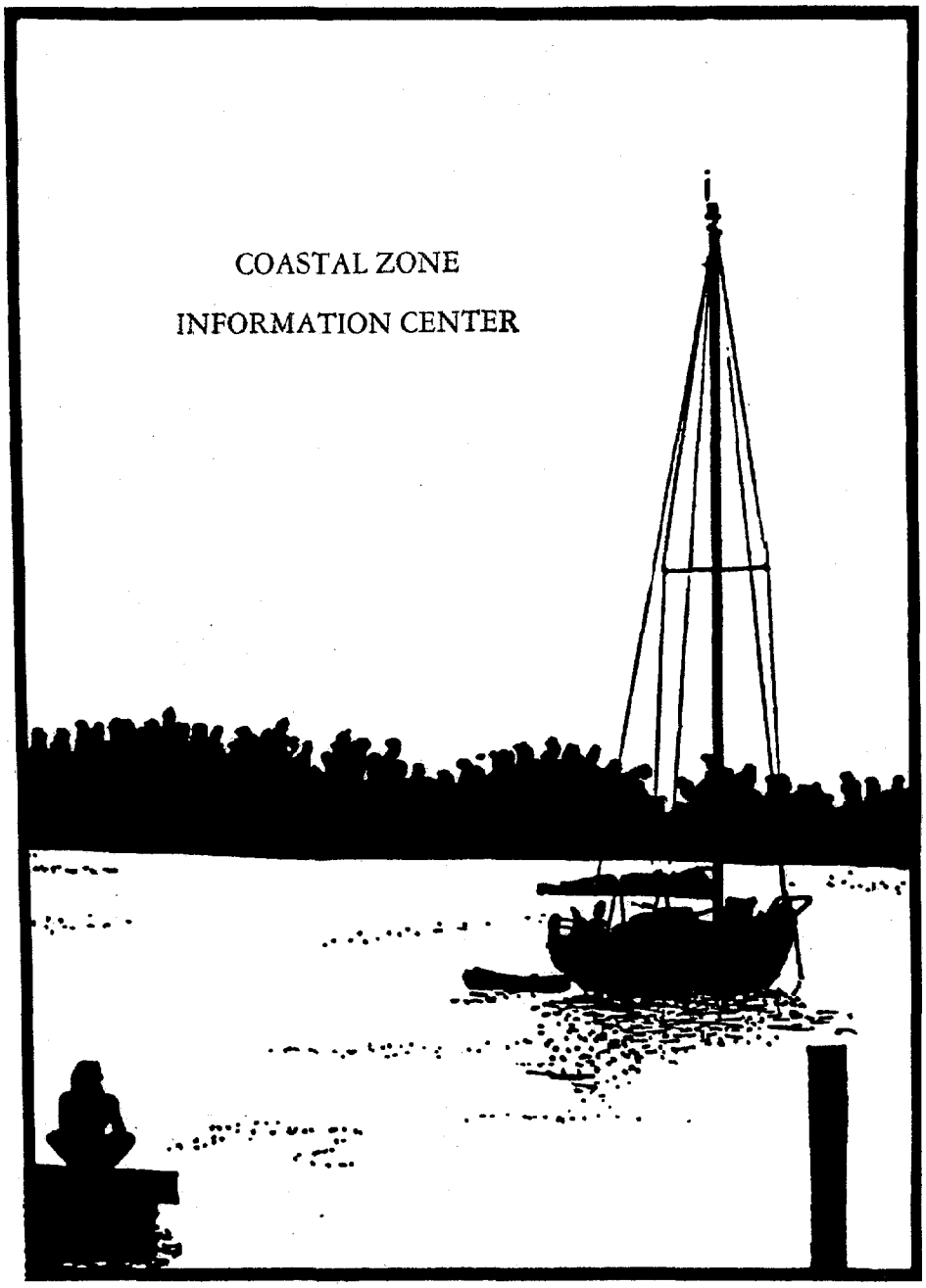
North Carolina. Coastal Zone Management Program

DARE COUNTY

Dare County, North Carolina

Land Use Plan and Policies for Growth and Development

1987 Update



Edward D. Stone, Jr. and Associates

County of Dare

County Commissioners

Michael P. Daniels, Chairman
Jesse F. Ambrose, Vice-Chairman
Gaskill Austin
Louise Dollard
Robert V. Owens, Jr.

Jack Cahoon, County Manager
Terry Wheeler, Assistant County Manager

COASTAL ZONE
INFORMATION CENTER

Planning Board

Elmer R. Midgett, Jr., Chairman
William W. Wheeler, Vice-Chairman
Barton Bauers
Larry Bray
David Lang
Timothy W. Midgett
Richard Scarborough
Frank Stone

Raymond P. Sturza II, Planning Director
Donna V. Creef, Assistant Planner
Janice E. Williams, Clerk to Planning Board
Lorraine Tillett, Zoning Administrator

Technical Assistance:

Edward D. Stone, Jr. and Associates
215 South Front Street
Wilmington, North Carolina 28401

The preparation of this document was financed, in part, through a grant provided by the N.C. Coastal Management Program, through funds provided by the Coastal Zone Management Act of 1972, as amended, which is administered by the Office of Ocean and Coastal Resources Management, National Oceanic and Atmospheric Administration

HD 211 .N8 D37 1988

Locally adopted 12/87

CRC certified 9/88

Table of Contents

Executive Summary 1

1. Data Collection and Analysis..Section 1, Page 1
1.1 Information Base 2
1.2
1.2.1 Population and Economy 2
1.2.2 Existing Land Use Analysis 9
1.2.3 Current Plans, Policies and Regulations 16
1.3 Constraints; Land Suitability 23
1.3.1 Physical Limitations for Development 23
1.3.2 Fragile Areas 29
1.3.3 Areas With Resource Potential 32
1.4 Constraints; Community Facilities and Services 34
1.4.1 Water 34
1.4.2 Sewer 38
1.4.3 Transportation 39
1.4.4 Law Enforcement 41
1.4.5 Fire Protection 42
1.4.6 Public Schools 43
1.4.7 Parks and Recreation 45
1.4.8 Solid Waste 47
1.5 Anticipated Demand 49
1.5.1 Population and Economic Projections 49
1.5.2 Future Land Use Needs 52

2. Policies for Growth and Development ..... Section 2, Page 1
Introduction to the Policies 2
2.1 Resource Protection 4
2.1.1 Constraints to Development 4
2.1.2 Areas of Environmental Concern 5
2.1.3 Other Hazardous or Fragile Land Areas 16
2.1.4 Hurricane and Flood Evacuation 20
2.1.5 Protection of Potable Water Supply 20
2.1.6 Package Sewage Treatment Plants 21
2.1.7 Stormwater Runoff 23
2.1.8 Marina and Floating Home Development 24
2.1.9 Industry in Fragile Areas 25

2.1.10 Development of Sound and Estuarine Systems Islands 26
2.2 Resource Protection and Management Policies 27
2.2.1 Productive Agricultural Lands 27
2.2.2 Commercial Forestlands 28
2.2.3 Mineral Production Areas 28
2.2.4 Fisheries Resources 30
2.2.5 Off-Road Vehicles 31
2.2.6 Development Impacts 31
2.2.7 Trees and Vegetation 32
2.3 Economic and Community Development Policies 33
2.3.1 Types and Locations of Desired Industries 33
2.3.2 Provision of Services to Development 34
2.3.3 Urban Growth Pattern 35
2.3.4 Redevelopment 36
2.3.5 State and Federal Program Support 37
2.3.6 Channel Maintenance and Beach Nourishment 38
2.3.7 Energy Facilities 39
2.3.8 Tourism and Beach and Waterfront Access 40
2.3.9 Coastal and Estuarine Water Access 41
2.3.10 Residential Development 42
2.3.11 Commercial Development 43
2.3.12 Solid Waste Disposal 44
2.3.13 Low and Moderate Income Housing 45
2.3.14 Land Clearing 45
2.3.15 Street Maintenance 46
2.3.16 Bikeways/Walkways 47
2.4 Public Participation Policies 48
2.4.1 Public Participation 48
2.5 Storm Hazard Mitigation, Post-Disaster Recovery and Evacuation Plan 50
2.5.1 Storm Hazard Mitigation 50
2.5.2 Post-Disaster Reconstruction 53
2.5.3 Evacuation Plan 55

3. Land Classification ..... Section 3, Page 1
3.1 Purpose of Land Classification and Relationship to Policies 2
3.2 Land Classification System 3

4. Intergovernmental Coordination and Implementation ..... Section 4, Page 1
4.1 Intergovernmental Coordination and Implementation 2
4.2 Area Development Coordination Agency 3

5. Public Participation ..... Section 5, Page 1
5.1 Public Participation 2

Appendices

Executive Summary

Introduction

Need For Planning

Dare County has grown very rapidly during the last 15 to 20 years. The attractiveness of the County's natural features, combined with higher levels of disposable income in the nation as a whole, and larger amounts of leisure time, has created a tremendous boom in growth and development in the County.

As the area becomes more densely settled, however, new problems must be faced, including: land use conflicts, as different uses are forced closer together; large public expenditures for the services and facilities required by this new growth; and possible degradation of the natural features of the County.

The intent of the Land Use Plan is to anticipate and plan for this growth, in a manner which helps protect the existing quality of life of area residents and avoids unreasonable increases in the local tax burden. The North Carolina General Assembly recognized these issues when it passed the Coastal Area Management Act of 1974, which requires coastal local governments to develop land use plans and update them every five years. The first Dare County Land Use Plan was adopted in 1976 and updated in 1982; this 1987 update refines the 1982 plan and policies to reflect current conditions in the County.

Functions of the Plan

The Land Use Plan performs several important functions for local governing bodies and the general public; these functions are briefly described below:

- Source of Information - The plan's technical studies provide information on a number of topics, including the local economy, population, environmental features, housing trends and facility needs.
- Guidance for Government Decisions - Once a governing body adopts a plan, it then has a blueprint for guiding future decisions on budgets, ordinances, and zoning and subdivision applications.
- Preview of Government Action - Business decisions of the public in general, and developers in particular, are easier to make when the probable outcome of governmental decisions is understood; the adoption of a Land Use Plan increases the predictability of government actions.

- Public Participation in Managing Growth - Public meetings and hearings held during the plan's preparation helped to insure that the plan expresses the will of the area's citizens.

Ingredients of the Plan

Several major steps were involved in the preparation of the Dare County Land Use Plan. First, a number of technical studies were made on the past and present conditions in the County. From these intial studies, forecasts for future growth and development of the area were summarized. Finally, policies and a land classification map were devised to address present and future needs.

Technical Studies

A number of basic studies are required before sound policy decisions can be made. These basic studies include the following subjects:

Population and Economy
Existing Land Use Analysis
Current Plans, Policies and Regulations
Physical Limitations for Development
Fragile Areas
Areas with Resource Potential
Water Supply
Sewage Treatment
Transportation Facilities
Police Protection
Fire Protection
Schools
Parks and Recreation
Solid Waste
Population and Economic Projects
Future Land Use Needs
Community Facility Demands

Collectively, these studies summarize past and present conditions, while providing the essential yardsticks for estimating future conditions. The results of these studies are contained in full in Section 1 of the Dare County Land Use Plan. In addition, detailed mapping of existing land use is available for inspection at the offices of the Dare County Planning Department.

Highlights of the Technical Studies

Population

In 1985, there were an estimated 17,243 residents in the County, up from about 7,000 residents in 1970. The total

permanent County population is expected to reach approximately 35,000 persons by 1995.

Economy

Dare County continues to be very heavily dependent upon the tourist and service sectors of the economy. A very low percentage of the County's total employment is involved in manufacturing, compared to the State of North Carolina as a whole. Despite recommendations over the years that the County attempt to diversify its economic base, these recommendations have not come to fruition.

Land Use Analysis

The 1987 Existing Land Use Survey revealed that the County is beginning to see increasing levels of higher density residential development, particularly along the Outer Banks. Also, a slow but steady trend toward the strip commercialization of the major highways in the unincorporated villages along the Outer Banks is escalating. With the establishment of the Alligator River National Wildlife Refuge, more land area than ever is under Federal government jurisdiction.

Housing

Though the statistics are not readily available to demonstrate the fact, the general consensus and knowledge among local residents is that there is a shortage of low to moderate income housing in the County. This problem is becoming greater as more seasonal residents with higher levels of disposable income compete for the available housing stock in the County.

Groundwater

Nearly all residences and businesses in the County are dependent either directly or indirectly on groundwater. In addition, all future plans for expanded public water supply systems recommend the use of groundwater for the supply source. Citizen interest in protecting this resource from declines in quality and quantity was highly evident during plan development.

Wastewater Disposal

The suitability of area soils for septic tanks continues to be one of the primary constraints on the future growth and development of the County. While the availability of public central sewage treatment plants could help alleviate some of the environmental problems associated with septic systems, these central facilities could also provide a very strong incentive for higher density development.

Transportation Facilities

The roadway system of the County is currently inadequate to accommodate emergency evacuation situations, and is proving to be inadequate in certain sections of the Outer Banks. The County's extreme variance in population levels from peak to off-peak seasons creates problems in planning for transportation facilities, as well as many other types of public facilities and services.

Policies For Growth and Development

The technical reports described above were geared to gathering and summarizing information related to the growth of the planning area. Building upon this information, a number of policies were prepared for consideration by the Dare County Board of Commissioners.

The policies which are presented in this document are the results of this process; as officially adopted policies of the County, they will serve as the basis for future decisions on capital improvements, ordinances, zoning requests, special use permits, subdivision approvals, and other similar matters.

Land Classification Map

Some of the policies make reference to specially mapped areas; the Land Classification Map contained in the Land Use Plan illustrates these areas. The seven land classification categories (Municipal, Transition, Community, Community-Residential, Rural, Conservation and Limited Conservation) were adapted from the Coastal Area Management Act's land use planning guidelines. By assigning the land classes to specific parts of the County, the map shows visually where and at what density growth should occur, and where significant natural resources are to be conserved. The classes are as follows:

Municipal

The Towns of Kill Devil Hills, Manteo, Nags Head, Southern Shores, and Kitty Hawk are covered by plans prepared by each local government. For the purpose of the County plan, all are shown on the land classification map as Municipal. The reader is referred to each Town's individual plan for details.

Transition

The purpose of the Transition class is to provide for future urban development within the ensuing 10 years on lands that are most suitable and that will be scheduled for provision of necessary public utilities and services.

For the 1987 update to the Dare County Land Use Plan, the land areas in Transition remain largely unchanged from the 1982 plan. Included in the Transition class are the following areas: Colington and the area outside Kill Devil Hills, portions of Roanoke Island outside the Town of Manteo, as well as parts of Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, and Hatteras.

Community

The purpose of the Community class is to provide for clustered land development to help meet housing, shopping, employment, and public service needs within the rural areas of the County. This class includes, for example, the communities of Mashoes, Manns Harbor, East Lake, Stumpy Point, and Duck."

Community Residential

Community Residential is a subclass of the Community land classification. The Community Residential classification is intended to provide for primarily single family residential and passive recreational land uses. Public water and sewer services will not be provided in these areas unless they are required to correct a public health problem. An example of the land class occurs on the north end of Roanoke Island.

Rural

The purpose of the Rural class is to provide for agriculture, forest management, mineral extraction, and other low intensity uses. Residences may be located within Rural areas where urban services are not required and where natural resources will not be permanently impaired. The primary example of this land class occurs on the Dare County mainland generally south of U.S. Route 64.

Conservation

The purpose of the Conservation class is to provide for effective, long-term management of significant limited or irreplaceable areas. This management may be needed because of its natural, cultural, recreational, productive or scenic values. By definition, all Areas of Environmental Concern (AECs) are included in this class.

Limited Conservation

The purpose of the Limited Conservation class is to provide for the management and long-term viability of essentially undisturbed land that is suitable for only a limited range of uses under a specified set of guidelines. The Limited Conservation class should be applied to lands that contain valuable species of plant and/or animal life or topographical features that necessitate such guidelines to insure their survival. Such lands may include maritime forests or inland dunes not subject to CAMA AEC guidelines.

Major Changes From the 1982 to the 1987 Updated Policies

Transition Areas Refined

Due to recent availability of National Wetlands Inventory Maps prepared by the National Wildlife Service, the boundaries of Transition areas contained in the Land Classification Map have been refined to reflect the general occurrence of wetlands in the County.

These refinements to the Transition areas should not affect the amount of developable land in these areas, however, due to the jurisdiction of the U.S. Army Corps of Engineers and CAMA over development in wetland areas.

Rural Area of Mainland Reduced

Due to the establishment of the Alligator River National Wildlife Refuge on the mainland of Dare County, some formerly Rural areas that were in private ownership have been reclassified to Conservation.

Limited Conservation Land Class Established

This new land class was created to allow for the proper development of certain inland dune and maritime forest areas of the unincorporated County. Included are generally undisturbed lands that have not been designated as Areas of Environmental Concern, yet hold certain environmental or cultural values deserving of protection. At the same time, the class allows for reasonable development to occur within specified guidelines.

Section 1: Data Collection and Analysis

1.1 Information Base

The CAMA guidelines for preparing land use plans in the coastal area of North Carolina require that an analysis of existing conditions and future trends be performed prior to policy development. The intent of this requirement is to insure that the policies as developed respond as closely as possible to current problems and issues facing the County. Key components of the analysis may be described in four categories: 1) present conditions, including population, economy, existing land use, and current plans and regulations; 2) land suitability constraints, including physical limitations for development, fragile areas, and areas with resource potential; 3) community facility and service constraints, including water, sewer, transportation, police, fire, schools, parks and recreation, and solid waste; and 4) anticipated demand, including population and economic projections, future land use needs, and community facility demands.

Collectively, these studies summarize past and present conditions, while providing the essential yardsticks for estimating future conditions.

1.2.1 Population and Economy

1.2.1(a) Population

Dare County's population growth was negligible until about 1970. Over the 90 year period from 1880 to 1970, the total population of the County increased by only about 4,000 people. In contrast, over the 15 year period from 1970 to 1985, over 10,000 new people made their permanent homes in Dare County.

Another way to look at the County's population growth is to examine the average annual growth rate, which is based on the standard compound interest formula. An annual growth rate higher than 2% per year is considered to be quite substantial by many demographers. During the decade of the 1970s, Dare County had a dramatic annual growth rate of 6.7% and, despite the presence of a larger population base in 1980, the County's growth has continued at a rapid clip of 5.2% per year.

Dare County Population Growth

1880-1985

County Population

1880	3,243
1890	3,768
1900	4,757
1910	4,841
1920	5,115
1930	5,202
1940	6,041
1950	5,405
1960	5,935
1970	6,995
1980	13,377
1985	17,243

Absolute Increase

1880-90	525
1890-00	989
1910-20	274
1920-30	87
1930-40	839
1940-50	(636)
1950-60	530
1960-70	1,060
1970-80	6,382
1980-85	3,866

Average Annual Growth Rate*

1950-60	1.0%
1960-70	1.7%
1970-80	6.7%
1980-85	5.2%

**Average annual growth rates are derived using the compound interest formula: Pn=Po (1+r)n. Where Po is the initial population, Pn is the population at the end of the time period, and r is the average annual rate of change.*

Population and Household Growth, 1970-1980

To understand how rapid Dare County's population growth has been, one need only compare it to the growth rate of the State of North Carolina. While North Carolina's total population increased by a healthy 15.7%, Dare County's population growth was an incredible 91.2% over the decade. These relative growth rates are also reflected in the percent change in households over the same period. In both the County and the State, the tendency toward smaller household sizes was evident.

Regarding household size, Dare County's average household was comprised of about 2.5 persons, while the State's was significantly higher at 2.8 persons per household. The County's smaller household size may be a reflection of the number of retired householders in the County.

Population and Household Growth, 1970-1980

	% Change Population	% Change Households	Persons/ Household, 1980
Dare County	91.2	117.4	2.48
State of NC	15.7	35.4	2.78

Source: *U.S. Census, 1980*

Racial Composition, 1980

Compared to the population of the State of North Carolina, Dare County's racial composition in 1980 was overwhelmingly white, with only 6.2% of the population black.

Racial Composition, 1980

	% White	% Black	% Spanish Origin
Dare County	93.2	6.2	0.4
State of NC	75.8	22.4	1.0

Source: *U.S. Census, 1980*

Age Breakdown, 1980

The age breakdown for the County vs. the State again reveals the tendency of Dare County toward a greater retirement aged population. This is evident across the board with fewer persons under 18 years of age and significantly more in the 65-year-old and over category. The median age of Dare County residents was nearly four years older than the median age for the State in 1980.

Age Breakdown, 1980

	Under 18 Years	18-64 Years	65 Years And Over	Median Age
Dare Co.	23.2	64.1	12.6	33.2
State of NC	28.2	61.6	10.3	29.6

Source: *U.S. Census, 1980*

Educational Attainment of Residents, 25 Years Old and Over, 1980

Dare County residents in general tend to be better educated than those residents of the State as a whole. While 55% of the State's population over 25 years of age had graduated from high school, about 65% of Dare County residents were high school graduates. There were also slightly more college graduates in Dare County as a percentage of the total population relative to the State.

Educational Attainment of Residents, 25 Years Old and Over, 1980

	% High School Graduates	% Completed 4 or More Years of College
Dare County	64.7	15.4
State of NC	54.8	13.2

Housing Characteristics, 1980

The seasonal nature of Dare County's population base is well reflected in the housing characteristics for the area. For example, while nearly 98% of all housing units in the State were for year-round occupancy, only 56% of those in Dare County were in year-round use. On April 1, 1980, the day the census was taken, only about 10% of all housing units in the State were vacant. Contrast that figure with Dare

County, where fewer than half of the County's housing units on April 1 were occupied during the off-season.

Regarding housing tenure, Dare County exhibited a tendency toward greater owner occupany at the time of the 1980 census. Of all occupied housing units on April 1 of 1980, only 23% were renter occupied, compared with nearly 32% for the State. If the census had been taken during one of the peak season summer months, the percentage of rental occupancy would no doubt be much higher.

Housing Characteristics, 1980

	Total Housing Units	Year Round Housing Units	% Year Round	% Occupied April 1	Occupied Housing % Owner	Occupied Housing % Renter
Dare Co.	11,006	6,112	55.5	48.7	77.1	22.9
State of NC	2,274,737	2,223,007	97.7	89.8	68.4	31.6

Source: *U.S. Census, 1980*
* Occupancy statistics compiled for April 1, 1980

1.2.1(b) Economy

Median and Per Capita Income in 1979 (Dollars)

Dare County's median household and family income in 1979 was very close to the statewide figures. However, when the per capita incomes are compared, Dare County comes out significantly ahead of the State of North Carolina. With over $2,000.00 more per person in Dare County, the income on a per capita basis is consistent with the County's much smaller household and family size. Thus, while Dare County households have about the same median income as other households in the State, there is more money to go around per person in Dare County.

Median and Per Capita Income in 1979 (Dollars)

	Households	Families	Per Capita Income
Dare County	14,347	17,000	8,346
State of NC	14,507	16,819	6,182

Source: *U.S. Census, 1980*

Employed Persons 16 Years and Over - Percent in Manufacturing Industries, 1980

Dare County has an extreme lack of manufacturing industry compared to the State of North Carolina. This is evident by the fact that less than 7% of the total employed persons 16 years and over work in a manufacturing industry. Contrast that small figure with the State of North Carolina, where almost one out of every three persons is employed in a manufacturing industry.

Employed Persons 16 Years and Over - Percent in Manufacturing Industries, 1980

Dare County	6.7
State of NC	32.8

Source: *U.S. Census, 1980*

Travel Related Employment, 1984

Compared to the State as a whole, Dare County is overwhelming dependent upon travel related industries for a significant portion of its employment base. In 1984, over 36% of all private sector employment in the County was in some way related to the travel industry, while in the State as a whole, less than 10% of all private sector employment was travel related. Thus, while the State looks to the production of manufactured products as a prime foundation of its economy, Dare County's economic base is very heavily service-oriented and produces few products for sale or export. While the commercial fishing industry of Dare County is a notable exception to this statement, the relative financial contribution of the industry to the total County economy is rather limited.

