higher volumes of traffic to be accommodated. As stated earlier, the Wisconsin DOT will typically consider such an upgrade when the AADT count reaches 7,000. Along most of the stretch from Egg Harbor to Sister Bay, traffic volume is approaching or has reached 7,000 AADT and the peak traffic periods easily exceed this figure. Currently there are no plans by the Wisconsin DOT for capacity improvements on Highway 42. If traffic counts continue to rise, however, the state may be compelled to upgrade the highway. Such an upgrade could initially involve construction of turn lanes, intersection improvements, and safety widenings. If traffic congestion persists, however, construction of a complete four-lane highway might ultimately be considered.

Scenic roads

Another of the objectives of the transportation goals is the utilization of the road system to improve scenic viewing opportunities. This has been an objective of the county for a long time. The 1964 Comprehensive Plan for Door County contained recommendations pertaining to the acquisition of scenic easements. It also suggested that certain new roads and/or trails be developed because they would open up new scenic viewing opportunities. The suggested roads and/or trails were to be placed along the southeast shoreline of the county and along the top of the escarpment which

FIGURE 8.2

ROAD IMPROVEMENTS FOR RELIEVING TRAFFIC CONGESTION



- | | | |
|---------|---------------|--|
| | ALTERNATIVE A | INDIVIDUAL BYPASSES AT EGG HARBOR AND SISTER BAY |
| ----- | ALTERNATIVE B | CONTINUOUS BYPASS ROUTE |
| /////// | ALTERNATIVE C | COUNTY HIGHWAY A BYPASS |
| ————— | ALTERNATIVE D | WIDEN EXISTING STATE TRUNK HIGHWAY 42 |

runs up the west side of the peninsula north of Sturgeon Bay. Because of subsequent development along these areas, the opportunity for such scenic roads is probably lost. However, there exist several other means of enhancing scenic views through the transportation system.

One option that has been utilized in Door County is the Wisconsin Rustic Roads program administered under Section Trans-RR1 of the Wisconsin Administrative Code. Under this program, roads with outstanding natural or rustic features can be officially designated as rustic roads. Maintenance activities, including mowing of vegetation, would then be conducted in such a way as to preserve the rustic qualities of the route.

Rustic road designation qualifications are summarized as follows:

- The road should have outstanding natural features along its borders, such as rugged natural terrain, native vegetation and native wildlife, or include open areas with rustic or agricultural vistas which singly, or in combination, uniquely set this road apart from other roads.
- The road should be a low-volume local access road, usable year-round, which serves the adjacent property owners and those wishing to travel by auto, bicycle, or hiking for purposes of recreational enjoyment of its rustic features.
- The road should not be scheduled nor anticipated for major improvements which would change its rustic characteristics.
- The road should have, preferably, a minimum length of two miles and, where feasible, should provide a completed closure or loop, or connect to major highways at both ends of the route.
- The road should, preferably, have no high density development along it and the existing development should be compatible with the surroundings and not detract from the rustic, natural, unspoiled character and visual impact of the road area.
- The land adjacent to the rustic road preferably is zoned compatible with maintenance or preservation of its rustic character and low density development.

Door County currently has 3 segments of rustic roads officially designated by the State of Wisconsin. These include Glidden Drive (CTH T) along Lake Michigan in the Town of Sevastopol, Ridges Road along the north coast of Baileys Harbor, and Cana Island Road, also in the Town of Baileys Harbor. All three road segments offer exceptional scenic values and increase the recreational enjoyment of the county's transportation system.

Another possible means of improving the scenic viewing opportunities from the road system is the Scenic Byways program. This is a federal program promulgated by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. Under this program, highways designated as Scenic Byways by the state would be eligible for funding for the purposes of enhancing scenic views, billboard removal, and similar measures. In 1992 the Door County Board of Supervisors passed a resolution supporting the designation of Highways 42 and 57 as Scenic Byways by the State of Wisconsin. If such a designation is approved, it could greatly improve scenic qualities of these main roads.

One more way in which scenic viewing opportunities from the road system can be enhanced is through the maintenance of public water access roads. There are numerous public right-of-ways which lead to and end at Lake Michigan, Green Bay, or the inland lakes. They often provide for spectacular views of the water. Some of these, however, are poorly marked or not maintained.

Air Transportation

Air transportation in Door County is limited. There are three small airports, but no scheduled passenger service. The Washington Island and Ephraim-Gibraltar airports are currently geared toward recreational aircraft. The Door County Cherryland Airport, in addition to recreational usage, handles some limited passenger charter service.

The land use plan recognizes the need to protect the functioning of these airports because of their significance to recreation and existing and potential importance for commerce. Maintaining compatibility between the airports and surrounding land uses will be a major issue in the county.

Ferry Transportation

Ferry service is a vital concern for Washington Island as it is the primary means of transportation between the island and the peninsula. A passenger/freight/automobile ferry service operates year-round between Northport and Washington Island. In addition, a summer passenger ferry supplies service between the Island and Gills Rock. Certainly such service supports the Washington Island economy by supplying businesses with both the necessary goods and the potential clients.

A primary concern facing ferry transportation has been the hazards of operating in the treacherous Ports des Morts Strait. Fierce wind and wave action, as well as ice movement, can cause difficulty in crossing the strait or docking the vessels, or can even cause cancellation of scheduled trips. Recently, construction

of a breakwall at the exposed Northport dock was undertaken. This project should alleviate some of the problems and improve the reliability of ferry service.

Recommendations

When considering the actions necessary to address transportation issues (particularly congestion), it is important to recognize the overall goals and objectives for Door County. Recommendations for transportation must consider all the objective statements for transportation listed in the Goals and Objectives section of this Plan. In addition, recommendations made here must be careful not to hinder other goals that the county is striving for, especially the conservation of the county's distinctive natural and visual amenities, the conservation of the county's open landscape character, and the orderly development of communities within defined community service limits. The following recommendations are made:

A. Congestion.

1. The congestion problem along Highway 42 from Egg Harbor to Sister Bay should first be addressed without the construction of multi-lane highways or creation of new highway corridors. Because of the seasonal nature of this problem, it is not yet at crisis proportions. Therefore, smaller scale correction efforts that have a lesser impact on the scenic character of this highway corridor should be employed first. Possible means of lessening traffic congestions include:

- Increased on-street and off-street parking facilities, whether publicly or privately owned. Such parking facilities should be properly signed or be visible to motorists and made accessible to frequented areas within the villages. With fewer visitors and residents driving from attraction to attraction, or circling about searching for a parking space, congestion should be lessened.

- Implementation of access controls. Such access controls would help prevent the congested areas from expanding even further. Vehicular conflicts and congestion would be limited and safety improved if accesses onto the highway were limited and separated on those roads where congestion is a potential problem. Such regulations could separate access points by up to 800 feet at the fringes of built-up communities and between communities. The use of frontage roads is possible in some instances, particularly between the Villages of Ephraim and Sister Bay. Shared access

driveways should be encouraged both within the existing communities and in the outlying areas. Access controls would also help prevent the outward spread of sprawled development and maintain distinct separation of the existing communities. To protect the county's primary traffic routes, access limitations should be devised and enforced along the county's arterial routes and also the major collector routes.

- Traffic flow improvements. The county and the affected communities, in conjunction with the Wisconsin Department of Transportation, should look for possible traffic flow improvements. Within the villages, measures such as traffic signals, the creation of left-turn-only lanes, or even eliminating left turns at certain intersections could enhance the flow of traffic. In rural areas between communities, turnouts at strategic locations could be used to allow through traffic to pass slow moving vehicles.

The methods of relieving traffic congestion listed above should be the starting point for the county and the villages in addressing the problem. Increasing parking facilities, access controls, and traffic flow improvements are all measures which can be implemented without damaging the natural and visual resources or severely altering the character of the affected communities. These methods should be considered prior to investigating or implementing more drastic measures.

2. A continuous four-community bypass route, as discussed earlier, is not recommended at this time. Examination of the traffic count data shows that a great deal of traffic leaves one of the four communities to go to another one of the four communities rather than leaving to go elsewhere. Since the traffic counts show that a major portion of the traffic in the congestion area is local traffic and since a bypass would not likely affect this traffic, there would be no large benefit in reduced congestion. But, the bypass route option has the advantage of providing to through traffic a means of escape from local traffic.
3. Individual bypasses around individual communities are also not recommended for the same reason as the continuous bypass concept, as well as the aforementioned fact that bypasses for Ephraim and Fish Creek appear not to be physically feasible. Hence, a continuous bypass route is preferred over individual bypasses should the recommended measures proposed earlier fail to alleviate the congestion problem. It must be noted that if any bypass solution is ultimately implemented, it should be

limited to a two-lane roadway and should incorporate access control.

4. Upgrading County Highway A to serve as a bypass route is not recommended for at least two reasons. First, it would force the bypass traffic to use Highway 57 which passes through the communities of Institute and Valmy and which contains many stretches of roadway that are hilly or winding, thus making passing difficult and risky. Secondly, County Highway A connects with Highway 42 just south of Ephraim, meaning that bypass traffic would consequently be steered into the heart of the congested area. Therefore, little would be gained by utilizing County Highway A as the primary bypass route.
5. Upgrading Highway 42 to a four-lane highway between Egg Harbor and Sister Bay is not recommended. Such an upgrade has potential for a loss of scenic values due to tree cutting or grading and might have a damaging effect on the "small town" nature of the existing communities. Preserving the visual and natural resources of the county and the character of existing communities are primary goals of this Development Plan and must be respected in any transportation improvement scheme.

Should capacity improvements become absolutely necessary, the expansion to a four-lane roadway should be limited to outlying areas where commercial development has already altered the landscape and character of the area such as certain stretches between Fish Creek and Ephraim and between Ephraim and Sister Bay. Access control should be implemented and strictly enforced to prevent further sprawled development.

6. In summary, the recommended strategy in dealing with the problem of periodic congestion on Highway 42 is to first utilize smaller-scale efforts such as increasing parking facilities, utilizing strict access controls, and improving traffic flow capabilities. These techniques will have minimal adverse impact compared to opening new corridors or adding traffic lanes to increase capacity. In the event that this initial strategy fails to address the congestion problem, the fall-back strategy could include either individual bypasses around the villages of Egg Harbor and Sister Bay, with four-lane improvements on certain outlying portions of Highway 42; or the creation of a continuous bypass around all four affected communities. Further study should be undertaken to determine which alternative would be most cost effective at reducing congestion, would least damage natural or scenic values, and would have the lesser impact on the existing character of the affected communities. Access

control regulations should be implemented for both bypasses and any four-lane roadways to prevent additional sprawled development and protect these roadways as high-speed arterials.

B. **Scenic Roads.** In order to maintain and improve scenic viewing opportunities from the road system, the following recommendations are made:

1. The various municipalities and the county should continue to promote the Wisconsin Rustic Roads program by supporting qualified petitions for designation made by landowners.
2. The county should continue to support the Scenic Byways program and should work with the state to have all or portions of Highways 42 and 57 declared Scenic Byways.
3. The county should rigorously maintain all public accesses to the water. Where possible new public accesses should be considered.
4. The county and its municipalities should follow closely all proposed highway improvements. The highway department and the citizens of Door County should work with the Wisconsin DOT to ensure that such improvements are completed with minimal adverse impacts upon the aesthetic quality of the view from the highway.
5. The county should enforce strict signage controls as well as screening provisions for uses of land which detract from the visual enjoyment of the landscape. Such land use controls will prevent further despoilment of the landscape as seen from the roads.
6. The county, as well as the municipalities, should seek ways to improve and protect the view from the road system through landscaping programs or selective cutting of vegetation. One possibility is the purchase of scenic easements along public right-of-ways that are particularly scenic or sensitive to development pressure.

C. **Highway 57 Upgrade.** The county should continue to support the conversion of Highway 57 from Green Bay to the junction with Highway 42 in Southern Door to four lanes and to urge completion of the project as soon as possible. Green Bay and Sturgeon Bay have already been constructed or scheduled for construction. As mentioned previously, the state does have plans for this highway to be four lanes by the year 2020. Because this four-lane roadway would improve traffic flow in southern Door County without seriously affecting congestion impacts in northern Door County, the county should campaign

for rapid completion of this project. As mentioned in Chapter 7, Economic Development, the Highway 57 upgrade would have the additional benefit of improving the county's business environment by allowing for easier transportation of goods and materials.

- D. **Air Transportation.** Long range plans for the various airports need to be completed so that potential improvements or changes in airport use can be anticipated. The needs of the airports should be considered before approving adjacent land uses. Likewise, the presence of adjacent development should be considered before intensifying the usage of the airports.

Should it be determined that increased air transportation is needed for Door County, the Cherryland Airport should be examined first for improvements because of its proximity to Sturgeon Bay, the main employment and population center. Finally, the county needs to resolve any conflicts between Cherryland Airport and the Door County Landfill. Though airport relocation should be avoided, alternate sites could be studied in case such a drastic measure becomes absolutely necessary.

- E. **Ferry Transportation.** Continued support for ferry service to Washington Island is warranted. However, because the breakwater project at the Northport terminal is expected to alleviate existing problems, there are no specific recommendations for the short term. Still, the business owners and residents of Washington Island could meet with representatives of the Washington Island Ferry Line if additional methods to improve service can be identified.

Wastewater Treatment and Management

Chapter Nine

CHAPTER 9

WASTEWATER TREATMENT AND MANAGEMENT

Introduction

A necessary component of human existence is disposal of sewage. Necessarily, sewage disposal must be done in ways that protect human health, for a wide variety of diseases can result from contact with sewage or inadequately treated sewage. Consequently, various techniques, some relatively simple and other quite complex, have been devised to convert sewage into harmless substances.

It is the varying complexity of sewage, or wastewater, treatment techniques that moves the issue of wastewater treatment from strictly that of public health protection to concerns about public land use policy. Where the generation of wastewater in an area is limited, simpler techniques for wastewater treatment can be satisfactorily utilized. Conversely, where an area generates large volumes of wastewater, very much more advanced wastewater treatment techniques must be employed. Choosing the best technique to fit each given situation means making decisions. For limited wastewater situations, the best approach may be for each wastewater generator to exercise individual responsibility in treating wastewater. But, where large volumes of wastewater are generated, the most efficient and cost-effective approach may be a cooperative effort in treating wastewater. In deciding which approach to choose, many questions need to be answered: What wastewater treatment system will function in a given physical environment? What can those utilizing the treatment system afford? Will new development that might follow introduction of an advanced treatment system produce undesired effects, such as the destruction or impairment of prized natural features, or threaten or destroy a community's way of life? Is an investment in an advanced treatment system necessary in order to stimulate a community's economic development potential? These and many more similar questions transcend health issues and deal directly with community development policies. It is important to recognize that while health protection is an overriding concern in management of wastewater, land use and development concerns are tightly bound with wastewater management issues.