Travel Related Employment, 1984

	Number of Travel Related Employees	% of Total Private Sector Employment
Dare County	2,122	36.5
State of NC	176,775	8.27

Source: *North Carolina Travel and Tourism Division*

1.2.1(c) Impact of Seasonal Population

The impact of seasonal population on Dare County is dramatic and profound. During 1985, for example, there were an estimated 19,600 permanent residents in the County. Over the course of the year, the visitor population averaged close to 60,000 people, and during the summer season, peak visitor population reached 125,000 on some days (Dare County Service Requirement and Development Options Cost Report, March 21, 1986).

This kind of explosive seasonal growth makes planning for public facilities and services very difficult. Local governments in Dare County must design their facility and service capacities to meet the peak seasonal demand, as opposed to the demand created by the permanent population. By way of example, the collective pumping capabilities of the various local governments in Dare County for potable water was a little over 7 million gallons per day in 1985. During the majority of the calendar year, the County's permanent population required an off-peak demand of only slightly over 1 million gallons per day. However, on certain days during the peak of the summer tourist season, total water demand throughout the County was nearly 6 million gallons per day. Thus, there is considerable idle capacity in the County's water system and other public facilities during much of the year.

If an analogy were to be made between Dare County and a major airline company, it might be said that better than four out of every five planes are grounded and out of service for the majority of any given year. As might be imagined, this situation would create fiscal havoc with a major business, and indeed poses significant fiscal problems for a relatively small local government like Dare County's.

The influence of peak seasonal population on the ability of the County to provide services has an impact on virtually every County facility or service, except perhaps education and fire protection. Most public services and facilities in Dare County were found to be at or in excess of their capacities during the peak summer season of 1985, and well within their limits during the balance of the year.

A policy implication provided by the 1985 Carrying Capacity Study was that Dare County could easily accept additional permanent population without having to expand its existing facilities and services, but that any additional visitor population would require the outlay of additional funds to meet these peak demands. The heart of the issue seems to rest on two points: 1) Does the County wish to make a conscious decision to encourage permanent population over visitor population? and 2) If such a conscious decision could be made, does the County have the necessary tools to implement such a policy? On its face, it would appear that the present political, institutional, and legal environment of the County does not lend itself to the implementation of such clearly defined policy choices.

1.2.2 Existing Land Use Analysis

Purpose

The existing Land Use Survey and Analysis serves a number of useful functions. The primary function is to provide a "snapshot" of development patterns, and a basis for determining growth trends over time. The survey identifies where development has occurred, what kind of development it is, and at what density. The survey also shows the relationships between different kinds of land use, and whether or not they are compatible.

Current land use information is fundamental to the preparation of a land use plan. Not only is the survey helpful in preparing growth and development policies, but it is also useful in identifying, for example, where it may be cost effective to provide public services, such as water and sewer. Accurate information on existing land use can also be helpful in making changes to an existing zoning ordinance, or in providing new zoning where none was present before.

Data provided by the survey is also useful to both the public and private sectors in considering specific development proposals. For the public sector, the land use survey can assist in siting a school or park, while in the private sector, the information might be helpful in locating a future shopping center or residential development.

Study Area

The study area for the existing land use analysis corresponds to the planning jurisdiction of Dare County. The planning jurisdiction consists of all unincorporated areas of

the County that are subject to development, including: Duck, Colington, Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras, Roanoke Island (outside Manteo), and the mainland (including Manns Harbour, Stumpy Point, Eastlake and Mashoes). Not included in the study area are the incorporated municipalities of Nags Head, Kill Devil Hills, Kitty Hawk, Southern Shores, and Manteo. For information regarding existing land use within these incorporated areas, the reader is directed to the respective land use plans prepared separately for each of those areas.

Methodology

The existing Land Use Survey and Analysis conducted for the 1987 Dare County Land Use Plan represents a significant improvement over previous land use surveys conducted for the 1976 and 1981 land use plans. First, parcel level base maps were obtained for all unincorporated areas of the County subject to development. Second, black-and-white and color aerial photography dated 1984 to 1986, was used to examine overall development patterns and to help identify specific land uses. Land uses that could not be readily discerned from the aerial photography were flagged temporarily on the base maps. Third, a windshield survey was conducted to verify existing land uses on the ground and record any signficant changes in land use since the date of the aerial photography. Color-coded land use maps were then prepared at full tax map scale, and served as the basis for the existing Land Use Survey contained in this report. These color-coded maps, which are generally at a scale of 1"=400', have been retained on file in the offices of the Dare County Planning Department. The following paragraphs summarize existing land use patterns in each of the unincorporated areas of the County.

Duck

Duck is the northernmost unincorporated area of Dare County. Route 1200 is the only access road into the Duck area, and forms the primary spine from which all development patterns have emerged. The majority of the developable land in Duck has been platted for single family residential use. The majority of the platted land between Route 1200 and the Atlantic Ocean has been developed as such. The Duck area also includes, however, six to eight multifamily developments, a campground, the U.S. Army Corps of Engineers Research Station and Pier, and a growing commercial area adjacent to Currituck Sound. There are a few land parcels of significant size remaining in Duck that have not yet been platted for development. These occur at

the extreme north end of Duck adjacent to Currituck County and in the southern area of Duck near the commercial district.

Colington and Area Outside Kill Devil Hills

The development pattern for Colington has been clearly established by the subdivision plat for Colington Harbour. The area has been platted exclusively for single family residential on small lots adjacent to canals feeding into Albemarle Sound. An older area of single family residential development occurs along Colington Bay on the east side of Colington Harbour. Most of the balance of the unincorporated area outside Kill Devil Hills is sparsely developed for single family residential use. There is a scattering of small commercial establishments along 1217 between Colington Harbour and the Kill Devil Hills town limits.

Rodanthe

This area has a mixed development pattern. While nearly all of the residentially platted parts of Rodanthe are developed for single family use, there is a significant amount of commercial development along Route 12. Lot sizes vary considerably in this area, as do street patterns and age of housing. Using the 1976 Existing Land Use Survey as a basis for comparison, a substantial amount of commercial development has taken place here in the last 10 years. The National Park Service has jurisdiction over a fairly broad strip of property along the area's entire ocean frontage.

Waves

This less densely developed area is characterized by single family residential uses with a minor amount of commercial development. In terms of acreage, the most signficant commercial development is a campground. A substantial number of single family homes are located on the west side of Route 12 in Waves, backing up to Pamlico Sound. Generally, lots on the west side of the road are larger and of older origin while the lots on the east side of the road are part of more recently platted subdivisions. As in Rodanthe, the National Parks Service has jurisdiction over a band of property along the entire length of the area's frontage on the Atlantic Ocean.

Salvo

Salvo is the least commercialized of the three adjacent communities. Nearly all development is contained on the east side of Route 12 and is dominated by single family residential dwellings. Generally, single family parcels are of uniform size and this results in a fairly uniform development density within the area. Three or four small commercial establishments are located near the southern part of Salvo, and there are also a half dozen or so real estate sales

offices located in the area. As in Rodanthe and Waves, the National Parks Service controls a significant band of property along the Atlantic Ocean for the entire length of the Town's ocean frontage.

Avon

Avon is located on a portion of Hatteras Island that is wider, east to west, than Rodanthe, Waves, or Salvo. Avon is also unique in that the location of Route 12 in this section of Hatteras Island leaves a greater amount of land on the west side of the road than to the east toward the ocean. Much of the limited ocean-oriented acreage has already been developed for single family use. Like Rodanthe, there is also commercial development occurring in the area, especially toward the northern half of Avon. A comparison with the 1976 Existing Land Use Survey shows that while the southern portion of Avon had no development ten years ago, there is now emerging a considerable amount of single family residential.

Buxton

The Buxton area exhibits a mixed concentration of residential, institutional, and commercial uses. Commercial uses can be found along every major thoroughfare in the community, including 1231, 1232, and NC 12. Institutional uses also show a concentration here, including the U.S. Coast Guard Station near the Cape Hatteras Lighthouse, the Cape Hatteras High School, the weather station, and several churches. Residential uses in Buxton have generally been developed one lot at a time, and show little evidence of large-scale planned development. Two platted subdivisions can be found, however, on the road leading to Cape Hatteras Lighthouse. In general, there is limited segregation of land uses in the Buxton community. The National Park Service maintains a very substantial amount of land in public ownership on the south side of Buxton.

Frisco

Development patterns in Frisco are heavily influenced by the location of NC 12 through the community. In addition to single family residential uses, there are perhaps a dozen or more commercial uses oriented toward the highway. In comparing the 1986 Land Use Survey with the 1976 survey, it can be observed, however, that some single family residential development is now occurring off NC 12 adjacent to Pamlico Sound. Included as examples are Brigon's Bay and Indian Town Shores near the Buxton side of Frisco. As is the case with Buxton, the National Parks Service maintains a large area of land between Frisco and the Atlantic Ocean for public use and conservation.

Hatteras

Hatteras is the southernmost unincorporated area of Dare County subject to development. Its historical development as a commercial fishing village is well reflected in its existing land use pattern. Commercial fishing uses predominate along the creeks feeding into Pamlico Sound. Service-oriented commercial uses tend to locate along NC 12, reflecting perhaps both in-town demand for services as well as passing traffic from the Ocracoke-Hatteras ferry.

Single family residential uses are scattered throughout the balance of the community, wherever wetlands do not preclude development. Most lots tend to be irregular in size, with the exception of several small planned subdivisions adjacent to the National Park area and in the Sandy Point area.

Roanoke Island (Outside Manteo)

With most commercial uses being concentrated within the corporate limits of Manteo, the balance of the island is mostly residential in character. Notable exceptions include Manteo Airport and its immediate environs, Highway 64/264 heading out of Manteo to the south and east, and Wanchese, where there is a notable presence of the commercial fishing industry. Wanchese, while being predominately single family residential, has a scattering of small commercial uses throughout the community, as well as a concentration of commercial/industrial uses around Wanchese Harbour. The area of Roanoke Island just north of Wanchese is significant for its undeveloped character in that this area serves as the primary source of potable water for much of Dare County.

Mainland

Because of the overwhelming predominance of wetland areas on the mainland of Dare County, as well as the recent designation of most of the mainland as the Alligator National Wildlife Refuge, very little of mainland Dare County is developed or is likely to be developed. Pockets of development occur at Manns Harbour, East Lake, Mashoes, and Stumpy Point. Manns Harbour is mostly single family residential, but with a scattering of small commercial uses within the community. The North Carolina State Shipyard occupies a large tract at the south end of the community. Stumpy Point, Mashoes, and East Lake have small resident populations in single family structures, with minor amounts of resource-based commercial activity. Other significant land uses on the mainland include the Navy and Air Force bombing ranges, the County landfill site at East Lake, and the remaining acreage of Prulean Farms, which is generally south and west of Highways 64 and 264.

Significant Land Use Compatibility Problems

Most of the major problems in the County regarding land use compatibility stem from a mixing of residential and non-residential uses in the small, unincorporated communities. In some areas, such as Rodanthe, Waves, and Salvo, commercial uses are distributed along various segments of NC 12. In others, such as Buxton, Hatteras, and Wanchese, commercial uses occur randomly throughout the community with few sizable areas developed solely for residential purposes.

It should be noted, however, that this intermixing of commercial and residential uses in these small communities is oftentimes the result of historical patterns of development related to the commercial fishing industry. In Hatteras, Wanchese, and Stumpy Point, for example, home sites were originally selected for their access to navigable water and for the ability to combine a business and residence on the same site. Therefore, the mixing of such uses in these small communities has not historically been as objectionable as it might be in other communities.

As development escalates and becomes more intensive, conflicts between non-compatible uses will increase, however. The mixing of incompatible uses that may have been acceptable in the past is likely to come under closer scrutiny in the future. Another factor is that newcomers to the area, unaccustomed to this traditional mixing of uses, may be less tolerant of the situation. It is worth noting that over the course of this plan's preparation, the County has been successful in establishing zoning in certain unincorporated areas of the County, most notably the Buxton Woods area.

Major Problems From Unplanned Development

There are several problems facing Dare County that, to a large extent, are the result of unplanned development. One problem mentioned repeatedly at the public meetings held for the Land Use Plan has been traffic congestion on existing thoroughfares. Beyond the sheer volume increase in traffic from greater amounts of growth and development, commercial establishments fronting on the highway can be sources of congestion. Curb cuts and multiple driveways from individual commercial uses reduce the capacity of the highway to handle traffic volumes.

A second problem resulting from unplanned development has been the loss of natural resources and amenities of the land. Residents at the public meetings mentioned, for example, the clear cutting of vegetation prior to develop-

ment, the destruction and leveling of sand dunes, and the loss of scenic beauty.

A third major problem is the issue of providing public water and sewer services to keep pace with the demand created by new higher density forms of development. This problem was made most evident by the recent 1985 Carrying Capacity Study conducted for the County. There is a need for improved coordination, planning and capital budgeting by all the government entities within the County.

In addition to the problems associated with the carrying capacity, the issue of sea level rise is emerging as a factor that could pose a significant problem in the coming decade. Although not completely understood or quantified at this time, the rise of sea level and the tendency for development to locate as close as possible to the shoreline represents a potential for property loss in Dare County that deserves regulatory attention as the issue becomes better understood.

Finally, a significant potential problem is the possibility that the County's potable water supply might be threatened by development in primary aquifer recharge areas. An idea that received considerable support at the public meetings was a hydrological study of Hatteras Island to determine exactly what the critical areas of the island are, and how they might best be protected. In any event, it is recognized that the Hatteras Island Wellfield AEC affords a certain level of protection to this important aquifer.

Areas Experiencing Or Likely To Experience Changes in Predominant Land Uses

Due to the recent rapid growth of the County and the prospect for likely continued rapid growth over at least the next ten years, it is possible that virtually any of the remaining developable lands within the County could experience significant changes in land use. While Dare County is a very large county in terms of overall acreage, only a relatively small portion of the unincorporated County is actually available for development. Nearly all of the mainland, and much of the Outer Banks must be ruled out due to the presence of wetlands, as well as the National Seashore area, the Pea Island Wildlife Refuge, and the Alligator River Wildlife Refuge. Any remaining high ground area is, therefore, a potential candidate for development and, thus, change in predominant land use.

In general, the County will continue to develop for residential purposes, and commercial establishments will follow

on the heels of the residential development in an effort to serve the new and expanding market. Commercial developments are likely to continue to concentrate along the major thoroughfares, while residential developments will occur away from the thoroughfares under more controlled conditions. This will be especially evident in the unincorporated communities located on the Outer Banks.

1.2.3 Current Plans, Policies and Regulations

(a) Local Government

Plans and Policies

As a means of coordinating the various planning activities of Federal, State and local governments in Dare County, a summary of important plans, policies and regulations is included here.

1. 1976 Dare County Land Use Plan - This was the first countywide Land Use Plan prepared under the guidelines of the Coastal Area Management Act. The plan established the initial land classification system for the County, and recommended balanced economic growth, including diversification of the local employment base away from primarily tourism and service industries.

2. 1982 Dare County Land Use Plan Update - This plan picked up on the economic diversification theme established in the 1976 plan, suggesting several specific actions that could be taken, including:
   - lengthening of the tourist season
   - increased permanent population
   - development of mineral production
   - revitalization of commercial fishing and associated industries
   - increased agricultural production
   - increased demands for public services on a year-round basis

   The plan's major conclusion was that the County's planning program should focus its attention particularly on development issues facing Hatteras Island, the Wanchese area, and the mainland.

3. Dare County Complex - 201 Wastewater Management Plan (1976) - This plan covered the areas of Nags Head, Kill Devil Hills, Whalebone Junction - South, Manteo and Wanchese. It recommended a regional treatment facility in Nags Head providing a capacity of 3.6 mgd of secondary treatment with effluent disposal via ocean outfall. This plan was eventually shelved, in large measure due to the environmental issues surrounding the ocean outfall.

4. Hatteras Island Complex - 201 Wastewater Management Plan (1984) - This plan covered all of Hatteras Island. The findings of the plan indicated that a centralized wastewater collection transport and treatment facility was not justified due to low demand and high costs. The study did indicate, however, that the feasibility for such a facility might increase as development densities and water quality problems increased.

5. Dare County Carrying Capacity/Development Study (1985) - This plan prepared a comprehensive analysis of Dare County's development options. The overall purpose of the study was to determine the facilities, services, and funding required to enable the County and its towns to cope with growth through the year 2000. The study recommended the creation of the Area Development Coordination Agency, which is currently in place.

6. Dare County Disaster and Assistance Relief Plan (1984) - This plan deals primarily with disaster prevention and mitigation, communications and warning, shelter responsibilities, and damage assessment and recovery operations. It includes an annex for each major disaster which could affect Dare County, in addition to plans for setting up shelter operations, damage assessment teams, and disaster assistance centers.

7. Dare County Hurricane Evacuation Plan (1977, Revised 1983) - The intent of this plan is to provide for an orderly and coordinated evacuation to minimize the effects of hurricanes on residents and visitors in Dare County. The plan provides for the alerting of selected officials, the evacuation of the public from danger areas, and the designation of shelters for evacuees. It also provides for re-entry into evacuated areas when appropriate.

8. Draft Master Plan/Environmental Assessment For Alligator River National Wildlife Refuge, Dare County, North Carolina (1986) - This plan and environmental assessment is a comprehensive planning document which includes the actual refuge master plan as well as an outline of public involvement in the planning process. The plan includes an explanation and description of three alternatives, an examination and

evaluation of the impacts of the alternatives, and a justification for the selection of a preferred alternative. In general, this plan outlines a strategy for the long-term management of the Wildlife Refuge.

9. General Management Plan and Amended Environmental Assessment For Cape Hatteras National Seashore (1984) - This National Parks Service plan proposes a general management plan for Cape Hatteras National Seashore that provides for the preservation of the cultural resources and the flora, fauna, and natural physiographic conditions, while allowing appropriate recreational use and public access to the oceanside and soundside shores. Included in the plan are provisions for controlling off-road vehicles, providing for accessible oceanside and soundside sites, allowing natural seashore dynamics to occur, controlling exotic vegetation, preparing natural and cultural resource studies, and cooperating with State and local governments to achieve mutual planning objectives.

Regulations

1. Flood Insurance Regulations - The County Building Inspector enforces flood insurance regulations for structures located in flood-prone areas. All of Dare County, including its municipalities, are enrolled in the Federal Insurance Administration's regular program for flood insurance. Up-to-date maps of all flood-prone areas have been delivered to the County within the past year.

2. Subdivision Regulations - All of Dare County is covered by subdivision regulations. A major revision of the County ordinance in 1981 raised the minimum lot size from 15,000 to 20,000 square feet where individual wells and septic tanks are to be used. If public water is used, the minimum lot size is 15,000 square feet. Subdivision plats are reviewed by the County Planning Board with technical assistance provided by the County Planning Department.

3. Zoning Ordinance - Dare County's zoning jurisdiction includes the unincorporated portion of Bodie Island (Duck) and the northern portion of Roanoke Island (generally, the area north of US 64-264 and Skyco Road). The County's five municipalities all enforce zoning ordinances within their corporate limits. It should be noted that at the time of this writing, the County has been

successful in establishing new zoning controls in certain critical areas of the unincorporated County, the most notable of which is the Buxton Woods area.

4. Dune Protection Ordinance - Dare County enacted a dune protection ordinance in 1971, several years before the passage of CAMA. An updated revision of this ordinance prohibits off-road vehicles from traveling on the dune and beach during peak summer seasons. Commercial fishermen and emergency vehicles are exempted from the ordinance. The National Parks Service also has its own rules and regulations regarding the use of off-road vehicles in the dune and beach area.

5. CAMA Permits for Minor Developments in AECs - Dare County established a program to enforce State guidelines for development within areas of environmental concern in 1978. Applications for minor developments, as defined by CAMA, are reviewed and acted upon by the local permit officer (LPO).

1.2.3(b) State and Federal Government Licenses and Permits

STATE LICENSES AND PERMITS

Department of Natural Resources and Community Development Division of Environmental Management	- Permits to discharge to surface waters or to operate waste water treatment plants or oil discharge permits; NPDES Permits, (G.S. 143-215).
	- Permits for septic tanks with a capacity over 3,000 gallons/day (G.S. 143-215.3).
	- Permits for withdrawal of surface or ground waters in capacity use areas (G.S. 143-215.15).
	- Permits for air pollution abatements facilities and sources (G.S. 143-215.108).
	- Permits for construction of complex sources; e.g. parking lots, subdivisions, stadiums, etc. (G.S. 143-215.109).

	- Permits for construction of a well over 100,000 gallons/ day (G.S. 87-88).
Division of Coastal Management	- Permits for any development in Areas of Environmental Concern (G.S. 113A-118). NOTE: Minor development permits are issued by the local government.
Department of Natural Resources and Community, Development, Division of Earth Resources	- Permits to alter or construct a dam (G.S. 143-215.66).
	- Permits to conduct geophysical exploration (G.S. 113-391).
	- Sedimentation erosion control plans for any land disturbing activity of over one contiguous acre (G.S. 113A-54).
Department of Natural Resources Community Development, Secretary of NRCD	- Permits to construct an oil refinery.
	- Easements to fill where lands are proposed to be raised above the normal high water mark of navigable waters by filling. (G.S. 146-6(c)).
Department of Human Resources	- Approval to operate a solid waste disposal site or facility (G.S. 130-166.16).
	- Approval for construction of any public water supply facility that furnishes water to ten or more residences (G.S. 130-160.1).

FEDERAL LICENSES AND PERMITS

Army Corps of Engineers (Department of Defense)	- Permits required under Sections 9 and 10 of the Rivers and Harbors of 1899; permits to construct in navigable waters.
	- Permits required under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972.
	- Permits required under Section 404 of the Federal Water Pollution Control Act of 1972; permits to undertake dredging and/ or filling activities.
Coast Guard	- Permits for bridges, causeways, (Department of Transportation) pipelines over navigable waters; required under the General Bridge Act of 1946 and the Rivers and Harbors Act of 1899.
	- Deep water port permits.
Geological Survey Bureau of Land Management (Department of Interior)	- Permits required for off-drilling.
	- Approvals of OCS pipeline corridor rights-of-way.
Nuclear Regulatory Commission	- Licenses for siting, construction, and operation of nuclear power plants; required under quired under the Automic Energy Act of 1954 and Title II of the Energy Reorganization Act of 1974.
Federal Energy Regulatory Commission	- Permits for construction, operation and maintenance of interstate pipelines facilities required under the Natural Gas Act of 1938.

- Orders of interconnection of electric transmission facilities under Section 202(b) of the Federal Power Act.

- Permission required for abandonment of natural gas pipeline and associated facilities under Section 7C(b) of the Natural Gas Act of 1938.

- Licenses for non-federal hydroelectric projects and associates transmission lines under Sections 4 and 15 of the Federal Power Act.

1.2.3(c) Evaluation of Previous Land Use Plan Effectiveness

Most of the attention given to the Dare County Land Use Plan since it was last updated in 1982 has focused on the Land Classification Map. This attention to the land classification map has resulted for a number of reasons. First, actual policy statements are not easily located in the text of the document. Consequently, both public officials and private developers have focused their attention heavily on the land classification map without benefit of policy statements for more detailed interpretation and explanation. Secondly, lack of clear policy statements has occasionally hampered the clear interpretations of the local Land Use Plan by State and Federal government agencies.

The Conservation class of the land classification map has been the subject of particular controversy over the years, owing to varying interpretations of its intent. Improvements to the 1987 update to the plan, therefore, have focused in three specific areas:

1. providing clear, identifiable, and easily located policy statements to address each of the policy issues identified in the CAMA guidelines, as well as issues of primarily local concern.
2. consolidating and clarifying the various layers of definitions for the land classes as contained in the 1982 plan. (The 1982 plan contained three layers of definitions: from the 1976 plan, from the State CAMA guidelines, and from the 1982 plan.)
3. improving the relationship of the various land classes to the natural features of the land, including recent wetlands inventory mapping.