This chapter will examine the topics raised in Goal III - To protect and improve the quality of the county's groundwater and surface water. The topics pertain to public health concerns and public policies about wastewater management.

Background

Door County's struggle with groundwater contamination has been long and well documented. The *Door County Comprehensive Sewer and Water Planning Report, July 1972* describes the situation very well. The description was amplified in *A Nonpoint Source Control Plan For The Upper Door Priority Watershed Project* produced by the Wisconsin Department of Natural Resources and the Door County Soil and Water Conservation Department in February 1987. The contamination problem results basically from the fact that Door County generally has insufficient soil of the proper type to "cleanse" water as it migrates toward the water table. Contaminated water can readily move into the groundwater system from which human drinking water is drawn.

Until the 1970s, most wastewater treatment was the responsibility of each individual wastewater generator. The exceptions to this situation were the city of Sturgeon Bay, the village of Forestville, and Peninsula State Park, which were served by area-wide sewage collection and treatment systems.

In the early 1970s, considerable public attention turned to the county's water contamination problem. The response to the problem took two forms: 1) improve individual wastewater treatment systems and 2) replace individual systems with area-wide systems.

To improve individual systems, better evaluation of soil characteristics at each specific site was done and better inspections of newly installed systems was instituted. In an effort to find better individual systems, research on fill and mound wastewater disposal systems was done. Such systems were found satisfactory and their use was employed. The emphasis on improving individual systems led to greater reliance on the holding tank. Many sites are simply unsuited for any kind of soil absorbing wastewater disposal system. For those sites, the only solution is to contain wastewater in holding tanks on the site for later transference and disposal away from the site. Through improved inspections and evaluation of specific sites, many sites were ruled unsuited for any system except a holding tank.

Throughout the 1980s and continuing to the present, improving on individual systems has been emphasized.

During the early 1970s, two additional area-wide sewage collection and treatment systems were installed, one to serve the village of Sister Bay and another to serve the communities of Valmy and Institute.

During the 1980s, more area-wide collection and treatment systems were installed. The villages of Egg Harbor and Ephraim and the communities of Maplewood, Baileys Harbor, and Fish Creek all installed such systems. Additionally, an area in the town of

Liberty Grove just north of Sister Bay installed a sewage collection system, the sewage from which is treated at the Sister Bay treatment plant. It was also during the 1980s that the village of Forestville and the city of Sturgeon Bay upgraded their sewage treatment capability by completely replacing their respective treatment plants.

The 1980s were a time for addressing wastewater disposal on a community scale. Also in the 1980s, efforts to address wastewater disposal on an individual scale were bolstered.

Beginning in June 1986, in response to an ordinance adopted by the Door County Board of Supervisors, the Door County Sanitarian's Office began administering a program whereby inspections of private sewage systems serving buildings would be conducted at the time the buildings are sold or title transferred. Systems found to be failing must be corrected within one year or the system must be discontinued.

The results of this so-called "time-of-sale" inspection program are rather alarming. From June 1986 through December 1994, 44% of the private sewage systems inspected were found to be failing.

TABLE 9.1

RESULTS OF TIME-OF-SALE INSPECTIONS

<u>Year</u>	<u>Total</u>	<u>Passing</u>	<u>Failing</u>
1986*	196	112 (57%)	84 (43%)
1987	374	153 (41%)	221 (59%)
1988	289	132 (46%)	157 (54%)
1989	278	150 (54%)	128 (46%)
1990	293	162 (55%)	131 (45%)
1991	367	215 (59%)	152 (41%)
1992	393	259 (66%)	134 (34%)
1993	355	213 (60%)	142 (40%)
1994	<u>384</u>	<u>236 (61%)</u>	<u>148 (39%)</u>
Total	2929	1632 (56%)	1297 (44%)

*Program began in June 1986.

Source: Door County Sanitarian.

Correction has been accomplished most of the time by replacing the failing systems with holding tanks, though mound systems and conventional in-ground soil absorption systems sometimes are used to solve the problem.

The time-of-sale program has two weaknesses. First, rather than inspecting all the homes in a given area at once, the program jumps from place to place looking at one property at a time and issuing correction orders as necessary. This effectively precludes the possibility of adopting potentially cost-effective area-wide solutions involving localized collection systems for off-site treatment and disposal. Over time, it may be more cost-effective to construct small area collection and disposal systems (as was done in Maplewood) than to install many individual holding tanks during the same time interval. Secondly, the time-of-sale approach means that the order in which homes are inspected and upgraded is based on the chance of conveying title rather than on the severity of the environmental harm or health hazard caused by the on-site system. Homes with only minor code violations or pollution potential may be forced to upgrade while other properties may continue to discharge untreated wastewater directly to fractured bedrock or into surface water as long as title to the property is not transferred. However, considering the fairly high rate of failure of existing private sewage systems and given that no alternative programs exist for the inspection of existing systems, the time-of-sale program should be continued. The time-of-sale program should not, however, be viewed as an ideal solution. In areas of high incidence of failure or of environmental or health hazardousness, a more cost-effective and a more efficient solution may be an area-wide system, not one at a time correction over a long span of time.

Another way that Door County bolstered management of individual wastewater disposal systems involved holding tanks. The use of holding tanks in Door County has been considerable and has been so for a long time. Unlike many counties in Wisconsin which have show great reluctance to use holding tanks, Door County has long accepted the device, but, not without apprehension. Holding tanks do not in any way treat sewage, they merely contain sewage for later disposal at another site. Transporting sewage from holding tanks can become expensive, thus some people using holding tanks are tempted to reduce expenses by clandestine disposal means, either by pumping sewage from the tank to the nearby ground surface, by punching holes in the tanks, or by simply letting the tank overflow. To help counter this situation, Door County initiated a water metering program in March 1994. Under this program, new buildings that utilize holding tanks are required to install a water meter which measures the amount of water entering the building. That measurement is compared with information regarding the amount of sewage leaving the holding tank which serves the building. When great discrepancies are noted, investigation of the situation is conducted.

While Door County accepts the use of holding tanks, efforts are directed at minimizing the number of holding tanks in use. The first system considered for use at a building site is the conventional septic tank-soil absorption system. If the building site is incapable of supporting that system, then a septic tank-mound system will be considered for use. Only after the systems that allow on-site disposal of wastewater have been considered and ruled out will use of a holding tank be allowed. Under this approach, the holding tank becomes the system of last resort, and in this way, holding tank numbers are kept to the minimum possible.

Threats

Management of wastewater is a ticklish matter from a health and environmental quality viewpoint as well as from a community development viewpoint.

Individual wastewater disposal systems, i.e., septic systems and holding tanks, must be maintained by each party served by the systems to ensure that they do not pose a health threat. Individual responsibility for maintenance of the systems must be of the highest order. This means that responsible maintenance must occur at the site of the systems and off the site while the septage is being transported to a disposal site.

The system for managing individual wastewater disposal breaks down when individuals knowingly exercise irresponsibility. Such irresponsibility occurs when people allow their systems to discharge wastewater to the ground surface, route wastewater to drainage ditches, or punch holes in their holding tanks to allow wastewater to drain away.

The system for managing individual wastewater systems will also break down if wastewater haulers do not exercise responsibility. Haulers are independent business people who provide the service of hauling septage away from the site of generation to a place of disposal. Should they dispose of septage improperly (dumping into road ditch, wetland, or lake; dumping on ground surface unsuited to receive the wastewater), human health safety can be threatened.

Management of individual wastewater systems can break down, not only by wanton acts, but inadvertently as well. Septic tanks and holding tanks may crack or develop leaks which may go undetected by the users of the tanks. Soil absorption fields may fail to properly function, to the ignorance of the property owner. Again, human health can be put at risk when these failures happen.

Just as careful management of individual wastewater systems is necessary to ensure human health, it is also necessary to maintain the healthy state of surface water. Heavy doses of nutrients and

oxygen-demanding substances from wastewater into surface water will reduce the natural and recreational value of such bodies of water.

Centralized sewage collection and treatment facilities must also be properly operated for the same reasons as individual systems. Public health and environmental quality is at stake with these systems, too.

In addition to sewage collected from each facility's sewerage system, all sewage treatment facilities in Door County, except for the village of Forestville, receive septic tank and holding tank septage. The imported septage contributes significantly to the volume of wastewater treated at the treatment facilities. Given the huge volume of wastewater collected at sewage treatment facilities, the adverse affects of malfunctioning treatment facilities could be extremely serious. On the positive side, however, a better mechanism generally is in place for discovering and correcting malfunctioning sewer treatment facilities than is the case for malfunctioning individual wastewater disposal systems.

From a community development viewpoint, there is a direct relationship between provision for wastewater treatment and how a community develops. Density of people and concentration of buildings will be largely influenced by the type of wastewater disposal system used. For example, an advanced sewage collection and treatment facility will allow more people and buildings to be packed together than will be safely feasible if individual septic tank-soil absorption systems are employed. The shape and extent of a community can be influenced by the presence of an advanced sewage collection and treatment facility; such influence can be positive or negative. An example of a negative influence is the creation of an unattractive highway sprawl situation.

The effect of wastewater disposal systems upon community development extends beyond the built-up areas. The most notable example of this involves use of holding tanks. Because holding tanks can be placed in virtually any soil or geological setting, they make it feasible to construct homes or other buildings in unsewered areas that would otherwise not support buildings due to high groundwater or bedrock. The availability of holding tanks as a wastewater disposal system alternative can therefore (1) increase development pressure in areas that otherwise could not be developed at all or (2) generate pressure for higher development densities than could be accommodated by septic tank-soil absorption systems. Thus, the use of holding tanks may lead to unwanted or inappropriate development in environmentally sensitive areas or scenic resource areas.

The use of holding tanks removes what is essentially a de facto land use control mechanism. So long as building construction is dependent on specific criteria related to installation of septic tank-soil absorption systems, including soil type and depth, slope,

and water table proximity, certain lands will not be built upon because those lands will not meet the established criteria. A side benefit of that situation is that communities will enjoy the presence of open space without having to establish an open space policy or take action to implement such policy. By allowing the use of holding tanks, Door County cannot rely on de facto land use control in order to advance an open space objective. Door County must deal directly with the open space policy question.

Another way that the wastewater management issue affects a community, and therefore may affect how a community develops, is in the sheer amount of institutional energy that needs to be brought to the issue. An example of this relates to the use of holding tanks. Since holding tank septage must be treated and disposed of at a site other than the site of generation, communities need first to provide such site and, secondly, continually evaluate whether or not sufficient capacity exists to accept additional septage. This requires considerable institutional energy and should not be overlooked or underestimated.

Another example of the need to apply institutional energy to wastewater management applies to the question of when should a community consider installation of an area-wide sewage collection and treatment system, or when should such system be expanded if one already serves a community.

Managing wastewater systems also means that secondary adverse impacts must be recognized. An example is the case of a large wastewater generator that discharges wastewater to a huge holding tank. If the transport trucks running between the holding tank and the sewage treatment facility use a light duty road, the constant, heavy load on the road may cause the road to break up, necessitating repair or reconstruction sooner and more frequently than would otherwise be necessary.

Management of wastewater disposal arrangements is difficult and involves many knotty problems. Communities need to be cautious about matching their ability to adequately and properly manage such arrangements when deciding on what arrangements to employ.

Recommendations

- Related to health protection and environmental quality.
 - Door County's system for evaluating proposed new private sewage disposal systems should be maintained and strengthened.
 - Sanitary surveys should be conducted in areas where high numbers of failing private sewage disposal systems are believed to be present.

- Door County's time-of-sale inspection program should be taken to a new level by instituting a program for regularly scheduled inspection and maintenance of all private sewage disposal systems.
- Door County should continue to emphasize use of natural soil to receive effluent from private sewage disposal systems to the greatest feasible extent.
- Door County should urge the Department of Industry, Labor and Human Relations to adopt more stringent construction standards for septic tanks and holding tanks to reduce leaking potential. This is particularly important for steel tanks.
- Door County's program that requires placement of water meters at buildings served by holding tanks should be continued and strengthened.
- Door County should support the development of new technologies for treating wastewater. Current research on a sand filter system in progress on Washington Island is an example of a new system which may prove acceptable for use in Door County.
- Related to land use considerations.
 - Door County should promote placement of higher density development in areas served by centralized sewage collection and treatment facilities and promote installation of such sewage facilities for planned growth areas that are not presently served by such facilities.
 - Door County should promote the preparation of sewer service area plans in accordance with NR 121, Wisconsin Administrative Code, for all existing areas served by centralized sewage collection and treatment facilities. Door County should oversee the work to ensure that the sewer service area plans are consistent with the county's land use plan.
- Related to management principles and strategies.
 - Door County should adopt a "mix and match" approach to solving wastewater disposal problems. That is, all alternative solutions should be carefully evaluated as they might apply to given situations. Chosen solutions should be based on effectiveness of wastewater treatment and cost-efficiency.
 - Door County should recognize that soil conditions in the county offer limited ability to attenuate wastewater and therefore population densities in areas not served by centralized sewage collection and treatment facilities should

be kept low.

- Door County should make use of the areas of soil which are suitable for subsurface disposal of wastewater by allowing development to be clustered or arranged in such fashion that a number of buildings in the development may discharge wastewater in the "good" soil areas.

- Landspreading of wastewater in Door County should be undertaken with great reluctance and accepted only as the last feasible disposal alternative. It is recognized, however, that landspreading may prove to be necessary on Washington Island and that acceptable property should be maintained for such purpose.

- For communities served by centralized sewage collection and treatment systems, those communities should develop or expand in a compact, rather than linear, arrangement. Such arrangement reduces sewage collection line installation costs relative to a linear arrangement and is therefore a more affordable arrangement.

- Individual towns should accept responsibility for the proper treatment of all holding tank wastes generated within their boundaries. In most cases this responsibility can be met by providing permanent dedicated capacity at a Publicly Owned Treatment Works (POTW). On Washington Island, the responsibility could be met by providing publicly managed landspreading sites.

- Door County should not encourage sewage disposal arrangements whereby large volumes of sewage are transported off-site by tanker truck on a very regular, say, daily, basis. Such constant truck traffic can be a nuisance because of noise and odors affecting neighbors of the development being served and can break up public roads. Additionally, spillage of sewage resulting from an accident with a tanker truck could produce a health danger or adversely affect water quality. Therefore, as a general policy, Door County should prohibit developments that generate more than 8,000 gallons of sewage per day that will not be directly discharged to advanced sewage treatment facilities. (The Department of Industry, Labor, and Human Relations uses the 8,000 gallons per day figure as a threshold for defining large system installations.) It is emphasized that this should be a general policy, not an absolute policy, and that the characteristics and merits of each development proposed should be evaluated to determine approval or not. Where such developments are accepted, the hauling distance for tanker trucks serving the development should be the shortest feasible.