1.3 Constraints; Land Suitability

1.3.1 Physical Limitations for Development

1.3.1(a) Natural Hazard Areas

In Dare County, the Coastal Resources Commission recognizes three kinds of natural hazard areas, all of which fall under the general category of Ocean Hazard Areas:

1) **Inlet Hazard Areas,** which are lands adjoining Oregon and Hatteras Inlets for variable distances as determined by the CRC.

2) **Ocean Erodible Areas** which, overlaying the frontal dune, include the distance landward from the first line of stable natural vegetation along the entire ocean front, and

3) **High Hazard Flood Areas,** which are areas subject to high velocity waters during a 100 year storm event. These are identified as V zones on the National Flood Insurance rate maps.

1.3.1(b) Man-Made Hazard Areas

Man-made hazards in Dare County are limited primarily to civilian and military aircraft operations. Land areas within the approach zones of the County's three airports are obviously hazardous locations in which to develop, especially if such activities generate concentrations of human activity. Inappropriate development can also be a hazard to airport operations, in that distracting lights or tall obstructions can be dangerous to aircraft.

Dare County Regional Airport on Roanoke Island has a limited amount of development in its immediate environs. First Flight Airport on Bodie Island and Billy Mitchell Airport on Hatteras Island typically handle only small aircraft and do not pose a significant threat to public safety.

The military operates a bombing range on the mainland for training Navy pilots. As appropriate, the location of the bombing range is remote from human activity. The main problem presented by the military operations have been

conflicts with civilian traffic seeking convenient access to and from the County's Regional Airport. Recently, the military has agreed to certain procedural concessions to improve civilian aircraft operations. The military has also agreed to restrict low flying runs and over-flights of the villages. All of these efforts should serve to reduce aircraft-related hazards in the County.

1.3.1(c) Soil Limitations

Soil limitations are perhaps the singlemost constraining natural factor in limiting growth and development in the unincorporated areas of Dare County. The 1985 Carrying Capacity Study for the County used 34 pages of detailed narrative and tables to document and discuss the issue. The following is a summary of some of the key findings of that study.

Dare County has one of the most diverse series of soil types of any County in coastal North Carolina. Along much of the Outer Banks portion of the County, the soils are generally well to moderately well drained sand. On Roanoke Island, soils range from loamy sand surfaces with sandy clay loamy subsoils to silty clay loam surfaces. The mainland area is predominantly poorly drained soils with thin organic loam to silt loam surface layers. In addition to these broad differences between the three main land masses, soil types can vary significantly within relatively small areas.

The high degree of variability in soil types, combined with a generally high, seasonally fluctuating water table, make large-scale land use planning difficult. Nonetheless, the Carrying Capacity Study used Soil Conservation Service soil maps to divide the entire County into four general categories for septic tank suitability:

Suitable
Marginal
Unsuitable
Questionable

A summary of the classification of soil types for septic system suitability in Dare County is contained in the table on the following page.

Classification of Soil Types for Septic Tank Suitability

Soil Type	Depth to Water Table	Suitability
Duneland	6.0'	Suitable
Fripp Fine Sand	6.0'	Suitable
Newhan Fine Sand	6.0'	Suitable
Newhan Complexes	Varies	Suitable
Pactolus-Wakula-Wagram Association	NA	Suitable
Corolla Fine Sand	1.5 to 3.0'	Marginal
Corolla Fine Sand, Forested	1.5 to 3.0'	Marginal
Beach Foredune Association	0 to 3.0' (Foredunes 6.0')	Unsuitable
Corolla-Duckston Complex		Unsuitable
Hobonny Soils	0 to 2.0'	Unsuitable
Duckston Fine Sands	1.0 to 2.0'	Unsuitable
Duckston Fine Sands, Forested	1.0 to 2.0'	Unsuitable
Carteret Soils, High	1.0 to 3.0'	Unsuitable
Conaby Soils	0 to 1.0'	Unsuitable
Currituck Soils	0 to 3.0'	Unsuitable
Wasada-Bladen Association	NA	Unsuitable
Capers Association	NA	Unsuitable
Dredge Spoil	3.0'	Questionable
Madeland	0 to 2.0'	Questionable

Source: Dare County Carrying Capacity Study (1985)

Dare County, in response to concerns for protecting its groundwater, has required that lots platted after January, 1981, must be a minimum of 15,000 sq. ft. when connected to a public water supply and a minimum of 20,000 sq. ft. when using a private well. A more complete discussion of the implications of these requirements on future growth levels is contained in Section 1.5 of the plan.

The table below represents a summary of land acreage available for development in various parts of the County. Included are only those acreages that are undeveloped and environmentally suitable for development, but not including lands that are already dedicated to uses not compatible with development (e.g. National Seashore Areas, airport areas, park areas, etc.). As can be seen from the table, of the County's total 16,200 remaining available acres of developable land, only about 1/3 or 6,600 acres are left in the unincorporated area. These figures are particularly profound in light of the total 250,000 acres of land within Dare County's borders.

Jurisdictional Summary of Total Acres Available for Development

Jurisdiction	Acres
Nags Head	1,600
Kill Devil Hills	1,500
Kitty Hawk	2,750
Southern Shores/Martins Point	2,700
Manteo	1,000
Unincorporated-Dare	
° N. Beaches	
- Colington-Baum Bay	900
- Duck/North	1,300
° N. Hatteras	
- Rodanthe-Salvo-Waves	300
° S. Hatteras	
- Avon	110
- Buxton	560
- Frisco	350
- Hatteras	330
° Roanoke Island	2,500
° Mainland	300
TOTAL	16,200

Source: *Dare County Carrying Capacity Study (1985)*

1.3.1(d) Water Supply

Dare County is dependent upon several different sources of raw water supply, but all are wholly or at least partially dependent upon groundwater. The following water supply analysis is excerpted from the 1985 Dare County Carrying Capacity Study.

Underlying the County is a system of layers of three aquifers. The shallow upper aquifer ranges in depth from 50 feet on Roanoke Island to a maximum thickness of 100 feet at Kitty Hawk. This upper aquifer receives new water or is recharged by precipitation and is used by a limited number of people on Roanoke, the Northern Beaches, and Hatteras Islands as a source of water for private wells. Roanoke Island serves as the land surface for recharge into this upper aquifer. The upper aquifer is hydraulically linked to the next aquifer below and some recharge occurs from the upper to the next aquifer below.

The next aquifer, known as the primary aquifer (since it is the primary source of potable water for the County), ranges from 110 feet deep on Roanoke Island to 45 feet deep at Nags Head. The depth to the surface of this primary aquifer ranges from about 100 feet on Roanoke Island to 200 feet along the Northern Beaches. This aquifer receives recharge from the mainland and Roanoke Island and may be affected by leakage from the upper aquifer.

The estimated total annual recharge capacity to the primary aquifer is 19,439 million gallons, which might produce a safe yield from 10,000,000 to 15,000,000 gallons per day. Since exact recharge to the aquifer depends on numerous factors including annual total precipitation, the 15,000,000 GPD may not be realized.

The lowest aquifer is not considered a plausible source of potable water due to a variety of factors. The water quality of this aquifer is unsuitable for water supply development since its chlorine concentrations are in excess of maximum allowable chlorine concentrations. Although no hydraulic data currently exists for this aquifer, recharge is suspected to be limited since it is bounded by clay layers and thus once water is withdrawn, rapid recharge is unlikely.

Fresh Pond, located on the Northern Beaches, is a 2.7 acre lake half way between the sound and the ocean and bisected by Nags Head and Kill Devil Hills. The water in the lake comes from precipitation as well as some flow from the

groundwater upper aquifer. Engineers estimate it could produce a safe, sustainable yield of 900,000 gallons per day during one year's time. For emergency purposes, a withdrawal of 1,500,000 is possible for periods of short duration, the maximum being a four day period.

The Cape Hatteras Water Association draws its raw water from an aquifer system underlying the Island. The system is comprised of two aquifers, the first is a water table aquifer extending from the land surface to the first confining beds. The second aquifer, a semi-confined aquifer, is below and between these confining beds. The fresh groundwater is not static in size as it is a lens-shaped mass which floats on heavier saltwater and is subject to seasonal and tidal fluctuations. This aquifer is recharged by precipitation. According to an Evaluation of Potential Ground Water Development on Hatteras Island, 1984, the estimated annual recharge is 2.178 billion gallons based on an average rainfall of 50 inches per year.

The area of Hatteras Island north of Avon depends exclusively on private wells as its source of potable water. The water is drawn from a shallow water table aquifer averaging 15 feet thick for which precipitation is the sole source of freshwater recharge. Although there is a general lack of data available to establish water quality trends, the residents of Rodanthe, Waves and Salvo have indicated that the water quality varies considerably from the ocean side and sound side of the island. Due to the hydrogeologic structure of the area, the ocean side can obtain good quality fresh water from a shallow aquifer underneath the dune ridge system. The sound side of these communities obtain potable water which is not contaminated yet appears, tastes and smells unpleasant.

1.3.1(e) Areas Which Exceed 12% Slope

The incidence of areas which exceed 12% slope comprise a very small percentage of the total acreage of the County. With the exception of the live dune areas of Jockey's Ridge and certain areas of the frontal dune system, the steep slopes within the County are stabilized with natural vegetation. Areas which do exceed 12% slope within the County are: 1) The dune system facing Roanoke Sound on the northeast section of Roanoke Island; 2) the Jockey's Ridge live dune system; 3) the maritime forest areas of Buxton Woods and Nags Head Woods; 4) the Wright Memorial at Kill Devil Hills; 5) a small area of inland dunes south of Frisco; and 6) the frontal dune system along the County's ocean shore.

While Jockey's Ridge, Nags Head Woods, and the Wright Memorial are not located within the unincorporated area of Dare County, they are included here for the sake of completeness.

The texture of all soil types in areas which exceed 12% slope is sand. In general, the depth to the water table is well below 3', the soils are well drained, and are either sparsely vegetated or vegetated by plants which can survive in very dry conditions: wax myrtle, live oak, slash pine, loblolly and longleaf pine, sand pine, sea oaks, sea coast blue stem and beach grass.

1.3.2 Fragile Areas

As defined in the CAMA guidelines, fragile areas are those areas which could easily be damaged or destroyed by inappropriate or poorly planned development. Fragile areas can include: coastal wetlands, sand dunes along the outer banks, ocean beaches and shorelines, estuarine waters and estuarine shorelines, public trust waters, complex natural areas, areas that sustain remnant species, areas containing unique geologic formations, registered natural landmarks, and others such as wooded swamps, prime wildlife habitats, scenic and prominent high points, archeologic and historic sites, etc.

Dare County is blessed with many unique and fragile natural and historic areas. The significance of many of these areas has long been recognized by the State Coastal Resources Commission as well as local governments in Dare County. As a result, much of the lands encompassing these fragile areas have been designated as Areas of Environmental Concern, with associated special management controls and development permitting procedures. Foremost among these specially recognized and protected fragile areas are coastal wetlands, ocean beaches and shorelines, estuarine waters and shorelines, and public trust waters. For a discussion of the significance of these areas, the reader is referred to Section 1.2.1 of this document.

Fragile areas not protected by AEC designation, but which are of particular significance in the unincorporated area of Dare County include the following:

a) Complex natural areas - A good example of this type of fragile area is Buxton Woods. This area is significant as one of the last prime examples of maritime forest in the State of North Carolina. It is also an important area for

recharge to the groundwater aquifer providing potable water to Hatteras Island. It is worth noting that over the course of preparing this plan, options were being considered at the State and local level as to the best course of action to take to ensure that complex natural areas such as Buxton Woods are not destroyed by improper development. After extensive dialogue among the various interests involved, the decision was made to establish a Special Environmental District under the County's local zoning authority. Nomination of Buxton Woods as an Area of Environmental Concern was eventually discontinued in lieu of the adoption of local development controls.

b) Sand dunes along the outer banks - Jockey's Ridge is the most well known example of this type of fragile area. Of less notoriety, but also of great significance to Dare County residents, are the numerous other smaller inland sand dunes found throughout the Outer Banks portion of the County. In recent years, concerns have arisen regarding the apparent indiscriminate bulldozing and leveling of these sand dunes by some developers. Sand mining has also been identified as a concern, particularly when such mining destroys the natural topography and visual quality of the land.

c) Prime wildlife habitats - Dare County is the home of several important and extensive wildlife habitat areas. Included are the Cape Hatteras National Seashore, the Pea Island Wildlife Refuge, and the Alligator River Wildlife Refuge. Because they are Federally-owned lands, however, and subject to the careful control of the Federal agencies responsible for their management, destruction of these fragile areas is of lesser concern than for those lands held in private ownership. Nonetheless, local governments and the public in general have shown an active interest in the proper use of these areas, as evidenced by public review and comment on management plans and environmental impact studies prepared for these areas.

d) Archaeologic and historic sites - Regarding these types of fragile areas, the North Carolina Department of Cultural Resources, Division of Archives and History, has stated:

A number of small archaeological surveys and excavation projects have been conducted in and around Dare County over the years and have resulted in the identification of many prehistoric and historic archaeological sites. Dare County has one of the longest histories of European settlement, beginning with the famous 'Lost Colony' of John White in the sixteenth century. In addition, the Native American presence is well known, spanning nearly 10,000 years. However, since the villages and early settlements are not readily visible to the eye, and since relatively little on-the-ground survey has been conducted in the region, our information concerning the nature and distribution of sites is limited.

Based on the available information, we have identified areas considered to have a high probability for containing archaeological sites. . . . These areas include most of the sound shoreline, stream and river shorelines, and some high ground within or around low-lying marshland. Since much of this area has been built upon in recent years, the remaining undeveloped lands take on increasing importance for identifying and learning about the past.

We have conducted a search of our maps and files, and have located [five] structures in the unincorporated areas of Dare County which are currently listed in the National Register of Historic Places, and one house which is on the Division of Archives and History's Study List for future nomination to the Register. These properties are . . . [as follows]:

<u>National Register</u>

1--Caffey's Inlet Life Saving Station
2--Chicamacomico Boathouse
3--Chicamacomico Life Saving Station
4--Fort Raleigh National Historic Site
5--Hatteras Weather Station

<u>Study List</u>

1--Drinkwater's Folly (Dough House)

> Since a comprehensive cultural resources inventory of Dare County has never been conducted, there may be other properties of architectural and/or historical significance of which we are unaware located in the planning area. (Letter communication, May 21, 1987)

1.3.3 Areas With Resource Potential

Areas with resource potential include: productive and unique agricultural lands; potentially valuable mineral sites; publicly owned forests, parks, fish and gamelands, and other non-intensive outdoor recreation lands and privately owned wildlife sanctuaries.

The most extensive areas having resource potential in Dare County are those lands included in the Federally-owned National Seashore and Wildlife Refuge areas. *The Cape Hatteras National Seashore Recreation Area* is administered by the National Park Service of the Department of the Interior. The Seashore encompasses some 70 miles of the Outer Banks and extends from Whalebone Junction at Nags Head southward beyond Dare County onto Ocracoke Island. The Seashore covers all areas of the Outer Banks not part of the incorporated municipalities.

Pea Island Wildlife Refuge is part of the Cape Hatteras National Seashore. The Refuge was established in 1938 to protect the breeding grounds of migratory birds and other wildlife. It encompasses approximately 14 miles on the northernmost end of Hatteras Island. Also included in the Refuge are several estuarine system islands adjacent to the main area in Pamlico Sound.

The most recent addition to the system of Federally-owned lands in Dare County is the *Alligator River National Wildlife Refuge*. Created since the last Land Use Plan Update of 1982, this 118,000-acre Refuge includes the majority of all areas on the mainland of Dare County. Most, if not all, of the Refuge is comprised of lands with a groundwater table at or near land surface, and the entire area is subject to flooding during a major storm event. Due to the extensive undeveloped and uninhabited acreage of this Refuge, the area supports a diverse and abundant stock of wildlife. Typical species are thought to include: black bear, cottontail and marsh rabbits, woodcock, raccoon, wildcat, opossum, foxes, snipe, rails, muskrat, mink, otter, duck, mergansers, geese, swan, and a host of others.

In the past year, red wolves have been reintroduced to the area from the West Coast of the U.S. with the hope that this declining species will multiply under favorable conditions of the Wildlife Refuge.

The remaining portions of mainland Dare County which are not part of the Refuge nor included in the few small communities there (East Lake, Mashoes, Stumpy Point, Manns Harbor) are largely in private ownership as private game reserves or for commercial forestry. While there has been discussion of major agricultural development and possible peat mining at various times over the years, to date these possibilities have not come to fruition.

The final category of areas with resource potential are the numerous locations for potential mining of sand, clay or marl. At present, sand mining is probably the most prevalent of the three, but is not yet considered to be a significant element of the local economy. This issue as well as each of the other resource areas mentioned above are also discussed in the policy section of this document.

1.4 Constraints; Community Facilities and Services

As discussed in the preceding section, the suitability of land for development presents one set of constraints on the future growth of Dare County. These mostly natural constraints are largely beyond the control of man, without considerable and oftentimes costly modification of the land resource.

A second set of constraints, however, has to do with local government's ability to provide and pay for community facilities and services in the face of continued growth. While such ability is linked to some degree to the natural systems upon which certain facilities (such as water) depend, the provision of such facilities and services is more a function of conscious **decisions** on the part of local government as to whether such services are needed, who will pay for them, how, and when.

Dare County's recent explosive growth rate has led to a concern about the County's ability to keep pace with such growth. In response to this concern, the County contracted in 1985 with Booz, Allen and Hamilton, Inc. to conduct the previously referenced Dare County Carrying Capacity Study. The purpose of this $150,000 study was to determine the facilities and funding that will be required to enable Dare County to cope with its growth and development through the year 2000. The study contains extensive analysis of both existing capacities and future demand for facilities and services. Therefore, the following sections of the Land Use Plan are largely key excerpts from the Carrying Capacity Study. In some instances, the text has been modified or revised to reflect more recent information.

1.4.1 Water

Description of Dare County Public Water Systems

Consumers receive their water from either the County Regional water system, which includes Fresh Pond, the Cape Hatteras Water Association, or from private wells. Each system obtains its raw water from discrete yet interrelated water sources. The Dare County system and any private wells on Roanoke Island and the Northern Beaches rely on the acquifer system as a source of freshwater. The Fresh Pond system taps a surface water source which is linked to the upper aquifer. Water for the Cape Hatteras Water Association comes from a water table groundwater aquifer system which floats on top of an underlying saltwater system.

All incorporated towns as well as unincorporated areas of the Northern Beaches receive potable water from the County Regional water system. Areas which are not serviced by the County water system include Hatteras Island, the mainland and portions of Roanoke Island. To service its customers, the County water department draws fresh water from the primary aquifer through ten wells in the Wanchese area of Roanoke Island. Total current pumping capacity of the system is 5.5 million gallons per day (MGD) while the current treatment plant capacity is 7.2 MGD.

Limited by its pumping capacity of 5.5 MGD, the County has allocated this total potable water capacity among the various areas it serves as either a wholesaler or retailer. The current County customers and their allocations include:

- Manteo - allocated 0.4 MGD at wholesale rate
- Nags Head - allocated 2.0 MGD at wholesale rate, plus one-third of actual production from Fresh Pond once operational
- Kill Devil Hills - allocated 2.0 MGD at wholesale rate, plus one-third of actual production from Fresh Pond once operational
- Overall county customers - receive an additional one-third of actual production from Fresh Pond

The County maintains the water lines for only those customers in Kitty Hawk, Southern Shores, and the unincorporated areas to the north. Nags Head, Kill Devil Hills, and Manteo maintain their own distribution lines.

The County's storage capacity of 3,200,000 gallons is from four tanks; one ground tank of 500,000 gallons near the border of Kill Devil Hills and Kitty Hawk; an elevated tank of 500,000 gallons near the Kitty Hawk elementary school (both tanks are intended to service areas north of Kill Devil Hills); a 2.0 million gallon ground tank at the main plant on Roanoke Island; and a 200,000 gallon elevated tank located at the main plant, which is used to service Manteo and the surrounding limits.

A joint venture between the County, Nags Head and Kill Devil Hills, the Fresh Pond water system can yield approximately 1.5 MGD at maximum capacity. Only about 1.5 MGD can be continuously pumped for no more than four days without damaging the water source. Of the total capacity, 0.90 MGD are considered Fresh Pond's safe sustainable yield allocated to Nags Head, Kill Devil Hills and the County at 0.30 MGD each. Each jurisdiction is allocated one-third of current water production regardless of total production.

Storage facilities for Kill Devil Hills comprise a total of 1.65 million gallons. The town has two elevated and three ground storage tanks. Of the two elevated tanks, one is at 8th Street which holds 250,000 gallons and the other is located at the Town Hall, holding 200,000 gallons. Also at the 8th Street plant are two ground storage tanks with capacities of 500,000 and 200,000 gallons. The third storage tank is located at the Town Hall and can store 500,000 gallons.

Nags Head has a total of 1.3 million gallons of storage capacity. A 300,000 gallon elevated tank is located at the Town Hall and two 500,000 gallon ground storage tanks are located one each at the Gull Street plant and the 8th Street water plant. Nags Head expects to construct another elevated tank holding between 300,000 to 500,000 gallons on Park Service land for the area south of Whalebone Junction. No date for construction has been set.

In 1985, 2,000 customers from the Villages of Avon, Buxton, Frisco and Hatteras were supplied by the Cape Hatteras Water Association. The Association obtains its raw water from the Buxton Woods Aquifer and operates a 1 MGD pumping and treatment facility assuming continuous 24 hour operations. The plant can safely produce approximately 800,000 gpd of treated water. The Association only sells water to its members on a retail basis. The total storage capacity for the area is currently 900,000 gallons which includes a ground level 200,000 gallon tank located at the water plant, three elevated 100,000 gallon tanks, (one for each of the Hatteras, Buxton and Avon areas), and a new tank of 400,000 gallons built in 1986 in Buxton.

The Dare County Regional Water System, together with the Fresh Pond and Cape Hatteras Water Association, are capable of producing 7.2 million gallons of water per day on a sustained basis. The breakdown of this total is as follows:

Current Water Systems Treatment Capacities

System/Source	MGD
Dare County Regional	5.5
Fresh Pond	0.9
Cape Hatteras	.8
	7.2 MGD

Dare County Water Demand

The **average** daily water use for the entire County from the Dare and Cape Hatteras system ranges from 4.3 MGD during the peak season to 1.2 MGD during non-peak season. The 1985 **average** figures indicate water demand below the projected capacity for all systems of 7.2 MGD. Although the average daily water use provides a guideline for what the water systems are handling overtime, the **actual peak** daily use should be compared against the water supply capacity to determine how much remaining capacity is available on a short term basis.

Peak consumption in 1985 for the towns and Cape Hatteras is presented below. The potential daily peak consumption has been derived based on the highest water use for each area regardless of the date. These figures are summed to illustrate the maximum capacity required if each system were simultaneously pumped the same total gallons as their single peak day.

Note: In the time since the initial draft of this Plan was written, the construction of a 15 MGD reverse osmosis desalinization water plant has begun. The plant is expected to come on line by the Fall of 1989. This new plant will further supplement at the County's existing regional water supply system. The project is a joint effort of the Towns of Nags Head and Kill Devil Hills, and Dare County.

Town/Area	Potential Peak Consumption (MGD)	Date
Nags Head	2.23	July 5
Kill Devil Hills	1.82	July 4
Manteo	0.50*	-
N. Bodie	0.90*	-
Regional System	5.33	July 25
Cape Hatteras Water Association	0.86	July 6
TOTAL	6.31	

* Estimated

These figures represent the potential for pumping at the 6.3 MGD capacity during a peak period not including extra capacity from Fresh Pond.