- There is one category of development that is very difficult to deal with. It is one which may have great market appeal or may serve a public benefit, but also is a generator of large volumes of sewage. It often is proposed to be located well away from areas served by advanced sewage treatment systems. Examples of this type of development are marinas; golf courses with associated lodging and eating facilities; performing arts facilities; or recreational facilities which utilize specific landforms, such as hills for skiing. As a general policy, Door County should require that such facilities, if approved, discharge sewage at existing advanced sewage treatment facilities, if feasible, even if this requires installation of a long collection line to the development. However, the long collection line should not be viewed as reason to develop the area lying either side of the collection line to a density greater than that expressed in the land use plan.

- Door County needs to be ever vigilant about wastewater disposal arrangements and therefore continually monitor those arrangements. To institutionalize its vigilance/monitoring effort, Door County should organize annual conferences involving representatives of village and city sewage treatment facilities, sanitary districts, town boards, county sanitarians, county planners, and other appropriate persons for the purpose of reporting on and determining the adequacy of wastewater management arrangements.

Land Use Plan

Chapter Ten

CHAPTER 10

LAND USE PLAN

A Generalized Land Use Plan for Door County is presented in an accompanying map insert. The plan separates the county into various land use categories, each with different land use/development objectives, and arranged in such manner as to bring about the desired land use/development objectives expressed in the goals statements shown in Chapter 2. In summary, the land use plan relates to the goals statements in the following ways:

- Directs intensive development away from sensitive environmental areas. (Goal I.)
- Provides public access to the various waterfront areas of the county. (Goal II.)
- Protects and maintains Door County's natural resources, especially wild plant and animal life and scenic areas. (Goal II.)
- Directs intensive development away from areas not served by advanced sewage treatment facilities or that have limited ability to provide such facilities. (Goal III.)
- Provides for the continuance of active agricultural uses. (Goal IV.)
- Maintains rural and open landscape character, particularly by avoiding high density development in rural areas. (Goal IV.)
- Maintains Door County's visual resources. (Goals II and IV.)
- Provides opportunity for economic development in ways compatible with Door County's natural environment. (Goal V.)
- Disallows commercial sprawl beyond established or planned business areas. (Goal VI.)
- Places development within communities and growth areas with well defined boundaries where such development can more easily be serviced by public facilities. (Goal VI.)
- Maintains the function of the county's principal arterial roads. (Goal VII.)

This land use plan provides a basic framework for guiding development and, hence, is fairly general and broad. There are often several ways in which to implement the desired development objectives. Thus, it is recommended that future detailed town plans, with more specific guidelines, be prepared using the county-wide plan as a base.

The Generalized Land Use Plan is intended to guide future development in the county for the next 10 to 15 years. However, it should be periodically reviewed and updated, particularly if new transportation or public utility facilities are constructed, or if future regional growth trends are drastically altered.

It is also important to recognize that the Generalized Land Use Plan is not intended to stand alone, but rather should be used in conjunction with the various recommendations contained elsewhere within this document. It is vital that integration of all the issues and recommendations is achieved when making future planning decisions.

Included in this chapter are guidelines for development for each specific town in Door County.

Development Guidelines For Individual Towns

As mentioned previously, individual town plans should be ~~created using the principles of the generalized countywide land use plan as a base.~~ In this regard, more detailed and specific guidelines can be developed that are geared to each town. A handful of towns have already approved, or are in the process of preparing, official town land use plans. Several others have developed, in conjunction with the Door County Planning Department, a set of townwide land use and development principles. A brief synopsis of some of the planning principles and guidelines for individual towns is presented here:

Baileys Harbor. The Town of Baileys Harbor approved a town plan in 1993. This plan contains an evaluation of future uses and improvements for town owned buildings, an assessment of the town's recreation facilities, the general town land use plan, and design guidelines. It provides a good planning base for the town and many of the recommendations are already being undertaken. Important land use concerns for Baileys Harbor are:

- Encouraging retail businesses and major government and social institutions to remain relatively concentrated within a well defined central business district.
- Preserving of the entrances to the community of Baileys Harbor, particularly by avoiding commercial sprawl beyond

the core business district.

- Redevelopment of the old school site and development of a town center.
- Locating light industrial uses, such as contractors shops, storage facilities, and light manufacturing, in a planned nonretail business park area northwest of the town core area.
- Encouraging medium and higher density residential land uses to locate near the town core area where they can be efficiently and economically served by public sanitary sewers, while limiting residential density in other parts of the town to maintain rural character.
- Promoting continued agricultural usage of productive farmlands, particularly in the southeast sector of the town.

Brussels. The Town of Brussels continues to be a primarily rural farming community. Development pressure has not been great in recent years, nor is major growth expected to occur within the town during the period of this plan. The primary land use and development issues facing the town in the near future are:

- The continued maintenance of the town's agricultural area, which serves as a vital economic base and defines the essential character of the town.
- Encouraging the community of Brussels to continue to function as the town's higher density mixed-use core area. Future commercial, residential, and institutional uses should be encouraged to locate there, but within defined limits to prevent strip development patterns.
- Maintaining Highway 57 as a high-speed arterial road, particularly by avoiding multiple highway access points. The town should also monitor and provide input to Wisconsin Department of Transportation plans for upgrading the highway to four lanes, including a potential by-pass of the community of Brussels.
- Monitoring any future private septic system problems within the community of Brussels. If widespread system failures occur, regional solutions such as common drainfields or public sewer should be considered in order to provide cost effective sewage treatment and to protect groundwater.

Clay Banks. The Town of Clay Banks is dominated by agricultural land uses. The town has historically promoted the preservation of

its agricultural base and this will continue to be the primary development principle for the future. Other guidelines for Clay Banks include:

- Protecting the residential character of the town's shoreline by prohibiting strictly commercial developments in this region.
- Providing a transitional area (generally the area landward of the shore properties to South Lake Michigan Drive/County U) to serve as a buffer between the higher density residential shoreline area and the exclusive agricultural parts of the town.
- Promoting the Vignes area for any future commercial growth, but only if such growth becomes desirable or necessary in the future.

Egg Harbor. The Town of Egg Harbor traditionally has had an agricultural character with mostly residential development along the town's shoreline. In recent years, however, the town has experienced additional development along the Highway 42 corridor and in the town's bluff areas. Development guidelines for the Town of Egg Harbor include:

- Maintaining Highway 42 as a high-speed arterial road, particularly by avoiding strip development and multiple accesses along its length. Development should instead be directed to limited growth nodes such as Carlsville.
- Providing areas for additional residential growth, but at densities that still protect the town's natural and visual resources, particularly the bluff region and large expanses of woodland.
- As much as practical, maintaining the town's agricultural character by discouraging development that detracts from active agricultural activities.
- Coordinating planning with the Village of Egg Harbor so that a coherent and consistent growth pattern is maintained. In general, higher density developments should be located in or near the village where they can be more efficiently and economically served by public sanitary sewer. However, the entrances to the Village of Egg Harbor should be protected from sprawl or strip development, particularly along and above the hill leading into the south edge of the village.
- Maintaining the town's existing high quality single family residential area along the Green Bay shoreline and

avoiding future overdevelopment along the shore.