1.4.2 Sewer Service

Community sewer service in Dare County is limited to the municipal wastewater treatment plant at Manteo. The Town operates a surface water discharge plant with additional land application capacity. The plant's service area is limited to residents and businesses within the Town. With a total capacity of 375,000 gallons per day and a peak flow of 200,000 gallons per day in 1985, excess capacity is estimated at 175,000 gallons per day.

There are no other publicly operated sewage treatment plants in Dare County, and little prospect in the immediate future of any being developed. (Also see Section 1.5.3 for future facilility demands.)

Septic systems have been and will likely continue to be the method of choice for sewage disposal in most of the County. There are also, however, a significant number of package treatment plants operating in the County, with prospects for

the continued development of these systems increasing steadily. (See Section 2.1.6 for a focused discussion of package sewage treatment plants.)

1.4.3 Transportation

Present Road Network

Most travel within Dare County occurs on two arterial routes. For either north-south or east-west travel, motorists in Dare County are limited in the choice of possible travel routes. The arterial roadway system in the County is shown on the accompanying "Key Roadways" map and consists of the following major links.

- For north-south traffic, Route 158 (Croatan Highway) and N.C. 12 (Virginia Dare Trail) serve the Southern Shores to Whalebone areas, while N.C. 12 (Ocean Drive) serve the northern and southern island areas, respectively.

- Movements on and off the outer islands to the west are also confined to the Route 64 and Route 158 bridge crossings and, on a more limited scale, to ferry connections at Ocracoke Island.

- On the mainland, travel is also limited to Route 64 and Route 264.

- Except for portions of Route 158 which are three and five lanes in width, all roads and bridges are two lanes in width.

The narrow widths of the barrier islands minimize the volume of traffic flows on cross streets which intersect the arterial roads. Because of this, the major intersections in the County are formed by the approach roads to the various bridge crossings. These serve to transfer east-west flows to and from the north-south direction.

Traffic flows within the County vary widely according to the roadway section, season, and day of week. Typical of a resort or recreational area, the roadway system in Dare County experiences sizable variations in traffic demands. While most evident on the bridge crossings and primary arterials, travel throughout the County will vary in response to visitor activity. A summary of 1984 Average Daily Traffic as determined by NCDOT is shown on the accompanying "Vehicle Counts" map. While most roadways in the County had traffic flows of less than 5,000 vehicles per day, several key roadway

sections and bridges had average daily flows of 10,000 to 14,000 vehicles per day. However, during peak seasons, substantially higher volumes occur:

- Peak season traffic flows can exceed average day conditions by more than 60 percent.

- Weekend flows during the peak season are typically the highest and these can exceed average day conditions by more than 160 percent.

Physical conditions such as roadway alignment, width, intersection operations, or vehicle type influence traffic flows on any roadway segment. Within Dare County, these conditions are prevalent on the various bridge approaches which regulate traffic flows on and off the island communities. For this reason, the movement of vehicles on and off the Route 158 and 64 Bridges is the key to the overall County transportation system. Other areas which restrict or influence traffic movements include:

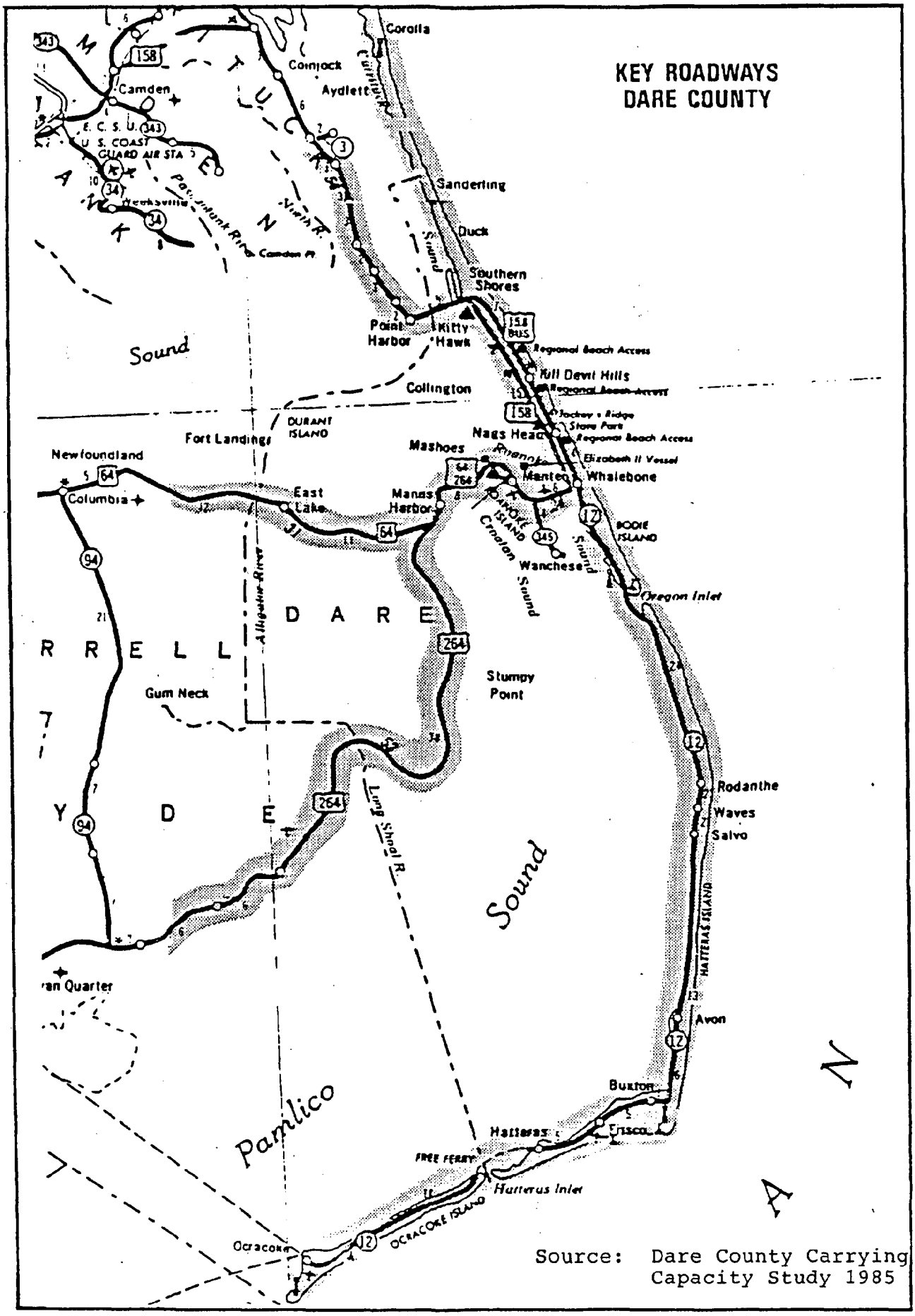
- Turning movements in the more densely developed areas of the County such as between Southern Shores and Whalebone;

- Bridge geometry at Oregon Inlet;

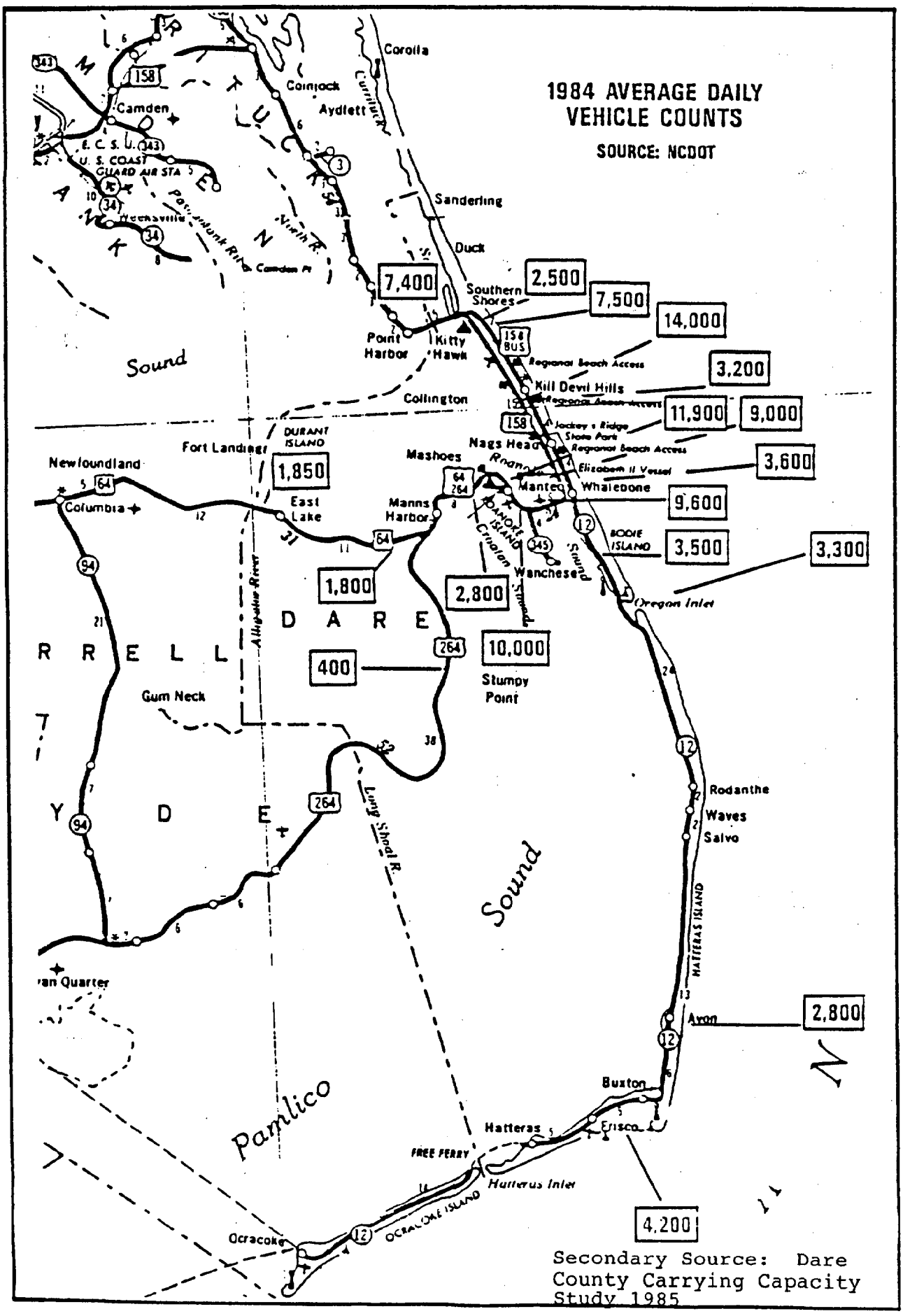
- Sharp roadway curves north of Rodanthe and Buxton; and

- Ferry operations at Hatteras Island.

Dare County has limited capacity in other modes of transportation. Air transportation is limited to the Dare County Regional Airport, the First Flight Airport and the Billy Mitchell Airport in Hatteras. At present, there are no scheduled passenger services by a regional carrier. However, a commuter service airline has been proposed to serve the Dare County Regional Airport and the Dare County Board of Commissioners is on record in favor of providing commuter air services to the Dare County area. Other modes of transportation are the ferry operation between Hatteras and Ocracoke Islands. Sea transportation is relatively unavailable as passage through Oregon Inlet is restricted to small sport and fishing craft. A limited bus service is run between Manteo and Norfolk and Dare County is not served by any railroads.



Source: Dare County Carrying Capacity Study 1985



Secondary Source: Dare County Carrying Capacity Study 1985

Transportation System Capacities

The capability of the existing transportation system to evacuate area residents and visitors during a hurricane event is the most critical factor in determining system capacities in Dare County. Therefore, the transportation capacity analysis prepared by Booz, Allen and Hamilton, focused most closely on hurricane evacuation times.

The 1985 Carrying Capacity Study concluded that, owing largely to bottlenecks at the Route 158 Bridge and the Route 64 Bridge, evacuation times for the Bodie and Hatteras Island Area could range up to 27 hours. If both bridges were equally available for evacuation and traffic was distributed between them, the total evacuation time could be reduced to approximately 20 hours. As such, a range in evacuation times of 20 to 27 hours was estimated for peak season conditions. During average or off-peak season times, evacuations could be accomplished in 13 to 18 hours. A further reduction could be made if the bridges had both lanes available for outgoing vehicles during critical hours of an evacuation.

Beyond the concern about hurricane evacuation, island residents at public meetings expressed near universal concern that the main thoroughfares through their respective communities were already incapable of handling peak season traffic loads. Further, the County has been disappointed in recent years over the projects that have been approved for funding through the State's Transportation Improvement Program (TIP). Prospects for the future remain uncertain.

1.4.4 Law Enforcement

The Dare County Sheriff's Department has approximately thirty deputies plus the sheriff, three secretaries, and six jailers. The Department is housed in four office locations including the main office and annex in Manteo, plus satellite offices in Duck and Hatteras. The thirty deputies are about evenly distributed among three districts: (1) Roanoke Island/Mainland, (2) the Beaches, and (3) Hatteras Island.

Equipment owned by the Department includes 34-35 patrol cars, a Bell helicopter, and a canine unit for drug enforcement. Emergency 911 communications are coordinated by the Dare County Communication Center, whose main office is in Kill Devil Hills, with branch centers in Manteo and Hatteras.

The Department recently requested additional deputies in the 1987-88 budget but the request was denied. The County is in need of a new Courthouse and jail to meet existing and future law enforcement activities, and plans are under consideration for the financing and construction of such new facilities.

The incorporated municipalities of Southern Shores, Kitty Hawk, Kill Devil Hills, Nags Head and Manteo also maintain their own police departments. In addition, the National Park Service has patrolmen which concentrate mainly on the beaches, but will provide assistance on request. Officers of the State Highway Patrol focus their activities primarily in the unincorporated areas of the County.

(Source: Telephone Communication with Sergeant Almey Gray, Dare County Sheriff's Department, July 30, 1987)

1.4.5 Fire Protection

Dare County is divided into 15 fire districts including four municipalities:

- Roanoke Island
- Northern Beaches
  - Nags Head
  - Kill Devil Hills
  - Kitty Hawk
  - Southern Shores
  - Colington
  - Duck
- Hatteras Island
  - Salvo
  - Rodanthe/Waves
  - Frisco
  - Buxton
  - Avon
  - Hatteras
- Mainland
  - Manns Harbor
  - Stumpy Point

The four municipalities provide their own services, equipment and funding; the fifth municipality, Manteo, is served by the Roanoke Island district. All of the fire districts have signed mutual aid agreements with their neighboring fire departments.

Recent statistical indicators of activity by fire departments have revealed increases in the number of calls responded to ranging from about a 60% annual increase to over 200%

annually. Many if not all of the departments have plans to expand their fire fighting capability. Current handicaps include an apparent decreasing availability of volunteer firemen, insufficient water pressure in some locations, increasing numbers of taller structures, and existing roadways of substantial width.

(Source: Dare County Carrying Capacity Study, 1985)

1.4.6 Public Schools

Public schools in Dare County are consolidated under the direction of a five person, elected Board of Education and are administered by an appointed superintendent. Six separate school facilities serve the County as follows:

Name of School	Grades	Pupil Capacity	Membership April 8, 1987
Kitty Hawk Elementary	K-5	440	511
Manteo Elementary	K-5	638	529
Manteo Middle	6-8	440	467
Manteo High	9-12	616	613
Cape Hatteras	K-12	725	512
Dare County Alternative High School	9-12	70(Est.)	47

(Source: Interview, Mr. Willie Huber, Assistant Superintendent, Dare County Public Schools, May 13, 1987)

As can be seen from the above table, two of the County's six educational facilities, Kitty Hawk Elementary and Manteo Middle School, are currently operating above their planned capacities. A third, Manteo High School, has reached its capacity.

The Dare County Board of Education has prepared estimates of future enrollments at each of the County's schools through the year 2000:

School	Present Capacity	State Projection for 1987-88	Board Projection for 1987-88	Board Projection for 1989-90	Board Projection for 1999-2000
Kitty Hawk Elemen.	440	400	516	602	1301
Manteo Elemen.	638	262	559	616	1004
Manteo Middle	440	390	521	574	936
Manteo High	616	585	735	810	1320
Hatteras	725	532	502	522	637
TOTALS	2859	2533	2833	3124	5198

Source: Dare County Carrying Capacity Study, 1985

Capital Improvements Planned for School System

To keep pace with the projected growth in the public school enrollment in Dare County, the Board of Education has outlined a program of capital improvements for the school system over the next six to seven years. These improvements include additions and renovations to existing school buildings, the acquisition of land and construction of new school facilities, as well as administrative and support buildings. The various planned improvements are summarized in the table below.

Year	Nature of Improvement	Cost Estimate	Comment
1987	Major expansion to Kitty Hawk Elementary	$3.2 million	Increased capacity to 638 students
1987	Cape Hatteras cafeteria	$370,000	
1988	New middle school/Baum tract, Nags Head Woods Area	$7 million	Planned capacity 700 students
1989	Addition to Cape Hatteras Library	$200,000	
1989	Reroofing of Cape Hatteras School	$150,000	
1989	Expansion of Manteo Middle School	$300,000	Add four classrooms
1989	Reroofing of Manteo Middle School	$150,000	
1989	Addition to Manteo Elementary	$300,000	Expand capacity to 700 students
1989	Reroof Manteo Elementary	$100,000	
1989	Reroof and refurbish	$100,000	

Year	Nature of Improvement	Cost Estimate	Comment
	Alternative High School		
1989	Land acquisition and construction of maintenance shop	$200,000	
1989	Land acquisition and construction of school bus garage	$100,000	
1990	Property acquisition and construction of administration building	$560,000	
1990	Expansion of Manteo High School	$800,000	Increased capacity to 950 students
1991	New Alternative High School	$300,000	
1991	Improvements to athletic facilities	$150,000	
1991	Activity bus storage facilities at each school	N/A	
1992	Elementary school construction at Baum Tract	$5 million	
1993	Construction of new high school	$8 million	Planned capacity for 600 students

In summary, the Dare County Board of Education has planned an approximate $27 million capital improvement program from 1987 through 1993. Deliberations are cur-

1.4.7 Parks and Recreation

The Dare County Recreation Department was established in January of 1984 with an initial annual operating budget of $50,000. In subsequent years, the growth of the department and its services to the County have been reflected in the growth of the County's annual operating budget: FY 1984-85, $150,000; FY 1985-86, $195,000; and FY 1986-87, $226,000.

The Recreation Department is heavily program-oriented, in that the County actually owns only one recreational facility, that being a tennis complex on five acres in Nags Head. For recreational facilities, the County relies heavily upon the existing facilities located at each of the County's school sites, as well as certain park facilities in several of the local municipalities in the County. The Recreation Department maintains cooperative agreements with the school system and the municipalities for programming these facilities. For example, the Town of Kill Devil Hills owns an outdoor athletic complex, but relies upon the County Recreation Department for programming the facility. During the summer months, the Department also programs the use of the various school facilities in the County, and assumes maintenance responsibilities during this period.

Program activities arranged by the Department include the following: softball, soccer, basketball, volleyball, youth baseball, dance, gymnastics, senior games, arts and crafts, etc. These activities are organized and operated by a permanent staff of six full-time employees and three part-time employees. In addition, the Department has a "professional services" account in its budget, which allows the Department to hire special purpose instructors for specific activities throughout the year. In the 1986-87 budget, this professional services account amounted to $35,000.

Owing largely to the many natural opportunities for outdoor recreation afforded by the area, Dare County has not traditionally placed strong emphasis on organized outdoor recreation. This is reflected in the general lack of County owned park and recreation facilities. However, as the County continues to grow, there will undoubtedly be an increasing call for more organized athletics and recreational opportunities. The primary near term (five years) need appears to be for additional ballfields. The Recreation Director indicated that there is perhaps the highest need for an additional ballfield complex in the Nags Head/Kill Devil Hills area and one other ballfield complex in Manteo.

Buildings and equipment for the Recreation Department are also fairly limited at this time. For administrative activities, the Department shares a building with the Tourist Bureau and Mental Health Center at the corner of Budleigh and Highway 264 in Manteo. Existing equipment includes two pickup trucks and one large riding lawnmower, all of which are stored at the County Public Works yard.

For indoor recreation, the Department makes use of the various community centers located throughout the County. In addition, for swimming activities the Department makes arrangements with hotel and motel facilities to use their pools.

(Also see Section 2.3.8 of this Plan for a discussion of beach and waterfront access.)

1.4.8 Solid Waste

The County and the municipalities provide facilities and services for the disposal of solid waste for both residential and commercial properties. There are three major phases of solid waste disposal:

- Collection services for private residences and commercial establishments and transport of the waste from the locality to the transfer station on Roanoke Island.
- Collection trucks off-load the waste into a County trailer truck at the transfer station.
- Shipment of the waste from the transfer station to the landfill at East Lake on the mainland.

The County is responsible for the transfer station and shipping functions but has a shared role with the municipalities for collection and transport of the solid waste to the transfer station.

Collection services vary between the County and the individual municipalities. There are three municipalities currently providing services to residents and commercial establishments within their respective city limits:

- Manteo
- Nags Head
- Kill Devil Hills

The County currently provides collection services for the remaining municipality:

- Kitty Hawk

The County also provides services to the unincorporated areas and Ocracoke Island. The East Lake landfill site is owned and operated by the County. There were 120 transfer trailer truck trips to the landfill for the week of July 21, 1985. Assuming this to be a weekly average for the peak season, an estimate of 208,800 cubic yards of waste transported to the landfill for the five months of the peak season is calculated. The off-peak season generates approximately 37% of the peak season volume or 77,256 cubic yards. The total annual average is estimated to be 286,056 cubic yards for 1985. Using this figure, with a 10% annual increase in waste products, an estimate of the remaining life of the landfill is expected to be in the range of 7 to 10 years.

East Lake Landfill Life Expectancy
At a 10% Growth Rate in Solid Waste

Year	Volume of Landfill Remaining (cubic yards)	Inflow of Waste at 10% Growth (cubic yards)	New Remainder for Volume of Landfill (cubic yards)
1985	5,047,999	286,056	4,761,943
1986	4,761,943	314,662	4,447,281
1987	4,447,218	346,128	4,101,153
1988	4,101,153	380,741	3,723,412
1989	3,723,412	418,815	3,304,597
1990	3,304,597	460,696	2,843,901
1991	2,843,901	506,766	2,337,135
1992	2,337,135	557,443	1,779,692
1993	1,779,692	613,187	1,166,504
1994	1,166,504	674,505	491,998
1995	491,998	741,995	FULL as of August 1, 1995

- Landfill started operations in early 1982
- At a 10% growth rate in the volume of waste disposed in the landfill, life expectancy is to August 1, 1995.
- Total years of projected operation from date of opening is 13 1/2 years.
- Total years of projected operation from 1985 is 9 1/2 years.
- Using a straight line method of growth, life expectancy from date of opening is 18 years.

1.5 Anticipated Demand

1.5.1 Population and Economic Projections

The purpose of this section is to anticipate how future population projections may impact upon the need for additional developable land and facilities in Dare County. These projections have a direct bearing on the amount of land allocated, for example, to the Transition Class of the Land Classification Map. This is more fully explained in the paragraphs that follow.

As noted earlier under Section 1.2.1, the population growth rate for Dare County was fairly modest until about 1970. During the decade of the 1970s, however, the County's average annual growth rate accelerated to a rather substantial 6.7% per year. At this rate of growth, the County's permanent population nearly doubled in just ten years. North Carolina's Office of State Budget and Management estimates that the County's permanent population reached 17,278 persons in 1985. If this estimate is accepted, the County's growth rate for the first half of the 1980s is estimated at about 5.2% compounded annually.

The Office of State Budget and Management is also responsible for producing future population projections for all counties in North Carolina. The most recent population projections for the County are as follows:

Dare County Population Projections As Prepared By the State

Year	Population
1985	17,278
1990	20,827
1995	24,574
2000	28,582
2010	36,375

Source: Mr. Bill Tillman, Office of State Budget and Management, Raleigh, NC, First Quarter 1987

It should be noted that past population projections for Dare County have been uniformly low, and there is reason to believe that this most recent set of projections may also be very conservative. Follow-up discussions with a represen-

tative of the Office of State Budget and Management revealed that the above projections are based on fairly conservative trend lines from the recent past. The representative also indicated that any special demographic studies prepared for the County might very well be more accurate than those of the State. The explanation given was that the State's projections must rely upon known factual information from the past and extrapolations therefrom, as opposed to more locally specific conditions and trends.

The 1985 Carrying Capacity Study for Dare County included a location specific analysis suitable for projecting future population levels in the County. In developing the projections, the consultants for the County used carrying capacity, both natural and manmade, as the basis for making estimates. Based upon the amount of available developable land in the County, and three alternative scenarios for providing public services to the County, the study produced the following sets of population projections for Dare County:

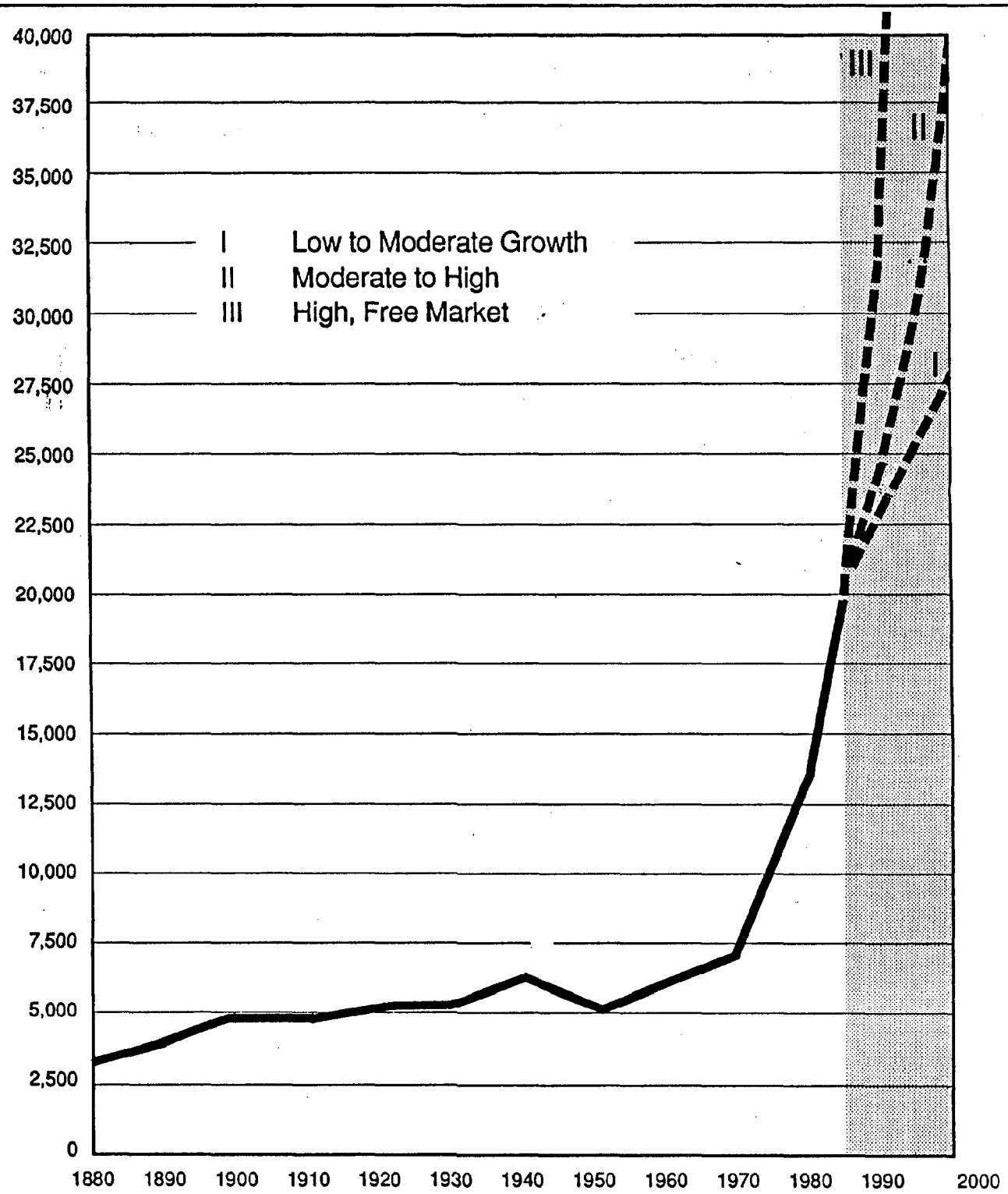
Dare County Popoulation Projections As Prepared By Booz, Allen and Hamilton

Permanent Residents	Scenario I	Scenario II	Scenario III
1985	19,600	19,600	19,600
1990	23,796	24,484	31,608
1995	25,738	31,683	54,320
2000	27,886	39,470	95,166

Source: Dare County Carrying Capacity Study, 1985

Comparing the carrying capacity population projections with the projections of the State, it is evident that the State's projections are indeed conservative. Scenario I, or the low growth scenario of the Carrying Capacity Study, most closely approximates the population projections prepared by the State. Scenario II would show roughly 10,000 more permanent residents in the County in the year 2000 than as projected by the State. Scenario III would have more than triple the number of permanent residents compared to the State's projection of 28,500 in the year 2000.

Most local officials have indicated that Scenario II is the most likely alternative for population growth of the County. Scenario II would add roughly 11,000 new residents to the



POPULATION GROWTH AND PROJECTIONS
1880 TO 2000
DARE COUNTY

Source: Division of State Budget and Management, 1987
Dare County Carrying Capacity Study, 1986

EDSA

EDWARD D. STONE, JR. AND ASSOC.
PLANNERS AND LANDSCAPE ARCHITECTS
WILMINGTON, NC

County during the decade of the 1980s, a figure not unreasonable in light of the minimum 4,000 residents added during the period 1980-85.

For purposes of the ten year planning period for this update to the Dare County Land Use Plan, the 1995 Scenario II estimate of population has been deemed most accurate, and is therefore adopted. It should be noted that the Scenario II estimate was updated in April of 1987. Projections for 1995 and the year 2000 now stand as follows:

Scenario II Population Projections (Revised)

	1995	2000
Permanent Residents	34,885	45,565
Peak Visitors	161,921	204,460
Day Visitors	9,995	6,740
GRAND TOTALS	206,801	256,765

Source: Preliminary Development Projections

Thus, the officially recognized permanent population projection for Dare County in 1995 is 34,885.

Subarea Population Projections

Population projections prepared for various subareas of Dare County are revealing in terms of anticipated allocations of future growth to specific parts of the County. The table below shows, for example, that of the total 15,000 additional permanent residents that will be added to the County's population between 1985 and 1995, roughly 9,000 will be located in the incorporated towns, and the remaining 6,000 will be located in the unincorporated areas.

Regarding peak visitors, however, out of a total increase of 60,000 persons, about 45,000 visitors will stay at accommodations in the incorporated towns, while only 15,000 will stay in the unincorporated areas.

Population Projections By Subarea

	Estimated Permanent Residents By Area		Estimated Peak Visitors By Area	
	1985[1]	1995[2]	1985[1]	1995[2]
Unincorporated Areas				
Roanoke Island	1,615	3,000	8,805	12,331
Mainland	1,100	1,230	150	185
Colington	1,940	3,750	660	825
Duck/North	1,400	3,160	5,550	9,460
R, S, W	1,700	1,960	3,855	4,900
Avon	500	710	4,600	6,600
Buxton	600	700	4,620	6,425
Frisco	550	635	3,555	4,500
Hatteras	1,550	1,790	3,595	4,560
Sub Total	10,955	16,935	35,385	49,786
Grand Total	19,370	34,885	102,035	161,121

1Estimate for July 1985 contained in "Carrying Capacity/ Development Study, Scenario II."
2Revised estimate for July of year indicated made in April 1987.

Source: Preliminary Development Projections, Homer Porter, April 1987

1.5.2 Future Land Use Needs

Future land use needs for Dare County are determined as a function of total population growth, as specifically distributed to the various subareas of the County. Such population distributions must take into account several important factors including, particularly: the environmental suitability of the land, the availability of urban services (especially water and sewer), and local area self determination as incorporated into County-wide growth policies.

As noted in Section 1.2.2, Dare County is a very large County in terms of overall acreage, yet has a limited supply of land available for development. This is particularly true for the Unincorporated area of the County, where much of the land is taken up by Federally owned park and wildlife refuge areas. Included among these Federally owned properties are the Cape Hatteras National Seashore Recreation Area, which includes all lands on Hatteras Island not part of the unincorporated villages, and the Alligator River National Wildlife for future development due to the presence of wetlands, a high water table and other environmentally sensitive features of the land. Thus, in light of the County's continued

rapid population growth and limited supply of land available for development, estimates of future land use needs are not so much a function of supply and demand, but rather supply alone. The exercise of determining future land use needs, therefore becomes a question of first determining the desired population level, and then allocating that population to various parts of the County based on the ability of each subarea to accommodate appropriate levels of development. This is essentially what the Carrying Capacity Study did in 1985.

The subarea population projections of Section 1.5.1 are significant in that they seek to consolidate the various environmental, public facility, and local growth policy factors necessary to allocate future land uses. The County's Land Classification Map, which is part of this plan, is the geographic representation of the County's growth policies, key development factors and desired population levels. For example, according to the population projection for unincorporated Roanoke Island, some 1,400 new permanent residents are expected to locate there by 1995. Roanoke Island has significant amounts of undeveloped land suitable for development, relative to the balance of the unincorporated area. Thus, the two areas of the Island most suited for urban level development have been designated Transition on the Land Classification Map (found in the back of this document).

For the Mainland, however, only 130 new permanent residents are expected. As a result, the few remaining areas of the Mainland suited for development have been designated as "Community." The balance of the Mainland is either in "Rural" or "Conservation."

In summary, land use needs for Dare County over the next ten years are likely to include all land that is environmentally suitable, tempered only by the intensity of development desired. The Land Classification Map therefore identifies all such environmentally appropriate lands, and classifies them according to their intended level of development density.

Section 2: Policies for Growth and Development

Introduction to the Policies

The data collection and analysis described in Section 1 of this plan was geared to gathering and summarizing information related to the growth of Dare County. Building upon this information, a series of official local government policies are hereby set forth. As officially adopted policies of the Dare County Board of Commissioners, they serve as the basis for future decisions on capital improvements, ordinances, rezoning requests, subdivision approvals, and other similar matters.

Policy Format

Each major policy category in the 1987 update to the Policies for Growth and Development is addressed according to the following format:

Discussion-	A brief summary of the issues and relevant findings.
Policy Statement-	A statement of local government principal designed to achieve legitimate public objectives related to the issue.
Implementation - Actions	Assignable actions designed to carry out the policies, and which can be accomplished within the 1987-1992 timeframe.

It is important to understand that discussion and implementation actions are not policies, and do not carry the same degree of importance as the actual policy statements. The narrative in each discussion section is designed to provide background and rationale for the ensuing policy statement. In most instances, the discussion serves to identify a problem or issue, and may present a summary of findings from other technical studies. There is no intent to establish policy within any discussion section.

Short-term (i.e. within five years) implementation actions are designed to suggest several possible courses of action available to a County government to carry out the policies. The suggested actions are not intended to be all-inclusive, nor are they binding. In other words, as conditions change, additional actions may be added to the list and others removed.

The policy statements, on the other hand, must be viewed in a wholly different light. As statements of local government principle, the policies should remain substantially unchanged during the five year planning period. Frequent changes to the policies would undermine their effectiveness in achieving intended goals and objectives. Indeed, the policies are designed to maintain a consistent and predictable direction for local government decisions affecting the local growth and development of the County during the planning period. Therefore, in reviewing the pages that follow, the reader is asked to focus greatest attention on the policies, while relying upon the discussion and implementation actions primarily as explanations as to intent.

2.1 Resource Protection

2.1.1 Constraints to Development

Development activities in Dare County are constrained by a variety of natural and manmade limiting factors, as discussed in Sections 1.3 and 1.4 of this plan. Of the various natural limitations on development in Dare County, the suitability of soils for septic tanks is the singlemost significant constraint presently facing the County. Citizen comments expressed at the public meetings related to the Land Use Plan reveal that there is a general desire to use soil limitations as a means of "naturally" constraining the density of development in Dare County, particularly along the Outer Banks. Concern was expressed that if municipal wastewater treatment facilities were built to serve the Outer Banks, such facilities would encourage a much higher density of development than is currently being experienced. Such development would further clog the already overburdened primary transportation network, and would heighten existing hurricane evacuation problems.

Regarding the mechanics of septic tank approvals, it was noted that there needs to be improved coordination among Building Inspections, the Health Department, and the Planning Departments.

The other major natural constraint to development in Dare County is the extensive occurrence of flood prone areas throughout the County. SLOSH maps of Dare County, as prepared by the U.S. Army Corps of Engineers, reveal that nearly all of the unincorporated area of Dare County is inundated during a major storm event. By general consensus, flooding is not considered to be a "show stopping" constraint on development, when compared to soil suitability for septic tanks. In general, development can be permitted in flood prone areas, so long as all building construction requirements and environmental standards are achieved. Environmental standards include, specifically, those use standards listed by the Coastal Area Management Act Guidelines for areas of environmental concern and those regulations administered by the U.S. Army Corps of Engineers for wetland areas.

Policy 2.1.1(a)

DARE COUNTY SUPPORTS THE ADMINISTRATION AND ENFORCEMENT OF TITLE 10, CHAPTER 10, SUBCHAPTER 10-A, SECTION .1900 OF THE LAWS AND RULES FOR SANITARY SEWAGE COLLECTION, TREATMENT, AND DISPOSAL. IN DOING SO, IT IS THE COUNTY'S INTENT TO PROTECT EXISTING GROUNDWATER RESOURCES, THE NATURAL CONDITIONS OF ESTUARINE WATERS, AND THE PUBLIC HEALTH, SAFETY AND GENERAL WELFARE.

Implementation Actions

1. The County will continue to enforce minimum State standards for septic tank and nitrification field systems through the Dare County Board of Health and staff sanitarians.

Policy 2.1.1(b)

DARE COUNTY SUPPORTS THE ADMINISTRATION AND ENFORCEMENT OF ALL APPLICABLE FLOODPLAIN MANAGEMENT REGULATIONS, AND THE NATIONAL FLOOD INSURANCE PROGRAM.

Implementation Actions

1. The County will continue to enforce the Federal Emergency Management Agency guidelines for construction in special flood hazard zones and N.C. Building Code specifications for coastal construction.

2.1.2 Areas of Environmental Concern

The Coastal Area Management Act of North Carolina calls for the identification of certain environmentally fragile and important land and water areas that are judged to be of greater than local significance. The Coastal Resources Commission, in cooperation with local governments in the 20 county coastal area, has developed a program of permit review and coordination within these "areas of environmental concern" (AECs). The intent of the regulatory program is not to stop development, but rather to insure the compatibility of development with the continued productivity and value of certain critical land and water areas.

While the CAMA program identifies some 13 specific categories of AECs in the total Coastal Area, there are currently only nine categories of AECs located in Dare County. These existing AEC's are summarized in the following table and discussed individually in the Plan sections that follow.

Areas of Environmental Concern in Dare County

AEC Classification	Dare County Resource/ Definitions
Estuarine System	
a. Coastal Wetlands	Marshes as defined in 15 NCAC 7H .0205.
b. Estuarine Waters	Croatan, Currituck, Pamlico and Roanoke Sounds; Alligator River; others as defined in 15 NCAC 7H .0206 (a).
c. Public Trust Areas	Most surface water, estuarine or other.
d. Estuarine Shorelines	75 foot wide strip, landward of estuarine waters from normal high water.
Ocean Hazard Areas	
a. Inlet Hazard Areas	Lands adjoining Oregon and Hatteras Inlets for variable distances as determined by CRC.
b. Ocean Erodible Areas	Overlaying Frontal Dune, distance landward from first line of stable natural vegetation along entire ocean front.
c. High Hazard Flood Area	Areas subject to high velocity waters during a storm having 1% chance of being equaled or exceeded in any given year. Identified as zone V1-30 on flood insurance maps.
Public Water Supplies	
a. Small Surface Water Supply Watersheds	Fresh Pond
b. Public Water Supply Well Fields	Cape Hatteras well field, Buxton Woods

2.1.2(a) Coastal Wetlands

Coastal wetlands are defined as any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial sources), providing this shall not include hurricane or tropical storm tides.

In Dare County, the soundside shore is generally covered by coastal marshgrass, as evidenced by mapping prepared by the National Wetlands Inventory, Fish and Wildlife Service of the U.S. Department of the Interior. (Draft Maps, 1983.) The position of these wetlands, often between buildable high ground and deeper navigable waters, has placed considerable pressure on these environmentally significant areas. However, stricter enforcement of State and Federal dredge/fill laws in recent years has done much to curtail the destruction of these valuable wetlands. For the Dare County Land Use Plan, the critical importance of coastal wetlands has been recognized by including all such areas in the Conservation category of the Land Classification Map.

Policy 2.1.2(a)

DARE COUNTY SUPPORTS REASONABLE EFFORTS BY ALL FEDERAL, STATE AND LOCAL AGENCIES TO PROTECT AND PRESERVE THE ENVIRONMENTAL AND ECONOMIC VALUES OF COASTAL WETLAND AECS.

Implementation Actions

1. The County supports CAMA use standards for Coastal Wetland AECs as identified under 15 NCAC7H, Sections .0205 and .0208. Highest priority of use shall be allocated to the conservation of existing coastal wetlands. Second priority of coastal wetland use shall be given to those types of development activities that require water access and cannot function elsewhere. Examples of acceptable land uses may include utility easements, fishing piers, docks, and agricultural uses, such as farming and forestry drainage, as permitted under NC's Dredge and Fill Act and/or other applicable laws.
2. The County will continue to administer the CAMA local permit enforcement program and maintain the staff Local Permit Officer.

2.1.2(b) Estuarine Waters

Estuarine waters are defined as "all the water of the Atlantic Ocean within the boundary of North Carolina, and all the water of the bays, sounds, rivers, and tributaries thereto, seaward of the dividing line between coastal fishing waters

and inland fishing waters, as set forth in an agreement adopted by the Wildlife Resources Commission and the Department of Natural Resources and Community Development, found in 15NCAC3F. 0200 in the most current revision of the NC Fishing Regulations for Coastal Waters." Another way of defining estuarine waters is to say that estuaries are semi-enclosed coastal water bodies having free connection with the open sea and within which seawater is measurably diluted with fresh water drained from the adjacent land.

In Dare County, estuarine waters include the Roanoke, Croatan, Currituck, Albemarle, and Pamlico Sounds. Public comments received at meetings related to the Land Use Plan Update indicated strong support for the continued protection of the water quality of the County's estuarine waters. While shellfish area closings are not as frequent an occurrence in this part of the coastal area as, for example, the heavily urbanized area of southeastern North Carolina, there is nonetheless considerable concern that estuarine water quality remain at a high level.

Policy 2.1.2(b)

DARE COUNTY SHALL DISCOURAGE DEVELOPMENTS THAT HAVE A HIGH PROBABILITY OF SERIOUSLY IMPACTING THE WATER QUALITY OR ENVIRONMENTAL VALUES OF THE ESTUARINE RESOURCE FROM LOCATING ADJACENT TO ESTUARINE WATERS.

Implementation Actions

1. Dare County supports the CAMA use standards for estuarine waters as contained in 15NCAC7H, Section .0206 and .0208. Highest priority of use shall be allocated to the conservation of estuarine waters and its vital components. Second priority of estuarine waters use shall be given to those types of development activities that require water access and use which cannot function elsewhere, such as simple access channels; structures to prevent erosion; navigation channels; boat docks, marinas, piers, wharfs, and mooring pilings.
2. The County will establish zoning classifications in those parts of Dare County currently unzoned in an effort to reduce the potential for incompatible development adjacent to estuarine waters.

2.1.2(c) Public Trust Areas

Public trust areas are all waters of the Atlantic Ocean and the lands thereunder, from the mean high water mark to the seaward limit of State jurisdiction; all natural bodies of water

subject to measurable lunar tides and lands thereunder to the mean high water mark; all navigable natural bodies of water and lands thereunder to the mean high water level or mean water level, as the case may be, except privately owned lakes, to which the public has no right of access; all water in artificially created bodies of water containing significant public fishing resources or other public resources which are accessible to the public by navigation from bodies of water in which the public has rights of navigation; and all waters in artificially created bodies of water in which the public has acquired rights by a prescription, custom, usage, dedication, or any other means.

In Dare County, public trust waters include the Atlantic Ocean, Albemarle, Croatan, Currituck, Pamlico and Roanoke Sounds, and over 40 bays, lakes, creeks, ponds, and inlets. A complete listing of all these various public trust waters and their general description is contained on pages 89-95 of the 1976 CAMA Land Use Plan for Dare County. In considering development on any body of water in Dare County, it is best to presume that the water is in the public trust, unless otherwise specifically documented.

It goes without saying that Dare County is heavily water-oriented, from both a commercial fishing and recreational standpoint. Residents attending public meetings for the Land Use Plan Update, as well as members of the Dare County Planning Board, expressed a strong desire that the public's right to access and use of public trust waters is preserved.

Policy 2.1.2(c)

IT IS THE POLICY OF DARE COUNTY TO PROTECT PUBLIC RIGHTS FOR NAVIGATION AND RECREATION, AND TO PRESERVE AND MANAGE PUBLC TRUST AREAS SOAS TO SAFEGUARD AND PERPETUATE THEIR BIOLOGICAL, ECONOMIC, AND AESTHETIC VALUE.

Implementation Actions

1. Dare County supports the CAMA use standards for public trust areas as contained in 15NCAC7H, Sections .0207 and .0208. In the absence of overriding public benefit, any use which significantly interferes with the public right of navigation or other public trust rights which the public may be found to have in these areas shall not be allowed. The development of navigational channels or drainage ditches, the use of bulkheads to prevent erosion, and the building of piers, wharfs, or

marinas are examples of uses that may be acceptable within public trust areas, provided that such uses will not be detrimental to the public trust rights and the biological and physical functions of the estuary.

2. A Dare County Waterways Commission will be established in an effort to provide for maintenance of existing waterways and harbors and to provide for additional access to these waters.

2.1.2(d) Estuarine Shorelines

Estuarine shorelines, although characterized as dry land, are considered a component of the estuarine system because of the close association with the adjacent estuarine waters. Estuarine shorelines are those non-ocean shorelines which are especially vulnerable to erosion, flooding, or other adverse effects of wind and water, and are intimately connected to the estuary. This area extends from the mean high water level of normal water level along the estuaries, sounds, bays, and brackish waters as set forth in an agreement adopted by the Wildlife Resources Commission and the Department of Natural Resources and Community Development for a distance of 75' landward.

Estuarine shorelines in Dare County are generally non-ocean shorelines along estuaries, sounds, bays, and brackish waters extending landward from mean high water or normal water level for a distance of 75'. It is useful to emphasize that where the range of saltwater influence on freshwater streams ends is also the approximate location where the estuarine AEC ends. In reviewing the estuarine shoreline issue, Planning Board members expressed concerns that these shorelines should be preserved in their undisturbed, natural condition, unless there is a serious problem and an overriding need for shore stabilization.

Policy 2.1.2(d)

DEVELOPMENT ALONG ESTUARINE SHORELINES SHALL BE ACCOMPLISHED IN A MANNER THAT PRESERVES THE LONG-TERM NATURAL INTEGRITY OF THE ESTUARINE SHORELINE. EXCEPTIONS TO THIS POLICY SHALL BE MADE ON A CASE-BY-CASE BASIS IN ACCORDANCE WITH CAMA STANDARDS.