Forestville. The Town of Forestville, like the Town of Brussels, is not under severe development pressure and will likely remain a rural agricultural community during this planning period. In addition to the continued maintenance of the town's agricultural character, development guidelines for this town include the following:

- Directing future medium and higher density developments to the community of Maplewood or the Village of Forestville where public sewer service is available.
- Avoiding additional residential subdivisions in rural areas except in the vicinity of existing residential areas such as the Forestville Pond or Carnot areas.
- Maintaining Highway 42 and County S as high-speed arterial roads. Development at the fringes of Maplewood or Forestville should be within defined growth limits to maintain a distinct "edge" to these communities and to prevent strip development and multiple access points along the highway corridor.
- Preserving the town's several natural resource areas, especially the wetland corridors along the Ahnapee River and Stony Creek.

Gardner. Most of the existing development in Gardner is situated along the shore or in the vicinity of Little Sturgeon Bay. Guidelines for this town include:

- Protecting the existing single family residential character that exists along the majority of the shoreline.
- Promoting the Little Sturgeon Bay area as a recreational area, particularly by providing new development and redevelopment opportunities on both sides of the bay.
- Providing areas for rural residential and other types of development, while still maintaining the overall rural character of the town.
- Promoting the maintenance of the town's prime natural resource areas, especially the Gardner Swamp Wildlife Area.

Gibraltar. The character of the Town of Gibraltar is generally composed of three parts: the vibrant resort community of Fish Creek, the expansive blocks and corridors of natural areas, and the

agricultural areas containing the orchards and active or idle farm fields. There are several development issues facing the town that might impact this general character. In the coming years, attention must be paid to the following issues:

- Maintaining Fish Creek as the town's commercial core area with a continuance of a mixture of residential, resort, and retail uses. Allowing redevelopment opportunities and maintaining the major social institutions in this area will also be important.
- Protecting the highway corridor from becoming a continuous commercial strip. Planning will need to focus on ensuring that future development does not hinder the highway's arterial function, on maintaining a separation between communities, and on preserving the visual integrity and rural character of the highway corridor. Steering future development into a few limited growth nodes is preferred over scattered or strip development.
- Coordinating the establishment of new higher density development areas with the availability and desirability of public services, particularly sanitary sewer service. In outlying parts of the town, development density should be set such that good soils for septic systems are available, impacts to active farming operations are minimized, and the rural character of the town is maintained.
- Maintaining the integrity of the town's natural areas, including the Ephraim Swamp and Thorp Bog areas, the Fish Creek corridor, and the various islands.

Jacksonport. Planning for the Town of Jacksonport should focus on maintaining the character of the town by maintaining its four characteristic areas: agricultural, natural, shoreline residential, and community of Jacksonport areas. Guidelines should include:

- Encouraging a continuance of agricultural usage, particularly by avoiding incompatible uses and high density development in the town's rural areas.
- Preserving environmentally sensitive areas, particularly wetland corridors.
- Protecting the existing single family residential neighborhoods along the shores of Lake Michigan, Clark Lake, and Kangaroo Lake.
- Maintaining the community of Jacksonport as the town's

core area by encouraging a continued mix of residential, commercial, institutional, and resort uses. The limits of the core area should be clearly defined in order to maintain a compact community with a distinct "edge".

- North of the community of Jacksonport, the function of Highway 57 as a high-speed arterial road has been impacted by numerous driveway access to shore properties. Further impacts due to multiple accesses should be avoided through lower densities and/or shared accesses on the inland side of the highway.

Liberty Grove. Considerable growth and land use changes have occurred in the Town of Liberty Grove over the last several years. In response to this, the town adopted a comprehensive plan in 1988. The guidelines and recommendations of that plan are generally consistent with the goals and objectives of the county. Several important planning guidelines have been identified for Liberty Grove:

- Preserving and protecting the many important natural resource areas of the town, particularly the expansive wetland regions.
- Allowing additional residential development without negatively impacting the town's rural character or overdeveloping the town's waterfront areas.
- Guiding future commercial development into existing communities (Sister Bay, Ellison Bay, and Gills Rock) where services can more easily be provided. To ensure compact communities, development should occur within defined limits, using natural boundaries where appropriate, such as the slope leading into Ellison Bay.
- Encouraging future light industrial and/or rural commercial uses to locate in specified areas, with the possibility for future business park designations. Two areas along Old Stage Road have been identified for such uses.
- Preventing sprawl or strip development along the town's major roads and preserving a separation between the existing communities. Existing development and commercial zoning along Highway 42 between Ephraim and Sister Bay has hampered the ability to maintain a clear separation between these two villages. Guidelines for this area are to, at a minimum, reduce impacts of further development through combinations of access controls, greater setbacks, and screening/landscaping requirements. Eliminating the commercial zoning should also be

considered.

Nasewaupee. In recent years the Town of Nasewaupee has experienced residential growth in parts of the town and also commercial and industrial development along the Highway 57/42 corridor. In the future, the town will continue to experience growth pressures exerted by the City of Sturgeon Bay and by the highway corridor. Thus, considerable planning attention should be given to the lands adjacent to the city and along the highway corridor. Particular attention should be paid to:

- Avoiding development impacts along the Highway 42/57 corridor that might impact its function as a high speed arterial road. Future development should occur in designated zones with limited accesses rather than strung out along the entire corridor. The intersection of Highways 42 and 57 should be considered for future commercial development.
- Identifying areas for additional residential development such that impacts on active agricultural areas are minimized. Areas closer to the City of Sturgeon Bay and the northern portion of the town have been identified as appropriate areas for future residential growth.
- Maintaining the existing single family residential character along the waterfront while identifying areas for mixed resort and residential uses.
- Protecting and maintaining the Cherryland Airport as the primary air transportation facility in Door County.
- Coordinating with the City of Sturgeon Bay to achieve coherent growth patterns and integration of town, county, and city land use plans.

Sevastopol. Most of the recent growth in the Town of Sevastopol has occurred along both its east and west shorelines and along the bluff area of the town. Like the Town of Nasewaupee, it is expected that future development in the town will be influenced by growth pressures from the City of Sturgeon Bay. The following planning guidelines will be important for the Town of Sevastopol:

- Maintaining the town's expansive agricultural base in the central part of the town. The town should retain its agricultural character by avoiding any development that is incompatible with farming operations in this region.
- Establishing rural residential areas where conflicts with the farming areas and impacts on the rural character of

the town are minimized.

- Guiding future higher density development towards the City of Sturgeon Bay or the communities of Institute and Valmy where such development can more easily be served with public facilities, but establishing growth limits to prevent linear strip development along the major roads.
- Maintaining the town's highway corridors free of development.
- Protecting the large natural resource area in the eastern part of the town, particularly all wetlands located in that area.
- Maintaining the single family residential character that exists for most of the town's shorelines by avoiding new commercial areas.
- Guiding future residential and commercial development patterns adjacent to the City of Sturgeon Bay such that development sprawl is avoided and integration of town, county, and city land use plans is achieved.