Implementation Actions

1. Dare County supports the CAMA use standards for estuarine shoreline AECs as stated in 15NCAC7H, Section .0209. All development projects, proposals, and designs shall substantially preserve and not weaken or eliminate natural barriers to erosion. All other specific development standards for estuarine shoreline AECs as

contained in Section .0209 shall be adhered to in reviewing site plans for specific development proposals.

2.1.2(e) Ocean Hazard Areas

The ocean hazard system of AECs contains three specific types of areas:

1. **The Ocean Erodible Area**: This is the area in which there exists a substantial possibility of excessive erosion and significant shoreline fluctuation. The seaward boundary of this area is the mean low water line. The landward extent of this area is determined by one of two methods. In general, the first method may be described as 60 times the average annual erosion rate for the particular location or 120' landward, whichever is less. The second method involves the determination of the new shoreline that would likely be established in the event of a 100-year storm. For the specific language concerning these distances, the reader should consult the CAMA AEC Standards, Section .0304.
2. **The High Hazard Flood Area**: This is the area subject to high velocity waters (including, but not limited to, hurricane wave wash) and a storm having a 1% chance of being equalled or exceeded in any given year, as identified as zoned V1-30 on the flood insurance rate maps of the Federal Insurance Administration, U.S. Department of Housing and Urban Development. In Dare County, virtually all of the ocean shoreline along the Outer Banks is included in a high hazard flood area AEC. Fortunately, an extensive system of natural and manmade dunes has been preserved and/or created in the majority of these high hazard flood area zones. As a result, most of the so-called V zones in the unincorporated county are confined to an area oceanward of the dune system.
3. **Inlet Hazard Areas**: The inlet hazard areas are natural hazard areas that are especially vulnerable to erosion, flooding, and other adverse effects of sand, wind, and water because of their proximity to dynamic ocean inlets. The inlet hazard area AEC extends landward from the mean low water line a distance sufficient to encompass that area in which the inlet will, based on statistical analysis, migrate, and shall consider such factors as previous inlet territory, structurally weak areas near the inlet (such as an unusually narrow barrier island, an unusually long channel feeding the inlet, or an overwash area), and external influences such as jetties and channelizations. These areas are identified on inlet

hazard area maps approved by the Coastal Resources Commission.

As a group, the ocean hazard system of AECs comprise a "red flag warning system" that should receive considerable attention during development approvals. Review of the ocean hazard area issues at the Planning Board Land Use Plan work session revealed a desire to limit the density and overall magnitude of development in such areas, to notify prospective developers and owners of the dangers of building in such areas, and to discourage the disruption of any of the County's system of frontal dunes.

Policy 2.1.2(e)

DEVELOPMENT ACTIVITIES IN OCEAN ERODIBLE AREAS, HIGH HAZARD FLOOD AREAS, AND INLET HAZARD AREAS SHALL BE CAREFULLY CONTROLLED. IF DEVELOPMENT MUST OCCUR IN THESE AREAS, SUCH DEVELOPMENT SHOULD BE OF A LIMITED DENSITY AND SCALE, AND SHOULD RESPECT THE INTEGRITY OF THE DUNE SYSTEM.

Implementation Actions

1. Dare County supports the CAMA use standards for ocean hazard areas as contained in 15NCAC7H, Section .0306 through .0310. These standards fully describe appropriate development within the ocean hazard system of AECs, and all prospective developers and owners are encouraged to consult with these standards prior to considering development in such areas.
2. Dare County will continue to enforce the CAMA local permit program, including the staff necessary for enforcement, and will consider the establishment of zoning districts in those parts of Dare County currently without zoning guidelines in an effort to ensure the compatibility of future uses with the unique environmental features of these areas.

2.1.2(f) Public Water Supply AECs

This AEC category includes valuable small surface water supply watersheds and public water supply wellfields. Small surface water supply watersheds are defined as catchment areas situated entirely within the coastal area which contain a water body classified as A-II by the Environmental Management Commission. This means the maximum beneficial use of these bodies of water is to serve as public water supply areas.

Public water supply wellfields are defined as areas of well-drained sands that extend downward from the surface into the shallow groundwater table, which supplies the public with potable water. These surficial wellfields are confined to a readily definable geographic area as identified by the State, with assistance and support from affected local governments.

In Dare County, there are two public water supply AECs: 1) "Fresh Pond" located between Kill Devil Hills and Nags Head on Bodie Island, and 2) the Cape Hatteras wellfield located south of NC 12 on Hatteras Island between Frisco and Buxton. The Fresh Pond AEC is located outside the planning jurisdiction of unincorporated Dare County; therefore the reader is directed to the respective land use plans of Kill Devil Hills and Nags Head for further information.

The Cape Hatteras Wellfield AEC, however, has been a subject of recent concern and discussion. As described in NCAC7H, Section .0406, the wellfield AEC is described as being "bounded to the north, south, east, and west by a line located 500' from the centerline of the wellfield. The wellfield consists of 35 wells in line and is approximately 20,000' in length in an east-west direction." With the support of the Dare County Board of Commissioners, the N.C. Coastal Resources Commission recently voted to expand the existing AEC zone surrounding the well field from a 500' perimeter to a 1000' perimter. Residents attending one of the general input public meetings on the Land Use Plan Update on Hatteras Island voiced strong concern for the absolute protection of this potable water source. Comments received included the desirability of conducting a detailed hydrological study of the groundwater resource on Hatteras Island, including what past actions may have done to the water supply.

Policy 2.1.2(f)

DARE COUNTY SUPPORTS ALL APPROPRIATE ACTIONS TO PRESERVE AND PROTECT THE LONG-TERM VIABILITY OF THE GROUNDWATER AQUIFERS SERVING DARE COUNTY.

Implementation Actions

1. Dare County supports the CAMA use standards for public water supply wellfield AECs as contained in NCAC7H, Section .0406.

2.1.2(g) Natural and Cultural Resource Areas

As defined in the CAMA guidelines for AECs, these areas contain "environmental, natural or cultural resources of more than local significance in which uncontrolled or incompatible development could result in major or irreversible damage to natural systems or cultural resources, scientific, educational, or associated values for aesthetic qualities."

Within the system of natural and cultural resource AECs, there are five distinct subcategories:

1. Coastal areas that sustain remnant species - These are areas that support native plants or animals determined to be rare or endangered (synonymous with threatened and endangered), within the coastal area.
2. Coastal complex natural areas - These are lands that support native plant and animal communities and provide habitat qualities which have remained essentially unchanged by human activity.
3. Unique coastal geological formations - These are sites that contain geologic formations that are unique or otherwise significant components of coastal systems, or that are especially notable examples of geologic formations or processes in the coastal area.
4. Significant coastal archaeological resources - These are areas that contain archaeological remains (objects, features, and/or sites) that have more than local significance to history or prehistory.
5. Significant coastal historic architectural resources - Such resources are defined as districts, structures, buildings, sites or objects that have more than local significance to history or architecture.

Currently, there are no natural or cultural AECs located in the unincorporated area of Dare County. During the course of preparing this plan, there was considerable discussion, both locally and at the State level, regarding the nomination of the Buxton Woods area of Hatteras Island as a Coastal Complex Natural Area Of Environmental Concern. The inventory and study of this natural area was quite extensive. The preliminary conclusion of the Coastal Resources Commission and its staff was that Buxton Woods maritime forest fulfilled all eligibility requirements of NCAC7H .0506 for nomination as a Coastal Complex Natural AEC. However, the nomination process was eventually discontinued in lieu of the adoption of local zoning and development controls by the County.

For the record, comments received on the nomination from the U.S. Fish and Wildlife Service described the maritime forest of Buxton Woods as among the most ecologically valuable and the most threatened by urbanization or conversion in the State. Other comments received by the Division of Coastal Management in its review of the nomination included the importance of the groundwater resource underlying Buxton Woods, the need to keep public water withdrawals at a moderate level to maintain the surface water table and prevent saltwater intrusion, and the level of uncertainty as to how much impact a maritime forest can absorb from human activities and still remain a maritime forest. Discussion of the Buxton Woods issue at public meetings related to the Land Use Plan Update focused on the importance of the maritime forest area as a recharge area for the groundwater supply and as a wildlife habitat. Some residents mentioned the need to identify potential uses of the Buxton Woods area that would be in keeping with the protection of the habitat.

At the March 25, 1988 meeting of the Coastal Resources Commission, the proposed Buxton Woods AEC nomination was referred back to the Commission's Planning and Special Issues Committee for potential further consideration at a later date. The rationale was that if the recently adopted Dare County Special Environmental District should prove ineffective in providing natural resource protection for Buxton Woods, then the AEC nomination could be reactivated and adopted.

Policy 2.1.2(g)

DARE COUNTY ENCOURAGES THE IDENTIFICATION AND PROPER LONG-TERM MANAGEMENT OF FRAGILE COASTAL, NATURAL, AND CULTURAL RESOURCE AREAS AS DEFINED IN NCAC7H, SECTION .0500.

Implementation Actions

1. At a special meeting of the Dare County Board of Commissioners held on March 21, 1988, the Board adopted a new zoning classification for the Buxton Woods area known as "Special Environmental District No. 1." The effect of this action was to imitate stronger local control over the future land use and development of the Buxton Woods area.

2.1.3 Other Hazardous or Fragile Land Areas

2.1.3(a) Freshwater Swamps and Marshes

At the time of preparation of the last Land Use Plan Update in 1982, there were literally hundreds of thousands of acres of freshwater marshes that were in private ownership in Dare County. The most significant of these marsh areas were located on the Dare County mainland, and served as significant wildlife habitats. The 1982 Land Use Plan Update referenced a study done by Barrick and Critcher (1975) which identified several types of wildlife habitat on the Dare mainland:

- Bogs and pocosins north of U.S. 64 and east of U.S. 264
- Wooded swamps fringing south lake, the Alligator River, Mill Tail Creek, and Whipping Creek Lake
- Freshwater marsh (Durant Island)
- Saltwater marsh adjoining Croatan and Pamlico Sounds

In addition to the natural areas on the mainland and Durant Island, the 1982 Land Use Plan also recognized Buxton Woods as an area that might be deserving of designation as an AEC.

Shortly after the 1982 Land Use Plan Update was completed, Peacock and Lynch (1982) completed a Natural Areas Inventory of Mainland Dare County. The 1982 study affirmed the value of the marshes and pocosins north of U.S. 64 and east of U.S. 264, the freshwater marsh on Durant Island, and added three new areas known as the Alligator River Swamp Forest, the Faircloth Pond pine stand, and the U.S. 264 low pocosin.

In March of 1984, approximately 118,000 acres in Dare and Tyrrell Counties were donated to the U.S. Fish and Wildlife Service by Prudential Life Insurance Company as the new Alligator River National Wildlife Refuge. As a result of this action, most of these valuable natural areas were taken out of private ownership and placed in the Natural Wildlife Refuge. Only the 3,500-acre Durant Island and the 21,000-acre U.S. 264 low pocosin southeast of the military bombing range remain in private ownership. Access to Durant Island is limited to boat, and no development exists on the island except for a hunting club.

The 264 pocosin is centered inside a broad, 12-mile curve of U.S. 264 which begins at the Dare/Hyde County line and ends in the vicinity of the Stumpy Point fire tower. Current ownership is by First Colony Farms, Inc. and by the Department of Defense. Exploitation of peat for energy must be considered a potential activity at the site, depending on various factors of energy economics. The 1982 study recommends preservation to the greatest extent possible for both of these natural areas.

One of the comments received during State and Federal agency review of the draft Land Use Plan concerned road access across (primarily) freshwater wetlands. Specifically, the U.S. Army Corps of Engineers expressed a concern regarding requests for private driveways across wetlands to gain access to buildable sites. Specific examples given were in Buxton Woods and Rodanthe, where lots are fairly narrow and contain a series of parallel high ground ridges and wetland swales. The Corps felt that the cumulative impact of frequent individual access roads across wetland areas was significant, in that the fill necessary would result in a substantial loss of wetlands. The Corps therefore recommended that "collective access" road plans be developed for certain areas such as Buxton Woods and in Rodanthe, "which would provide reasonable access to private property while minimizing wetland impacts." (Letter from Charles W. Hollis to John Crew, February 3, 1988)

Policy 2.1.3(a)

DARE COUNTY WILL CONTINUE TO SUPPORT THE EFFORTS OF THE CAMA PROGRAM AND THE U.S. CORPS OF ENGINEERS 404 PERMITTING PROGRAM TO PROMOTE PROPER USE AND DEVELOPMENT IN SENSITIVE FRESHWATER SWAMP AND MARSH AREAS.

Implementation Actions

1. Dare County will continue to support any studies and actions which promote a better understanding of the potential impacts of peat mining on the County's extensive areas of freshwater marsh.
2. Dare County will make use of the National Wetlands Inventory Maps in helping to interpret the County's Land Classification Map, specifically concerning Conservation Areas.

3. Dare County will assist the U.S. Army Corps of Engineers in reviewing community access easements and driveway requests across wetland areas.

2.1.3(b) Maritime Forests

According to information provided by the NC Division of Coastal Management, "maritime forests are those woodlands which have developed under the influence of salt spray. These woodlands are in the final stage of plant succession on stable barrier islands, i.e. those areas that are no longer under the direct influence of sea-water flooding or migrating dunes. Those trees and shrubs closest to the ocean, which have the most salt spray influence, are sculpted by the spray--very low nearer the ocean with increasing height away from the ocean."

As discussed under Policy Section 2.1.2(g) above, the unincorporated area of Dare County contains one of the best examples of maritime forest in the State of North Carolina: Buxton Woods. Much of the discussion centering on the Buxton Woods AEC nomination and Special Environmental Distric zoning is relevant to this policy section as well.

Policy 2.1.3(b)

MARITIME FORESTS IN DARE COUNTY SHALL RECEIVE A HIGH LEVEL OF ENVIRONMENTAL PROTECTION WHEN CONSIDERING PROPOSED PUBLIC AND PRIVATE SECTOR USES. WHEN DEVELOPMENT IS CONSIDERED, PREFERRED USES SHALL BE FOR LOW INTENSITY DEVELOPMENT.

Implementation Actions

1. In March, 1988, the Dare County Board of Commissioners adopted a new zoning classification for the Buxton Woods area. This "Special Environmental District" was designed specifically to address the resource management needs of the maritime forest which comprises Buxton Woods.

2.1.3(c) Cultural and Historic Resources

As noted in Section 1.3.2, the State Division of Archives and History has stated that there are five structures in the unincorporated areas of Dare County which are listed in the National Register of Historic Places, and one house which is on the Division of Archives and History's Study List for future nomination to the Register. The State has also noted that "there may be other properties of architectural and/or historical significance of which we are unaware."

Further, the State office has observed that areas along the County's sound shoreline, stream and river shorelines, and

some high ground areas within or around low-lying marshland have a particularly high probability for containing archaeological sites. Support for the protection and enhancement of cultural and historic resources has traditionally been very strong among Dare County residents, as evidenced by an active local historical society, annual productions of the Lost Colony, the Wright Brothers site at Kitty Hawk, the numerous historic life saving stations along the Outer Banks, and current initiatives under way to save the Hatteras Lighthouse, to name a few.

Policy 2.1.3(c)

THE IDENTIFICATION, PROTECTION, AND RESTORATION OF STRUCTURES AND SITES OF HISTORIC AND ARCHAEOLOGICAL SIGNIFICANCE SHALL BE ENCOURAGED.

Implementation Actions

1. Recognizing that the resources of the State Historic Preservation office are limited, the County welcomes further investigation investigations of cultural, historic, and archaeological sites that may be located within the planning jurisdiction of the County.

2.1.3(d) Manmade Hazards

As discussed more fully under Section 1.3.1(a), Dare County's primary manmade hazards are its three airports plus the military bombing range on the County's mainland. At the present time, conflicts between airport operations and surrounding land uses are not significant. As development activities continue to escalate in the County, however, there will undoubtedly be increased pressure to develop properties in closer proximity to the airports. At the same time, increased population levels in the County will cause increased traffic at the airport facilities, with associated pressures for further expansion.

The military bombing range on the mainland is isolated from development and poses no immediate hazard to the residents of Dare County. Agreements between the County and the military to restrict low-flying exercises over populated areas have also reduced noise conflicts and the possibility of an aircraft crashing into a developed area.

Policy 2.1.3(d)

THE DEVELOPMENT OF DARE COUNTY'S AIRPORTS AND THE SURROUNDING AREAS SHALL BE CAREFULLY REVIEWED TO MINIMIZE POTENTIAL LAND USE CONFLICTS AND HAZARDOUS CONDITIONS. THE COUNTY SHALL ALSO CONTINUE TO WORK WITH THE MILITARY TO MINIMIZE NOISE

CONFLICTS AND HAZARDOUS FLIGHT PATHS OVER DEVELOPED AREAS.

2.1.4 Hurricane and Flood Evacuation

Section 2.5 deals exclusively with the subject of storm hazard mitigation, post disaster recovery, and evacuation. The reader is referred to that section, which also includes a policy statement on hurricane and flood evacuation.

2.1.5 Protection of Potable Water Supply

Protection of the potable water supply for Dare County ranks as a very high priority concern for most County residents, second only to the broader issue of properly managed overall growth and development. As noted in Section 1.4.1, all unincorporated areas of the County are dependent upon groundwater as the sole source of potable water. The drilling depth to potable groundwater varies considerably in the County, from a maximum of about 200' along the northern beaches, to 100' on Roanoke Island, to the groundwater table in surficial sands on Hatteras Island.

The vulnerability of the County's groundwater resources is an issue well recognized by nearly all County residents, and has gained attention, particularly on Hatteras Island. Recently, the Hatteras Island wellfield AEC has received considerable discussion regarding a possible expansion of the AEC to help insure the protection of the groundwater resource. And, as previously noted, the Buxton Woods area was nominated for designation as an AEC, at least in part due to its significance as a primary aquifer recharge area for the groundwater resource on Hatteras Island.

The opponents of a golf course development, which has been proposed for the Buxton Woods area, cited possible contamination of groundwater by golf course pesticides as a major concern and deterrent to the project. Considerable public comments has been received on the issue, from both the general public and from State and Federal agencies. Much of the technical commentary received from reviewing agencies has indicated that there is a great deal of uncertainty surrounding the potential adverse impacts of development in general, and particularly a golf course development.

Proponents of the golf course development have stated that they have gone to great lengths to insure that water quality is protected, and that any development will be done in an environmentally sensitive manner.

Opponents of the golf course development have responded that the level of uncertainty surrounding the development outweighs any guarantees that may be set forth by the developer. As development pressures increase in Dare County, the issue of groundwater protection is likely to become even more highly charged.

Policy 2.1.5

THE COUNTY'S GROUNDWATER RESOURCES SHALL RECEIVE THE HIGHEST LEVEL OF PROTECTION POSSIBLE TO INSURE THE CONTINUED QUANTITY AND QUALITY OF POTABLE WATER FOR CURRENT RESIDENTS AND FUTURE GENERATIONS.

Implementation Actions

1. The County supports the preparation of a hydrological study for the Buxton Woods area. Such a study could be done in conjunction with a comprehensive sub-area management plan for the area.
2. The County will seek legislative assistance to improve water quality of all major aquifer recharge areas affecting Dare County.
3. The County will consider the adoption of a well ordinance to provide for ambient water quality standards, regulations of privately owned well points, and the periodic testing and certification of privately operated well systems.

2.1.6 Package Sewage Treatment Plants

In Dare County, the treatment and disposal of sewage can be handled by one of three methods: municipal sewage treatment plants, septic tanks, and package sewage treatment plants. For the unincorporated parts of Dare County, conventional septic tanks are far and away the most common method of sewage disposal. Package sewage treatment plants are typically not economically justified unless there is a higher development density proposed, or soil conditions preclude the use of conventional septic tanks. A summary table of several existing and planned package domestic treatment plants was prepared and included in the 1985 Carrying Capacity Study. (See following table.)

Several observations can be made about these package treatment plants. First, six out of seven were privately owned. Of the six private plants, total capacities ranged from 45,000 gallons per day for the Holiday Inn at Kill Devil Hills to 200,000 gallons per day for the Ocean Reef Motel also in Kill Devil Hills. The package sewage treatment plants serve both commercial and high density residential customers, and utilized both surface water discharge and land application.

Operations of package sewage treatment plants are monitored by the State Division of Environmental Management, though the frequency of inspections is sometimes limited due to the staffing levels of the agency. Treatment plant operators must also be approved by the State, and are required to conduct monitoring tests, with samples sent to a State approved laboratory for analysis.

Despite the monitoring requirements of the State, the primary concern regarding package treatment plants is the continued maintenance and proper operation of the plant following its initial installation. Some members of the Planning Board favored the greater use of package treatment plants, so long as greater assurance could be provided as to the proper maintenance of the facility. One alternative suggested was for the County to add additional local enforcement manpower, funded by fees applied to and derived from package plant owners. There are at least four reasons why package sewage treatment plants present an attractive alternative to other methods of sewage treatment and disposal:

1. Dare County has no plans to build publicly financed and operated sewage treatment plants in the foreseeable future.
2. The County's sandy soils and high water table oftentimes preclude the possibility of using conventional septic tank systems.
3. As land values continue to escalate, development densities are likely to increase, making the use of a package treatment plant more cost effective.
4. Under certain circumstances, the configuration of a particular tract of land may lend itself more readily to a sewage treatment plant operation, than to individual septic tanks on separate lots.

It is apparent that, for all of the reasons outlined above, package treatment plants will continue to present a viable option for domestic and commercial sewage disposal in unincorporated Dare County.

Policy 2.1.6

DARE COUNTY SUPPORTS THE USE OF PACKAGE SEWAGE TREATMENT PLANTS ONLY WHEN UNSATISFACTORY SOIL OR HYDROLOGICAL CONDITIONS PRECLUDE THE USE OF SEPTIC TANK/DRAINFIELD SYSTEMS AND WHEN THE USE OF SUCH PLANTS WILL RESULT IN INCREASED PROTECTION OF EX-

ISTING LAND AND WATER RESOURCE THAN WOULD OCCUR WITH THE USE OF CONVENTIONAL SEPTIC TANK SYSTEMS. DARE COUNTY WILL NOT PROVIDE FOR INCREASED DWELLING DENSITY RATIOS DUE TO THE AVAILABILITY OF PACKAGE SEWAGE TREATMENT PLANTS.