Sturgeon Bay. Development in the Town of Sturgeon Bay has consisted primarily of rural residential development and also some shoreline residential development. Important land use concerns for Sturgeon Bay are:

- Avoiding development in the Highway 42/57 Bypass Corridor.
- Identifying areas that are appropriate for medium to low density residential development such that the overall rural character of the town is preserved and higher density development is directed into the City of Sturgeon Bay.
- Protecting the predominantly single family residential character of the town's shoreline.
- Promoting the reclamation and redevelopment of active and former mining sites.
- Maintaining County Highway S as a high speed arterial road by situating future development adjacent to the City of Sturgeon Bay city limits and/or maintaining limited access points through the use of frontage roads.
- Protecting the large ridge/swale areas on either side of the Sturgeon Bay Ship Canal through restrictive zoning or

other appropriate measures.

Union. Located relatively close to the city of Green Bay, the Town of Union is potentially under development pressure from the Green Bay metropolitan area. The upgrading of Highway 57 to four lanes from Green Bay to Sturgeon Bay and the nearness to public sewer in Dyckesville could spur development which might impact the agricultural character of the town. The following development guidelines are provided:

- Monitoring and providing input toward the proposed upgrade of Highway 57 to four lanes including a potential bypass of Namur, and maintaining the highway as a high speed arterial road by avoiding commercial sprawl and excessive signage.
- Identifying areas to absorb future residential development pressure, such that minimal impacts on active farmland will occur.
- Monitoring the effectiveness of wastewater treatment facilities along the shore, especially as seasonal cottages are converted to year-round residences. Regional solutions such as extension of public sewers should be considered if private septic systems failures are widespread.
- Avoiding development that would negatively impact historic buildings within the community of Namur, which is located in a National Historic Landmark District.
- Continue to allow mixed residential types in those waterfront areas that have an existing mixture of residences, duplexes, and manufactured homes, but consider restricting development in predominantly single family residential areas, especially as areas shift from cottages to year-round residences.
- Maintain the overall rural character of the town by promoting only low density development in the active agricultural areas and in the town's natural resource areas.

Washington. The Town of Washington has experienced significant growth over the last two decades. In particular, residential development has been on the rise as the number of both seasonal and total housing units has nearly doubled between 1970 and 1990. Future land use and development policies of the town will certainly be affected by this growth pattern. Land use considerations for the town are:

- Maintaining the low density character of the town, particularly by avoiding overdevelopment of the shoreline and by requiring larger lots within the mostly undeveloped parts of the town.
- Continuing to monitor the issue of wastewater treatment and disposal for the island. Ensuring the continued availability of land for disposal of septic and holding tank waste is critical.
- Maintaining the town's transportation facilities, particularly in regard to protecting runway clearance zones for the town's airport facility.
- Targeting the existing commercial centers of the town (Main Road, Ferry dock area, Detroit Harbor) to absorb additional commercial or mixed use development. In addition, certain areas along the shore, including West Harbor and Jackson Harbor, should be retained for recreational and resort uses, while maintaining other shore frontage for residential development.
- Preserving the town's significant natural areas, including the Jackson Harbor ridges, Coffee Swamp, Gunnerson and Wickman Marshes, the Mountain, and the several outlying islands within the town.

Implementation

**Chapter
Eleven**

CHAPTER 11

IMPLEMENTATION

Introduction

This development plan contains Door County's vision for its future. It provides a set of countywide guidelines for the attainment of the goals and objectives the county has set for itself, as expressed in this document. In a practical sense, however, the plan is not complete until the steps necessary to implement it have been specified. While adoption of the development plan by the county board is important, adoption by itself will not achieve the county's goals. Rather, realization will require faithful, long-term dedication to the development plan's recommendations and the underlying goals and objectives. Thus, the adoption procedure is only the beginning of a series of actions necessary to achieve the goals and objectives expressed in this document.

This chapter describes several tools for implementation and presents recommendations for utilizing these implementation instruments.

Zoning Ordinance

A zoning ordinance is an essential tool that communities can use for implementing their development plans. A zoning ordinance can be an effective means of guiding development such that an orderly and desirable pattern of land use is achieved, and such that compatibility and harmony are achieved between adjacent land uses. To accomplish this, zoning ordinances typically contain provisions that regulate both the use of property and the density of development, but they often also contain regulations affecting a wide variety of development issues, such as protection of natural resources and controlling access to highways.

Section 59.97 of the Wisconsin Statutes grants counties the power to enact zoning ordinances affecting unincorporated areas. Door County adopted a county-wide zoning ordinance in 1968. However, this ordinance is enforced only in the county's shoreland areas (lands within 1,000 feet of lakes and 300 feet of navigable streams) and in those towns that have approved the county ordinance. Only eight of the fourteen towns in Door County have approved the zoning ordinance. The City of Sturgeon Bay and the 4 incorporated villages in the county are also not affected by the county-wide zoning ordinance, but each of these municipalities has enacted its own municipal zoning ordinance.

In order to properly implement the Door County Development Plan, a comprehensive revision to the existing county zoning ordinance is in order. A revised ordinance would be a more effective tool for implementing the development plan, particularly the recommendations regarding protection and maintenance of the county's natural and visual resources.

A proposed new Door County Zoning Ordinance was prepared in conjunction with this development plan. The proposed ordinance contains several new provisions designed to achieve the goals and objectives of the county, as well as alleviate problems evident within the existing zoning ordinance. In addition, proposed zoning maps were prepared that are designed to help implement the Generalized Land Use Plan portion of this document. The proposed zoning ordinance has received considerable input from the towns and the citizens of Door County and is intended to be applicable to all unincorporated portions of Door County.

Future zoning decisions should be based upon the recommendations and guidelines contained within this development plan. In particular, zoning amendments, especially those affecting the zoning maps, should be carefully reviewed as to their relationship to the development plan. It is vital that the development plan and its implementing zoning ordinance be linked and consistent with one another.

The county should also strive for better participation in the county zoning program. The strength and vitality of the zoning ordinance will depend in large part on how comprehensively it is applied throughout the county. Towns that are currently unzoned should be encouraged to reexamine the county zoning program and efforts should be made to adapt the zoning program to meet the needs of these towns. If any town finds county enforcement of zoning to be unacceptable, a zoning ordinance adopted and enforced by the town should be considered as an option, provided that the town ordinance is consistent with the overall goals and objectives of the county.

Finally, the county program should continue to be revised and updated. Periodic examination and updating of the zoning maps should occur. Creative and flexible zoning techniques should be investigated, so that the changing needs of Door County are met.

Subdivision Ordinance

Subdivision plat review and regulation is another useful tool for implementing the Door County Development Plan. A subdivision ordinance would help ensure that new developments are consistent with the development plan. It could also ensure that development does not create additional tax burdens for the county or its municipalities by requiring that adequate services and facilities,

such as roads or water supply, are supplied by the developer, rather than left in the hands of the towns or county in the future. Sound subdivision regulations also ensure that new lots will be properly described and recorded, thus leading to better record keeping. Finally, a subdivision ordinance can ensure that new developments are properly laid out from an engineering standpoint.

Door County has had a subdivision ordinance in effect for many years. The ordinance, however, has generally been circumvented by developers because it contains loopholes allowing developers to avoid the regulations.

It is recommended that a new subdivision ordinance be developed and adopted by Door County. The new ordinance should reflect the state enabling legislation pertaining to subdivisions and should contain acceptable engineering and land surveying standards for the proper division of land. The ordinance should contain greater flexibility relative to allowing clustered, or planned, developments and creativity in providing adequate services to the development. The burden for providing these necessary services should be on the developer and not the responsibility of the municipalities. In general, the requirements and regulations contained in the subdivision ordinance should be consistent with the various recommendations contained in this document. Finally, the new ordinance should be structured such that all newly created property parcels in the county are included, including condominium plats.