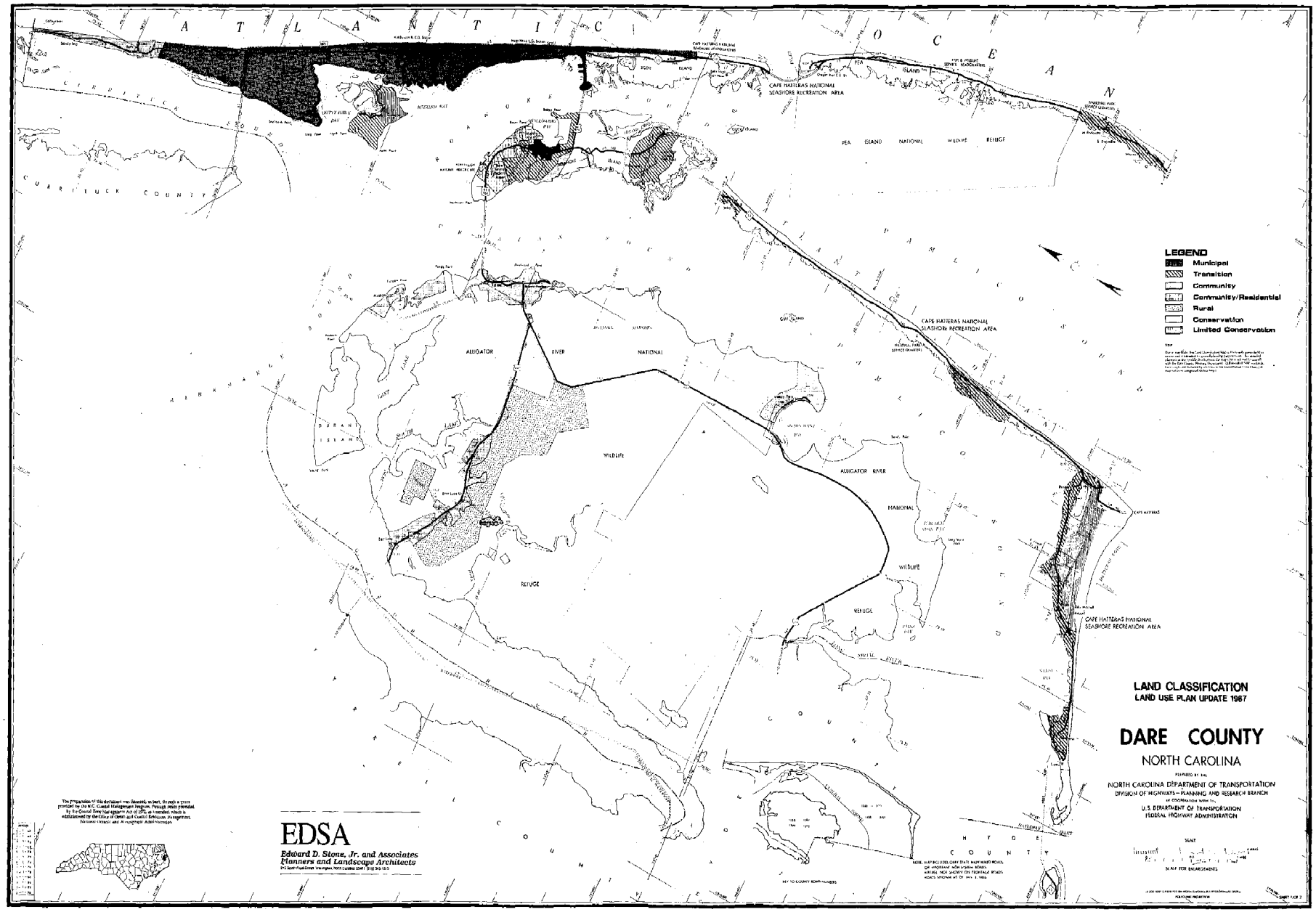
Implementation Actions

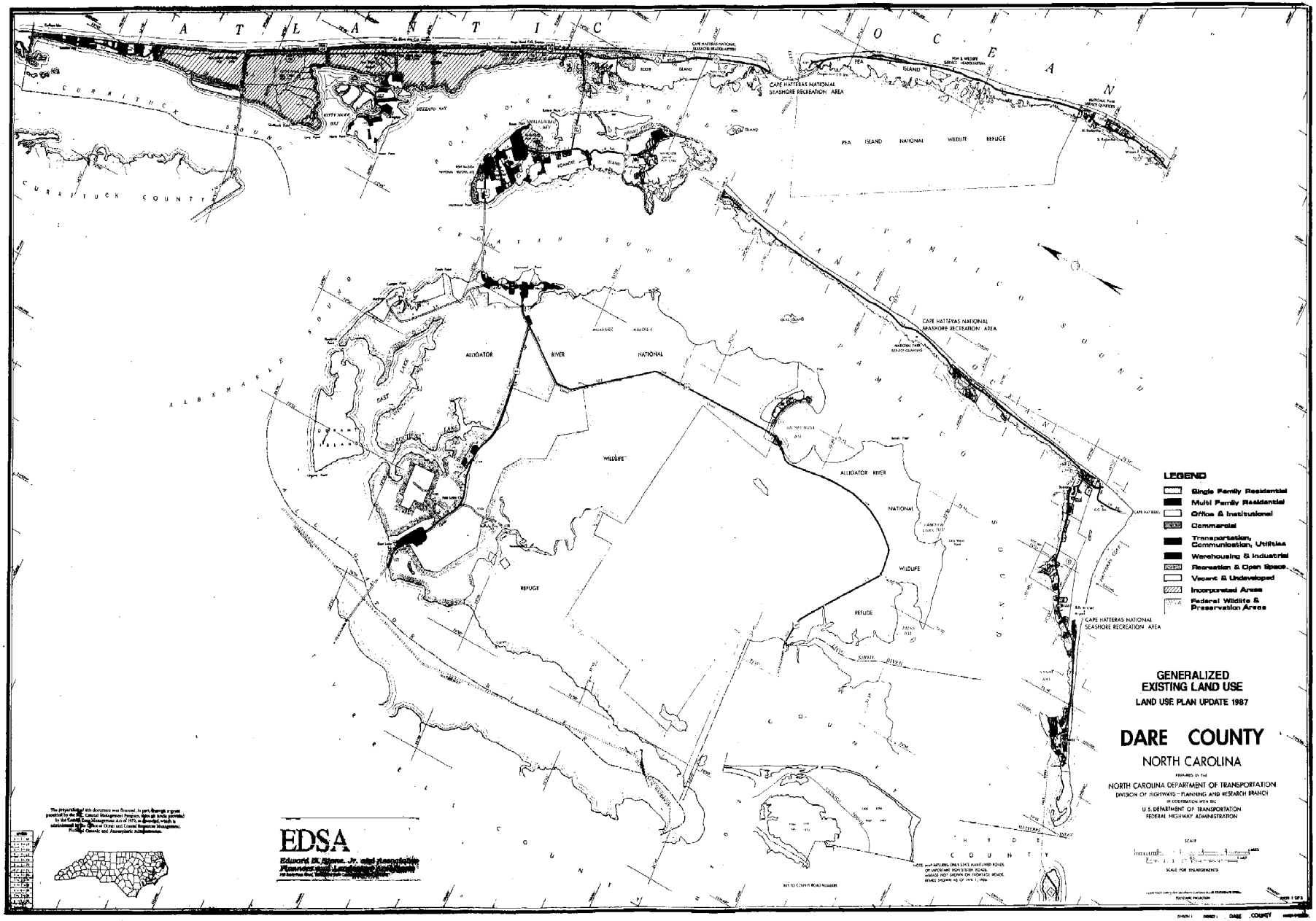
1. The County will meet with State officials for the purpose of assessing fees against new and/or existing package sewage treatment plants, the assessments of which could be used to hire additional local manpower to monitor and enforce the proper maintenance and operation of the plants.
2. Dare County will amend the Dare County Subdivision Ordinance to include language to clearly indicate that dwelling density or minimum lot size reductions will not be provided regardless of the availability of off-site waste-water treatment.

2.1.7 Stormwater Runoff

Ralph C. Heath, noted hydrogeologist who has studied hydrological conditions in North Carolina, has stated that: "Construction on the Outer Banks of North Carolina of multi-story condominiums, motels, and other vacation facilities, with their parking lots, tennis courts, and swimming pools, is resulting in the creation of large expanses of impervious areas. Disposing of the runoff from these areas during storms in a manner that is not detrimental to the adjacent sounds and ocean is among the most pressing water-management problems now confronting the developer and the public officials in this area." (News: Water Resources Research Institute of the University of North Carolina, November 1986).

The continued rapid development of the unincorporated areas of Dare County, particularly on the Outer Banks, is reflecting much of what Mr. Heath has described above. The construction of large impervious surfaces associated with major commercial and residential development, accelerates the rate at which rainwaters reach the estuarine sound waters. This rapid influx of freshwater can change the natural salinity of the sound water and disrupt the biological balance of the natural system. The water can also carry higher than normal levels of nutrients and other biodegradable materials that can create excessive oxygen demand for decomposing the material.


ATLANTIC OCEAN
CURRITUCK COUNTY
CAPE HATTERAS NATIONAL SEASHORE RECREATION AREA
PEA ISLAND NATIONAL WILDLIFE REFUGE
ALLIGATOR RIVER NATIONAL WILDLIFE REFUGE
LEGEND
Municipal
Transition
Community
Community/Residential
Rural
Conservation
Limited Conservation
LAND CLASSIFICATION
LAND USE PLAN UPDATE 1987
DARE COUNTY
NORTH CAROLINA
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS—PLANNING AND RESEARCH BRANCH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EDSA
Edward D. Stone, Jr. and Associates
Planners and Landscape Architects



ATLANTIC OCEAN
CURRITUCK SOUND
CURRITUCK COUNTY
ROANOKE SOUND
CROATAN SOUND
ALBEMARLE SOUND
PAMLICO SOUND
PAMLICO COUNTY
HYDE COUNTY
CAPE HATTERAS NATIONAL SEASHORE RECREATION AREA
PEA ISLAND NATIONAL WILDLIFE REFUGE
ALLIGATOR RIVER NATIONAL WILDLIFE REFUGE
LEGEND
Single Family Residential
Multi Family Residential
Office & Institutional
Commercial
Transportation, Communication, Utilities
Warehousing & Industrial
Recreation & Open Space
Vacant & Undeveloped
Incorporated Areas
Federal Wildlife & Preservation Areas
GENERALIZED EXISTING LAND USE
LAND USE PLAN UPDATE 1987
DARE COUNTY
NORTH CAROLINA
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS—PLANNING AND RESEARCH BRANCH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EDSA

While Dare County requires that a stormwater management plan be submitted as part of a development proposal, the plans typically receive a limited amount of review and less enforcement than desired.

Another issue related to stormwater runoff concerns the potential for peat mining on the Dare County mainland. Due to the presence of a groundwater table at or very near the surface on the mainland, the peat mine requires continual pumping to keep the site dry. If this groundwater is pumped directly into adjacent estuarine sounds and bays, the volume of freshwater can cause significant changes in the salinity of the sound. It is therefore important that any permits for peat mining take into consideration the method by which the groundwater will be disposed of. The whole issue of peat mining is alsocovered more fully under Section 2.2.3 of this plan.

Policy 2.1.7

RUNOFF AND DRAINAGE FROM DEVELOPMENT, AGRICULTURAL, AND MINING ACTIVITIES SHALL BE OF A QUALITY AND QUANTITY AS NEAR TO NATURAL CONDITIONS AS POSSIBLE.

Implementation Actions

1. The County supports the Sedimentation and Erosion Control Program to manage runoff from development.
2. The County will support and participate in the Dare County Soil and Water Conservation Review Program.

2.1.8 Marina and Floating Home Development

According to CAMA guidelines, a floating structure is "any structure, not a boat, supported by a means of flotation designed to be used without a permanent foundation, which is used or intended for human habitation or commerce. A structure will be considered a floating structure when it is inhabited or used for commercial purposes for more than 30 days in any one location. A boat may be deemed a floating structure when its means of propulsion has been removed or rendered inoperative and it contains at least 200 square feet of living space area."

From time to time, the Dare County Planning Board receives requests for the location of floating structures within public trust waters. In one instance, a request was received to allow the location of a floating sales office adjacent to a parcel of land being subdivided for a proposed residential development. The County has, in the past, had no formal policy dealing with floating homes. At the Planning Board level,

most of the concern has centered on the potential impact of such structures on shellfishing waters.

Requests for residential and commercial marinas continue to occur in the County as a result of steady growth and development. The County has also not had a formal policy on the location and development of marinas.

Policy 2.1.8 (a)

THE DEVELOPMENT OF FLOATING HOMES AND STRUCTURES IN DARE COUNTY SHALL BE IN ACCORDANCE WITH COASTAL AREA MANAGEMENT ACT POLICIES FOR THESE USES. THESE POLICIES INCLUDE THE REQUIREMENT THAT SUCH STRUCTURES WILL ONLY BE APPROVED IN PERMITTED MARINAS, AND SHALL BE IN CONFORMANCE WITH LOCAL REGULATIONS FOR ON-SHORE SEWAGE TREATMENT.

Implementation Actions

1. The County will support Coastal Area Management Act Policies as described in 15NCAC7M, Section .0600.

Policy 2.1.8(b)

IN DETERMINING THE LOCATION AND DEVELOPMENT OF MARINAS, DARE COUNTY SUPPORTS ALL APPLICABLE REGULATIONS AND GUIDELINES AS ADMINISTERED BY COASTAL MANAGEMENT OFFICIALS AND THE U.S. ARMY CORPS OF ENGINEERS.

Implementation Actions

1. In reviewing development proposals that include a marina, the Dare County Planning Board and staff will coordinate very closely with the CAMA and U.S. Army Corps of Engineers permitting authorities.

2.1.9 Industry in Fragile Areas

Dare County has a history of very little industrial development. Traditional reasons for lack of industrial development include, for example, lack of convenient transportation access to major markets, lack of significant public utilities, lack of suitable extensive areas of land at reasonable prices, and a general incompatibility with the desired lifestyle of many Dare County residents. The presence of extensive Federal wildlife and recreation areas in the County has also resulted in the designation of this area of the Outer Banks as a Federal air quality "area of no significant deterioration." This designation has posed a problem, for example, in finding a location anywhere in the County where a solid waste incinerator can be located.

The land use questionnaire conducted as part of the 1987 Land Use Plan Update for Dare County revealed very strong opposition to any heavy industrialization in the County and moderately strong opposition to any light industry or research and development industry. This opposition would no doubt be expressed even more forcefully if the industrial development were proposed for construction in a fragile area.

Policy 2.1.9

INDUSTRY SHALL BE DISCOURAGED FROM LOCATING IN FRAGILE OR ENVIRONMENTALLY SENSITIVE AREAS. RESOURCE-LINKED INDUSTRIES SHALL BE REVIEWED ON A CASE BY CASE BASIS.

Implementation Actions

1. Dare County officials will continue to support applicable State and Federal regulations as they relate to the siting of new industry, and particularly industry in environmentally fragile areas.

2.1.10 Development of Sound and Estuarine System Islands

A review of this issue with the Dare County Planning Board revealed a variety of opinions regarding the County's policy on the use of estuarine system islands. Some Planning Board members felt that so long as development on the islands met the same standard of review as developments elsewhere in the County, development would not be objectionable. Others added that such development would be acceptable so long as there was strict compliance with environmental standards of protection. Another recommended that only low density residential development be allowed, while yet another favored a policy of no development whatsoever.

The compromise position was that the County should encourage property owners and developers to use these islands wisely to preserve their unique natural qualities. However, if a property owner chooses to develop his or her land, there is little the County can do to prevent such development; rather the County should encourage the property owner to develop such islands for low intensive uses.

Policy 2.1.10

DEVELOPMENT OF SOUND AND ESTUARINE SYSTEM ISLANDS SHALL BE CAREFULLY CONTROLLED. IF DEVELOPMENT MUST OCCUR, LOW INTENSIVE USES SUCH AS OPEN SPACE, RECREATION, AND LOW DENSITY RESIDENTIAL DEVELOPMENT SHALL BE PREFERRED.

Implementation Actions

1. Dare County shall consider zoning of estuarine system islands where possible to structure allowable development in such sensitive areas.

2.2 Resource Protection and Management Policies

2.2.1 Productive Agricultural Lands

In general, Dare County has not had a history of extensive agricultural development. Beginning in the 1970s, however, interest in the large-scale agricultural use of Dare County's mainland heightened considerably. Extensive clearing of trees occurred over several thousand acres, the water table was lowered as necessary, and the required State and Federal permits were secured. The area of greatest interest for agricultural use was designated in the 1982 Land Use Plan as Rural. Concern about the potential runoff of fertilizers and other chemicals from these extensive agricultural lands prompted the County to require that no land area within 1 mile of Alligator River, Mill Tail Creek, East Lake, South Lake, Whipping Creek Lake, Morrell Bay Lake or Sawyer Lake be classified as Rural.

Despite the 1 mile buffer of Conservation land between the estuarine waters and the productive agricultural lands, there continues to be concern about the potential for chemical runoff into the area waters. As noted under Section 2.1.7 of this plan, the pumping of surficial groundwater from these large productive areas into the estuarine system is also a concern.

Since the time of the last Land Use Plan Update in 1982, extensive areas of the Dare County mainland have been placed under the authority and jurisdiction of the Alligator River National Wildlife Refuge. Some of the remaining lands not included in the National Wildlife Refuge are currently in the ownership of First Colony Farms. Comments received from the Planning Board regarding this issue indicated that the existing operations should be allowed to continue within the confines of the land already cleared, but that tighter controls and monitoring should be exercised over potential chemical pollution and freshwater runoff.

Policy 2.2.1

THE CONTINUED PRODUCTIVE AGRICULTURAL USE OF LANDS ON THE DARE COUNTY MAINLAND SHALL BE SUPPORTED, PROVIDED THAT SUCH ACTIVITIES HAVE NO SIGNIFICANT ADVERSE IMPACTS ON THE ENVIRONMENTAL QUALITY OF DARE COUNTY'S ESTUARINE SYSTEM WATERS.

Implementation Actions

1. The County will request that State agencies provide the Planning Board with relevant reports on water quality as related to agricultural runoff.
2. The County will support the Sedimentation and Erosion Control Program to manage runoff.
3. The County shall encourage use of the State cost share program.

2.2.2 Commercial Forestlands

Despite the presence of extensive wooded areas on the Dare County mainland, commercial forestry has not been a major resource industry in Dare County. The general lack of concern about the issue was reflected in the limited number of comments received from Planning Board members about commercial forestry. Citizen responses as recorded in the Land Use Plan questionnaire also revealed a neutral position, for the most part, on the issue of forestry and related industries.

Policy 2.2.2

COMMERCIAL FORESTRY ACTIVITIES SHALL BE SUPPORTED BY DARE COUNTY, SO LONG AS SUCH ACTIVITIES ARE DONE IN ACCORDANCE WITH STANDARDS AND RECOMMENDATIONS OF THE U.S. FOREST SERVICE, AND CAN BE SHOWN TO HAVE NO SIGNIFICANT ADVERSE IMPACT ON OTHER NATURAL RESOURCE SYSTEMS.

Implementation Actions

1. The County will encourage use of the Dare County Soil Survey to manage and plan woodland production.
2. The County will support the Sedimentation and Erosion Control Program, as pertaining to commercial forestry activities.

2.2.3 Mineral Production Areas

Mineral production activities that have the greatest potential for impact to the County's land resources are for peat mining. Peat is a low grade fossil fuel that is typically obtained through strip mining. The mainland of Dare County contains extensive peat deposits.

At the time of the last Land Use Plan Update in 1982, the potential benefits and costs of peat mining were being weighed. On one hand, it was noted that peat mining could provide a significant number of jobs to Dare County residents, and because it would be a basic (exporting) industry, it could have multiplier effects on other service sectors of the local economy.

On the other side of the issue, were the potential adverse impacts on the natural environment of the mainland. These adverse impacts included: a drawdown of the surficial water table, the pumping of large quantities of freshwater into nearby estuarine waters, and the removal of extensive areas of wildlife habitat.

The issue as defined in 1982 remains essentially unchanged today. Peat mining activities on the Dare County mainland involved tradeoffs between economic development and the natural hydrologic and wildlife systems.

Another mineral production issue typically involving less acreage but perhaps having an equally significant impact is the practice of sand mining. With the abundance of sand on the Outer Banks, and significant construction occurring in response to the rapid growth of the County, it is not surprising that sand mining is beginning to emerge as a mineral production issue. Comments received at the Planning Board level indicated that the greatest concerns regarding sand mining involved indiscriminate borrowpit operations and large area mining pits where adverse impacts on the environment of adjoining properties were apparent.

Policy 2.2.3

THE LOCATION AND DEVELOPMENT OF MINERAL PRODUCTION AREAS IN DARE COUNTY SHALL BE CAREFULLY CONTROLLED. APPROVAL OF ANY MINING SITE SHALL BE SUBJECT TO A REVIEW OF POTENTIAL ADVERSE IMPACTS ON THE SITE'S NATURAL CONDITIONS, AND THE VISUAL AND OTHER IMPACTS ON ADJOINING LANDS.

Implementation Actions

1. The Planning Board will monitor public and private action regarding mining in Dare County and report its finding to the County Commissioners as it deems necessary.
2. The County will coordinate with State and Federal agencies which review applications for mining and associated permits to determine whether or not their decisions are consistent with the County's Land Use Plan. Large-scale mining operations, such as peat mining, shall be limited in location to Rural areas under the County's land classification system.
3. In reviewing proposals for mining operations, the Planning Board may want to consider the following aspects of the mining process:

- Designation of the specific parcels of land to be disturbed by mining.
- Height and bulk of buildings associated with the mining operation.
- Parking and traffic flow.
- Utility extension and design.
- Auxilliary development.
- Reclamation plans.

4. The County will develop a local ordinance to prohibit sand mining activities that are not otherwise authorized by State or Federal regulatory agencies.

2.2.4 Fisheries Resources

Commercial and recreational fishing has a long and colorful history in Dare County. Local names such as Hatteras are synonymous with the fishing industry worldwide. Wanchese and Stumpy Point are homes for significant numbers of commercial fishing vessels. Statistics on commercial fish landings compiled over many years by the NC Division of Marine Fisheries have revealed that, while Dare County landings are not the largest in the State, they are the largest in the northern part of the State.

Commercial fish landings are not necessarily the best indicator of the impact of the fisheries resource on the overall economy of the County. Much of Dare County's tourism driven economy is derived from both the real and perceived image of an area with close ties to the sea. Support for the continuation of a healthy fishing industry was made most clear in responses of Dare County residents contained in the Land Use questionnaire. Residents favored encouragement of the industry over discouragement by a ratio of approximately 25 to 1. At the Planning Board level, concerns focused on the control of landside development to minimize adverse impacts on water quality in the estuary, and particularly primary nursery areas and shellfish areas.

Policy 2.2.4

THE CONTINUED PRODUCTIVITY OF COMMERCIAL AND RECREATIONAL FISHERIES SHALL BE FOSTERED THROUGH RESTORATION AND PROTECTION OF THE UNIQUE COASTAL ECOSYSTEMS UPON WHICH THEY DEPEND.

Implementation Actions

1. All policies and implementation actions designed to protect the estuarine system of AECs will be further supported and carried out under the fisheries resource policy heading.

2. Studies designed to evaluate and recommend corrective measures to the estuarine pollution problem and to improve management and production of all fisheries resources will be supported by Dare County.
3. The County shall continue to voice its support for the protection of shellfish and primary nursery areas to appropriate State level agencies.

2.2.5 Off-Road Vehicles

Concern for the environmental impacts of off-road vehicles in coastal North Carolina is primarily oriented toward beach and near-beach dune areas. Off-road vehicle traffic can easily destroy fragile dune vegetation, exposing the dunes to wind and wave erosion, thereby reducing their effectiveness as storm buffers. Wildlife particularly susceptible to improper ORV use includes ghost crabs, loggerhead turtles, and colonial nesting birds. Nevertheless, proper ORV use in controlled areas can provide convenient access to the beach for fishermen and other beach users. Such ORV use is a long held tradition in Dare County.

As a means of addressing the issue fairly, Dare County has enacted an ordinance prohibiting the use of ORVs on beaches in the County from Memorial Day to Labor Day. ORVs operated by commercial fishermen and emergency vehicles are exempted from the ordinance. It should also be noted that the National Parks Service controls the use of ORVs on all Hatteras Island beaches. Improper use of ORVs was not identified as a major concern at public input meetings, in the Land Use questionnaire, or at the Planning Board policy development work session.

Policy 2.2.5

EFFORTS TO PROPERLY BALANCE AND CONTROL THE USE OF OFF-ROAD VEHICLES USE ALONG THE COUNTY'S BEACHES, DUNE AREAS, AND ESTUARINE SHORELINES SHALL CONTINUE TO RECEIVE SUPPORT FROM COUNTY GOVERNMENT.

Implementation Actions

1. The County's ordinance governing ORV use on Dare County beaches will be maintained for enforcement as necessary.

2.2.6 Development Impacts

All of the County's major development impact issues, such as peat mining, industrial development, high density residential development, and stormwater runoff, etc. are covered under specific policy area headings in various parts of this plan. The reader is directed to the table of contents as a

means of quickly identifying any particular development impact issue.