Additional Plans

This development plan is fairly limited in scope and comprehensiveness. Additional studies will be necessary to fully examine the issues presented in this document or to analyze additional issues considered important by the county. In-depth studies should be considered for the problem areas identified in this plan. Further analysis of the options for solving long range congestion problems on Highway 42, an update of the county's farmland preservation plan, and further analysis of the county's natural resources are examples of desirable further study. Also, each municipality and sanitary district that supports sewage treatment facilities should prepare sewer service area plans which are consistent with this development plan. Additional issues, such as recreation plans, could be completed and added to this plan or left as separate documents.

Specific plans for individual towns should also be considered. The broad policies that are set forth in this plan will need to be detailed to fit the specific circumstances of individual towns or to reflect the individual desires of those towns. Finally, there may be issues unique to an individual town that could only be addressed in a town plan.

Development Plan Revision and Update

Changes in long-range planning documents, such as this development plan, are inevitable. As new data and information becomes available, as additional development issues are discovered, or as the attitudes and priorities of the county change, there will be a need for the reassessment of the goals and objectives, as well as the policies, of the plan. Adjustments will have to be made in the plan and the various implementing ordinances to accommodate changing conditions and needs. Consequently, one of the important tasks of plan implementation is a periodic reevaluation and reexamination of the development plan to ensure that it continues to properly reflect current conditions. Annual reviews should be conducted to examine the continued validity of the goals and recommendations of the plan, as well as to offer a benchmark to the progress being made in achieving the goals and recommendations. In addition, a more comprehensive review should be undertaken as necessary, perhaps every five years. The plan could be updated at this time and the projections and horizon of the plan could be extended for another five years.

Finally, it is recognized that future municipal planning and decision making covering topics that may not be directly addressed in this development plan will likely occur. Such planning and decision making should be done consistent with the directions expressed in the development plan and in a manner respectful of the vision for Door County's future as expressed here.

Appendix

APPENDIX A

ESTIMATE OF DOOR COUNTY PART-TIME POPULATION

	<u>Percentage of Housing Units - 1990 Census</u>					
	<u>Owner Occupied</u>	<u>Renter Occupied</u>	<u>Vacant For Sale</u>	<u>Vacant For Rent</u>	<u>Occasional or Seasonal Use</u>	<u>Other Vacant</u>
Door County	43.2	12.6	1.5	1.6	35.6	5.5
Neighboring Counties*	70.0	23.9	0.8	1.1	2.3	2.0
			Difference by Percent		33.3	3.5

$$\begin{aligned} \text{Total Housing Units} &= 18,037 \times 33.3\% = 6,006 \\ &18,037 \times 3.5\% = \frac{631}{6,637 \text{ Part-Time Units}} \end{aligned}$$

6,637 Part-time units x 2.52 persons per unit = 16,725 Part-time residents

* These are the average statistics for Brown, Kewaunee, Calumet, and Manitowoc counties which do not have significant seasonal housing units.

Note: The number of seasonal and occasional housing units in Door County are compared with the nonrecreational counties in order to factor out Door County's permanent residents who have second homes within the county or who reside part-time outside Door County.

APPENDIX B-1

INLAND LAKES OF DOOR COUNTY

Name	Location (Municipality)	Surface Acres	Maximum Depth(ft.)	Public Access	Fish* Habitat
1. Arbter Lake	Sevastopol	16.0	2.0	No	No
2. Bley Pond	Jacksonport	4.5	3.0	No	No
3. Butler Pond	Jacksonport	3.2	2.0	No	No
4. Clark Lake	Sevastopol/Jacksonport	864.0	22.0	Yes	Yes
5. Coffee "Swamp"	Washington	2.2	1.5	No	No
6. Dunes (Gurlack) Lake	Sevastopol	80.4	1.1	No	No
7. Europe Lake	Liberty Grove	274.7	8.0	Yes	Yes
8. Forestville Pond	Forestville	72.1	7.0	Yes	Yes
9. Gunnerson (Big) "Marsh"	Washington	31.3	2.0	No	No
10. Kangaroo Lake	Jacksonport/Baileys Harbor	1,109.0	12.0	Yes	Yes
11. Little Lake (Sturgeon Bay)	City of Sturgeon Bay	19.1	7.0	Yes	Yes
12. Little Lake (Washington Is.)	Washington	23.6	5.5	No	Yes
13. Lost Lake	Jacksonport	91.2	5.0	No	No
14. Mackaysee Lake	Gibraltar (Chambers Island)	354.0	26.0	No	Yes
15. Mink River (Rogers Lake)	Liberty Grove	69.5	12.5	No	Yes
16. Mud Lake	Baileys Harbor	155.0	5.0	Yes	Yes
17. Mud (Krause) Lake	Gibraltar (Chambers Island)	3.7	24.0	No	Yes
18. Pinney Lake	Sturgeon Bay	2.3	5.5	No	No
19. Pluff Pond	Liberty Grove	0.5	5.0	No	No
20. Schwartz (Schmoke) Lake	Sevastopol	30.0	4.0	No	No
21. Thorp Lake	Gibraltar	6.4	2.5	No	No
22. Upper Lost Lake	Jacksonport	4.5	3.0	No	No
23. Voecks Lake	Baileys Harbor	19.1	2.0	No	No
24. Wickman (Little) "Marsh"	Washington	14.0	1.5	No	No
25. Zoo Lake	Liberty Grove	0.9	3.0	No	No
TOTAL		3,251.2			

*A number of shallow inland lakes are not able to support fish because of winter kill.

Sources: DNR, Door County, Wisconsin Outdoor Recreation Plan, 1969; Door County Planning Department.

APPENDIX B-2

MAJOR STREAMS OF DOOR COUNTY

STREAM	LOCATION (Township)	WATERSHED AREA (Sq. Mi.)	LENGTH (Miles)	AVG. WIDTH (Feet)	GRADIENT (Ft./Mi.)
1. Ahnapee River	Brussels/Forestville	19	6.0	25	7.7
2. Bear Creek	Clay Banks	5	3.1	7	29.0
3. Donlans (Maple) Creek	Sevastopol	10	3.6	20	9.7
4. Ephraim Creek	Gibraltar/Ephraim	3	2.2	9	8.2
5. Fish Creek	Gibraltar	2	1.4	8	15.0
6. Heins Creek	Baileys Harbor	14	.7	14	27.5
7. Hibbard Creek	Baileys Harbor/Jacksonport	17	5.4	15	7.6
8. Keyes Creek	Gardner	13	5.1	4	8.0
9. Lilly Bay Creek	Sevastopol	11	3.4	5	19.1
10. Logan Creek	Jacksonport	12	4.8	8	17.7
11. Reiboldt Creek	Baileys Harbor	12	1.0	16	5.0
12. Renard Creek	Union	6	3.0	6	35.0
13. Shivering Sands Creek	Sevastopol	3	1.1	27	18.2
14. Stony Creek	Forestville/Clay Banks	26	13.6	16	8.5
15. Sugar Creek	Union/Gardner	14	4.5	9	22.2
16. Three Springs Creek	Liberty Grove	5	2.3	4	10.9
17. Whitefish Bay Creek	Sevastopol	11	1.1	28	7.3
18. Woodard Creek	Clay Banks	5	1.7	3	44.1

Sources: Surface Water Resources of Door County, Wis. Conservation Department, 1965; USGS Topographic Quads, 1981-82; Door County Planning Department.