DARE COUNTY SHALL COOPERATE FULLY WITH ALL FEDERAL, STATE, REGIONAL, AND LOCAL AGENCIES IN THEIR REVIEWS OF DEVELOPMENTS OF POTENTIALLY SIGNIFICANT IMPACT.

Policy 2.2.6

2.2.7 Trees and Vegetation

The County of Dare is opposed to the indiscriminate removal of trees from the landscape of the County. The presence of trees throughout the undeveloped section of the County is considered to be a natural resource valuable for shade, soil stabilization, and aesthetics.

THE COUNTY OF DARE IS OPPOSED TO INDISCRIMINATE LAND CLEARING AND TREE REMOVAL ACTIVITIES.

Policy 2.2.7

Implementation Actions

1. Dare County will incorporate tree protection language and tree removal guidelines into the Dare County Zoning Ordinance.

2.3: Economic and Community Development Policies

Introduction

This policy section is concerned with those issues associated with the development and redevelopment of Dare County. Included are the types and locations of desired development, the willingness of the County to provide public services for development, the desired pattern of development, local support for State and Federal programs influencing development, and the provision of access to public open space and land and water recreational areas.

2.3.1 Types and Locations of Desired Industries

Section 2.1.9 discussed many of the reasons why Dare County has traditionally not received significant levels of industrial development. Chief among those reasons were, for example, lack of convenient transportation access to major markets, lack of significant public utilities, lack of suitable extensive areas of land at reasonable prices, and the general incompatibility with the desired lifestyle of many Dare County residents.

The only extensive land areas of Dare County that are away from significant residential developments are located on the mainland. The vast majority of the mainland, however, is in the Alligator River National Wildlife Refuge. The remaining higher, drier sites are located in relatively small areas near existing communities such as East Lake, Stumpy Point, Manns Harbor, or Mashoes. Further, the narrow strip of barrier islands comprising the Outer Banks of the County affords no opportunity for extensive, large-scale industrial development. While portions of Roanoke Island present some opportunity for industrial development, this island is also becoming rapidly developed for residential and non-industrial commercial uses.

Judging from input received at public meetings for the Land Use Plan, the land use questionnaire, and Dare County Planning Board members, a policy which encourages development of light, clean industries would appear to receive the most support. There is also support, however, for a continuation of traditional resource-based industries in Dare County, such as commercial fishing.

Policy 2.3.1

INDUSTRIAL DEVELOPMENTS WHICH HAVE EXCESSIVE NOISE, ODOR, OR OTHER HARMFUL POL-

LUTION, SHALL BE DISCOURAGED FROM LOCATING IN DARE COUNTY, UNLESS SUCH ADVERSE IMPACTS CAN BE CLEARLY OVERCOME THROUGH EFFECTIVE MITIGATION. INDUSTRIAL SITES SHALL BE LOCATED ON LAND WHICH IS ENVIRONMENTALLY SUITABLE AND HAS UNIQUE LOCATIONAL ADVANTAGES FOR INDUSTRY.

Implementation Actions

1. The County shall use local zoning and site plan review ordinances to regulate the availability of industrial sites and permitted industrial uses to insure the compatibility of all proposed uses with the surrounding environment.

2.3.2 Provision of Services To Development

Dare County finds itself in a dilemma with regard to the provision of services to development. On one hand, there is concern that existing development, including septic tanks, is causing a slow decline in the surface and groundwater quality of the area. The existing road system is also not capable of handling traffic during the peak tourist summer season, and is particularly inadequate to handle emergency evacuations of the Outer Banks. The provision of public sewage facilities and improvements to the County's existing roadway system could help alleviate the potential problems with septic tanks and small private sewage treatment plants, while improvements to the road system could help handle summer traffic loads and evacuation emergencies.

On the other hand, the provision of public sewer to the unincorporated barrier island areas of Dare County would provide a tremendous incentive for much higher density development. As conditions presently stand, the capability of area soils to absorb septic tank effluent is the primary constraining factor on the density of development on the Outer Banks. If this natural land-based constraint were to be eliminated, the ever-increasing cost of land on the Outer Banks would encourage developers to press for more heated square footage per unit of land area. This higher density of development would, in turn, require that the existing roadway system be further improved to handle the larger traffic loads. Thus, a vicious circle between the provision of services and the density of development would be created.

The prevailing opinion is that services should be programmed to keep pace with development, but not as a means to induce further development.

Policy 2.3.2

PUBLICLY FINANCED URBAN SERVICES SHALL BE FUNDED AND PROVIDED TO KEEP PACE WITH, BUT NOT SERVE AS AN INCENTIVE TO, GROWTH AND DEVELOPMENT.

Implementation Actions

1. Dare County shall continue to lobby NC Department of Transporation for necessary improvements to transportation facilities, especially those serving as evacuation routes from the Outer Banks.
2. Dare County will continue to seek additional revenues from sources other than ad valorum real estate taxes to provide for those capital expenditures identified in Section One.

2.3.3 Urban Growth Pattern

The preferred pattern of urban growth in the unincorporated areas of Dare County is one of low density, primarily single family development. This desired pattern of development is consistent with the policy of the County regarding the provision of urban services. A dispersed pattern of development is felt to be more in keeping with traditional development patterns in Dare County, as well as being more compatible with the natural carrying capacity of the land resource. Low density development allows for maximum recharge to the groundwater, and minimizes runoff into the estuarine waters. A dispersed urban growth pattern also avoids the creation of traffic congestion and bottlenecks associated with more densely developed areas.

Results of the land use questionnaire revealed that there is a high level of concern regarding "small lots and crowded developments" and "highrise construction." Of the types of development activities to be encouraged or discouraged, respondents to the questionnaire heavily favored single family residences, while wishing to discourage highrise residences and low-rise multi-family residences. At the Planning Board level, the desire to encourage low density development was affirmed. At general public input meetings, as well as policy development work sessions with the Planning Board, there was some mention of the need to do away with small lots, and encourage larger lot zoning.

Another urban growth trend identified through the existing land use survey is the continued stripping of commercial uses along the major highway in virtually all the small, unincorporated communities along the Outer Banks. This strip development causes traffic congestion during the

summer months, and if allowed to continue, will further erode the usefulness of the highway.

Discussion at the Planning Board level focused on the need to implement zoning in those parts of the County experiencing rapid development that are currently unzoned, such as Rodanthe, Waves, Salvo, Buxton, Frisco, and Hatteras. Since zoning was identified as the most appropriate tool to control the size of lots in these areas, the Board of Commissioners has adopted a limited range of land use controls on Hatteras and Colington Island and the Planning Staff has conducted exploratory meetings in Wanchese. Although support for zoning was mixed at the public meetings conducted in conjunction with the Land Use Plan Update, support was strong at public hearings held later in the year. As a result, only the mainland and the village of Wanchese remain free of land use guidelines.

Policy 2.3.3

WHERE URBAN SERVICES ARE NOT PROVIDED, LOW DENSITY, SINGLE FAMILY RESIDENCES AND ONLY LOW DENSITY, MULTI-FAMILY RESIDENCES SHALL BE THE PREFERRED DEVELOPMENT FORM. COMMERCIAL STRIP DEVELOPMENT SHALL BE DISCOURAGED.

Implementation Actions

1. Dare County will investigate the feasibility of extending zoning to the unincorporated areas of the County, and establish multi-family density guidelines not to exceed five units per acre for any zoning district.
2. Minimum lot size guidelines shall be established and enforced and the recombination of existing substandard lots shall be encouraged. The use of local zoning guidelines to disperse patterns of concentrated commercial growth shall be encouraged as well as patterns of clustered commercial centers.

2.3.4 Redevelopment

Due to Dare County's negligible growth through about 1970, nearly all of the unincorporated areas building inventory is fairly new. Notable exceptions include a limited number of homes in Manns Harbor, along State Road 1217 to Colington Island, Buxton, and Stumpy Point. There are few structures in other parts of the unincorporated County that could be considered substandard to the point of public condemnation.

Most concern at the Planning Board level centered on the redevelopment of existing tracts to higher development densities. Typically, an individual large lot with an older single family structure on it is purchased and redeveloped for multiple housing units. Without zoning in place, the

County has very little control over this development practice.

The need was also mentioned to encourage previous higher density developments to be redeveloped at current, more restrictive standards, if applicable.

In general, the need for traditional redevelopment seems to take care of itself moreso in Dare County than in other counties that are less influenced by dramatic growth and escalating property values.

Policy 2.3.4

REDEVELOPED AREAS AND STRUCTURES SHALL CONFORM TO CURRENT, MORE RESTRICTIVE DEVELOPMENT STANDARDS.

Implementation Actions

1. The County shall enforce the State building code for coastal construction in the event of reconstruction.
2. The County shall enforce current zoning and floodplain ordinances.

2.3.5 State and Federal Program Support

State and Federal programs of most significance to Dare County are primarily related to transportation. In the area of water transportation, for example, maintenance of Oregon Inlet and access to Wanchese Harbor are considered top priority transportation concerns. The County also supports the continued maintenance of the Intracoastal Waterway and the Alligator River west of the Dare County mainland. Other boating channels in Croatan, Roanoke, and Pamlico Sounds provide access to the ocean from Manteo and Stumpy Point.

In terms of ground transportation, the bridges leading inland from the Outer Banks have been identified as a choke point in terms of emergency evacuation during hurricane events. There is a continued pressing need to make improvements at these points for the general safety of the public. Improvements to the main roadway spines in the unincorporated communities of the Outer Banks has also been identified as a concern by area residents. Bikeways, funded and built in conjunction with State and Federal road projects, received noticeable support from area residents at public meetings for the Land Use Plan. If properly constructed, such bikeways could provide a safe alternative to the further congestion of area highways by the automobile.

While residents expressed no opposition to continued State and Federal support for beach and estuarine access, this was not identified as a major public concern when compared to the transporation issue. (Also see Section 2.3.9, Coastal and Estuarine Water Access.)

Policy 2.3.5

STATE AND FEDERALLY FUNDED WATER AND HIGHWAY TRANSPORTATION PROJECTS SHALL RECEIVE THE HIGHEST LEVEL OF SUPPORT, IN LIGHT OF THEIR POTENTIAL IMPACT ON THE PUBLIC SAFETY AND THE ECONOMIC HEALTH OF THE AREA.

Implementation Actions

1. Funding and support of the lobbying effort for jetty approval at Oregon Inlet shall be maintained.
2. The County staff should closely monitor Federal and State programs, with the intent of informing County Commissioners and the Planning Board of important information or changes in these programs.
3. The County shall participate in Albemarle Commission review of State and Federal projects. Contact shall be maintained with legislators.

2.3.6 Channel Maintenance and Beach Nourishment

As discussed in the preceding policy section, channel maintenance is a very high priority concern in Dare County. Open, navigable channels are essential to both Dare County's tourism-based economy, as well as the future of commercial fishing industry locally. While concern for channel maintenance was not raised at the general public input meetings for the Land Use Plan, it was clearly identified as a priority by the Planning Board.

Beach renourishment, on the other hand, received little or no support from Planning Board members when compared to the channel maintenance issue. Comments included: "Let nature take its course on ocean beaches," "Enact ordinances to prohibit beach nourishment," "No beach nourishment at all except as associated with channel maintenance," and "Allow limited beach nourishment."

Policy 2.3.6

CONTINUED MAINTENANCE OF NAVIGABLE CHANNELS IN DARE COUNTY SHOULD RECEIVE A HIGH LEVEL OF SUPPORT AT THE STATE, FEDERAL AND LOCAL LEVEL. BEACH NOURISHMENT PROJECTS SHOULD NOT BE CONSIDERED A PRIORITY FOR FUNDING IN COMPARISON TO OTHER, MORE ESSENTIAL PUBLICLY FINANCED NEEDS.

Implementation Actions

1. The County shall support the Dare Waterways Commission.

2.3.7 Energy Facilities

As defined in the CAMA guidelines, "Major energy facilities are those energy facilities which, because of their size, magnitude and scope of impacts, have the potential to significantly affect the coastal zone. For purposes of this definition, major energy facilities shall include, but are not necessarily limited to the following: 1) Any facility capable of refining oil; 2) LPG-LNG-SNG terminals and associated storage, handling or processing facilities; 3) any oil or gas storage facility that is capable of storing 15 million gallons or more on a single site; 4) electric generating facilities 300 MGW or larger; 5) thermal energy generation; 6) major pipelines 12" or more in diameter that carry crude petroleum, natural gas, LNG-LPG or synthetic gas."

Concern about energy facilities was not identified at the general public meetings related to the Land Use Plan, the land use questionnaire, or at the policy development work session of the Planning Board. All but one member of the Dare County Planning Board indicated that the development of energy facilities was not a major concern in Dare County. The one Planning Board member who did choose to comment, stated that the local environment of Dare County would not support any major energy installations, and that they should therefore be discouraged in the County. In the event that an energy facilility were to be proposed in the County, a thorough assessment of its potential impacts would be in order. This latter statement is consistent with the State's intent for major energy facilities in the coastal area.

Policy 2.3.7

DARE COUNTY DOES NOT SUPPORT THE LOCATION OF ANY MAJOR ENERGY FACILITY WITHIN ITS JURISDICTION.

Implementation Actions

1. Any major energy facilities to be located in Dare County shall make a full disclosure of all costs and benefits associated with the project. This disclosure shall be in the form of an environmental impact statement.

2. In the event that an energy facility is proposed for Dare County, the County will support the policy statements and administrative regulations referenced in 15NCAC7M, Section .0400 entitled "Coastal Energy Policies."

2.3.8 Tourism and Beach and Waterfront Access

As Dare County's permanent and seasonal population continues to grow, the demand for public access to the beach grows commensurately. At the same time, opportunities for public access grow smaller each year as more and more of the developable shoreline is built upon. The State's policy on shorefront access is clearly stated in 15NCAC7M, Section .0300, and is worth repeating here: "It is the policy of the State of North Carolina to foster, protect, improve and insure optimum access to recreational opportunities at ocean and estuarine water beach areas consistent with public rights, rights of private property owners, and the need to protect natural resources, especially sand dunes and marsh vegetation. The State's ocean and estuarine water beaches are a resource of statewide significance held in trust for the use and enjoyment of all the citizens."

As a result of statewide concern for continued public access to NC's beaches, the State created a Coastal and Estuarine Beach Access Program for the purpose of acquiring, improving and maintaining recreational property along the oceanfront and estuarine shoreline. This program provides limited amounts of money each year to carry out the intent of the program.

The 1982 Dare County Land Use Plan Update contained a useful table summarizing the Dare County ocean shore as it occurs in various Federal and local government jurisdictions:

Dare County Ocean Shore

Controlling Agency	Length in Miles
Federal government	45.0
Kill Devil Hills	4.5
Kitty Hawk	3.5
Nags Head	12.0
Southern Shores	4.5
Dare County	15.5
TOTAL	85.0

The table points out that while there are approximately 85 miles of ocean shoreline in Dare County, only slightly over 15 miles are actually under the control of Dare County government.

At the present time, Dare County has a provision in its subdivision regulations in which the County may require the developer to provide easements to the mean highwater mark if the subdivision is adjacent to the Atlantic Ocean. Discussion at the Planning Board level indicated a desire to make public access a requirement in such developments.

Specific parts of the County where waterfront access is deemed by the Planning Board to be particularly inadequate include Duck, Manns Harbor, Roanoke Island, and sound-side areas in general.

Support for beach access from the public at large, however, varies considerably according to different parts of the County. In Hatteras, for example, support for additional beach access was revealed in both the results of the land use questionnaire, and by the residents attending the public input meeting there. In Duck, on the other hand, most residents liked beach access the way it was and several wished to discourage beach access. These findings were confirmed at the first general public input meeting held in Duck, when a majority of the residents present did not voice support for additional public access. In the case of Duck, this may reflect the desire of permanent residents to discourage seasonal and day visitors from using Duck area beaches. The County as a whole, however, recognizes the need for public access to the beach and sound, and is interested in providing additional access opportunities for both permanent residents and seasonal visitors.

Policy 2.3.8

DARE COUNTY SUPPORTS NORTH CAROLINA'S SHOREFRONT ACCESS POLICIES AS STATED IN 15NCAC7H, SECTION.0300. THESE POLICIES RECOGNIZE THE NEED TO PROVIDE REASONABLE PUBLIC ACCESS TO BEACHES AND ESTUARINE WATERS.

Implementation Actions

1. Where possible, Dare County will encourage developers to provide public access prior to subdivision plat approval.

2.3.9 Coastal and Estuarine Water Access

Much of the discussion contained in Section 2.3.8 above applies equally well to the issue of coastal and estuarine water access. The need for public access to the water at locations such as Manns Harbor and Roanoake Island is worth repeating and commenting upon, however. It would seem that with the exception of Duck, most Dare County residents have a reasonable level of satisfaction with the

amount of public access to the oceanfront beach. Access to the area's sounds and estuaries, however, appears to be less adequate in general. This sentiment is affirmed by a survey that was conducted by NC's Division of Coastal Management, the results of which were issued in a report entitled, "Understanding Coastal Water Access Needs" (September, 1986). In summarizing the survey, the report states that in northern oceanfront counties, respondents indicated a desire for additional sound or estuarine access. In support of this need and concern, therefore, the following policy statement is established.

Policy 2.3.9

IN ADDITION TO OCEAN BEACH ACCESS, DARE COUNTY SUPPORTS THE CREATION OF PUBLIC ACCESS OPPORTUNITIES TO ESTUARINE WATERS, INCLUDING OPPORTUNITIES FOR PARKING, BOATING AND PEDESTRIAN ACCESS.

Implementation Actions

1. Dare County supports the C.A.M.A. Shoreline Access Plan, and the N.C. Wildlife Resoures Commission Access Program.

2.3.10 Residential Development

As mentioned under Section 2.3.2 above regarding the provision of services to development, most residents of Dare County, as well as members of the Planning Board, favor the predominance of low density single family residential development. This is especially true on Hatteras Island, where there are concerns regarding higher density residential development which include: increased consumption of the limited amount of potable water on the island, increased impervious surface areas and runoff into estuarine waters, increased traffic congestion and evacuation times, and potential destruction of natural areas.

Policy 2.3.10

SINGLE FAMILY LOW DENSITY HOUSING SHALL BE ENCOURAGED AS THE PREFERRED RESIDENTIAL FORM IN DARE COUNTY, PARTICULARLY IN INSTANCES WHERE HIGHER DENSITY RESIDENTIAL DEVELOPMENTS WOULD PLACE A STRAIN ON WATER SUPPLY, SEWAGE TREATMENT, INCREASED STORMWATER RUNOFF, OR TRAFFIC CONGESTION AND EVACUATION. MULTI-FAMILY DEVELOPMENT SHALL BE ENCOURAGED TO LOCATE IN AREAS ADEQUATELY SERVED BY URBAN SERVICES, AND ENVIRONMENTALLY SUITED FOR SUCH DEVELOPMENT.

Implementation Actions

1. The County shall work toward the implementation of zoning for the entire County to reflect mostly single family uses with commercial and multi-family zones in areas with urban services and a suitable environment.

2.3.11 Commercial Development

Dare County recognizes that as the area continues to develop for residential purposes, commercial uses are likely to follow. In most urban areas, there is a natural tendency for commercial uses to locate in a stripped fashion along the area's major highways. Such stripping provides maximum exposure to the traveling public and allows developers to pick scattered sites where real estate prices are less competitive.

Unfortunately, this pattern of development has many public costs:

1. The use and efficiency of the highway is diminished by the number of driveway cuts and turnouts onto the highway. This can cause an unpredictable flow of traffic, resulting in congestion and increased accidents. In most instances, it eventually results in the loss of the highway for its originally intended purpose, that of moving traffic through the area. Parallel roads must then be built at additional public expense.
2. This stripped development pattern is also more costly to service with regard to the extension of water and sewer lines, police and fire protection, and trash collection.
3. Strip commercialization can eventually lead to visual blight due to a proliferation of signs, variable setbacks, unplanned parking areas with minimal landscaping, etc.

The 1987 Existing Land Use Survey identified a continuation of such a commercial strip development pattern along each of the major highways serving the unincorporated villages on the Outer Banks. This commercial strip development trend was especially apparent in Rodanthe, Avon, Buxton, Frisco, and Hatteras. For many of these areas, the narrow width and the existing development pattern would preclude the construction of a parallel bypass highway around these emerging commercial areas. It is, therefore, important that the County take steps now to control strip commercialization in these unincorporated areas. Discussion at the Planning Board level revealed strong support for the establishment of zoning in these unincorporated areas to discourage

further strip commercialization, and encourage a more favorable clustered pattern of commercial development

Policy 2.3.11

COMMERCIAL DEVELOPMENTS SHALL BE LOCATED AND EXPRESSLY DESIGNED TO MEET THE NEEDS OF THE MARKET AREA THEY ARE INTENDED TO SERVE, CONSISTENT WITH THE COUNTY'S LAND CLASSIFICATION SYSTEM. UNCONTROLLED STRIP DEVELOPMENT BY COMMERCIAL USES SHALL BE DISCOURAGED.

Implementation Actions

1. The County Planning Board will work with the residents and property owners of the unincorporated villages on the Outer Banks to educate and inform them of the benefits and need for zoning in these areas. The long-term consequences of continued strip commercialization will be pointed out as one major reason for the need for zoning.

2.3.12 Solid Waste Disposal

Concern about solid waste disposal varies considerably from one part of the County to another. For example, at public input meetings in Manteo and Hatteras, solid waste disposal was identified as a number one concern. For Hatteras Island in particular, residents pointed out that trash, both toxic and household, was being dumped "all over the island." This in turn led to concerns about the impacts this waste might eventually have on the island's groundwater. At Duck, on the other hand, residents assigned solid waste disposal a low priority.

While the East Lake landfill is projected to be able to serve the needs of the Couny for the next 7-10 years, there is some concern that leachate from the landfill may be reaching estuarine waters. Suitable alternative sites for a landfill are extremely difficult to locate, due to the widespread occurrence of an seasonally high water table throughout much of the County mainland.

Permits for a regional incineration facility may also be difficult to secure for a site within a reasonable distance of the Dare County population. Extensive areas of the County are contained in Federally owned wildlife and recreation lands, resulting in the application of very stringent air quality standards under Federal air quality legislation. In fact, Dare County is in the highest air quality classification, calling for "no significant deterioration."

From the above discussion, it is apparent that the solid waste disposal issue is a complicated one with no easy solutions. Nonetheless, it is a problem that is likely to intensify over the next 5-10 years, when the East Lake landfill reaches capacity.

Policy 2.3.12

DARE COUNTY RECOGNIZES THE NEED FOR A REGIONAL SOLUTION TO THE SOLID WASTE ISSUE, AND WILL WORK DILIGENTLY TOWARD THAT END.

Implementation Actions

1. The Dare County Commissioners will establish a study committee to research alternatives for a future regional solid waste disposal facility.
2. The County shall continue to coordinate studies with adjacent counties in the Albemarle Region.
3. The County shall support local incentives for recycling and solid waste separation, will support similar action by the Dare County municipalities, and will consider support for legislative initiatives or glass bottle and aluminum can recycling for the 1989 N.C. General Assembly session.

2.3.13 Low and Moderate Income Housing

Dare County, like other resort-oriented coastal communities, has a shortage of low and moderate income housing. The need for such housing was identified most strongly at the general public input meeting on Hatteras Island, and was affirmed by several members of the Dare County Planning Board. The problem stems, in part, from the competition for housing between permanent residents and seasonal residents. Seasonal residents and second home owners oftentimes have higher levels of disposable income available to spend on housing. At the same time, the tourist driven service economy of the County provides the highest number of jobs in the lower pay scales. There is a need to meet the housing needs of these lower to moderate income permanent residents.

Policy 2.3.13

PUBLIC AND PRIVATE SECTOR EFFORTS TO MEET THE HOUSING NEEDS OF LOW TO MODERATE INCOME RESIDENTS SHALL BE SUPPORTED.

Implementation Actions

1. Dare County shall investigate the applicability of various State and Federal housing programs for low to moderate income residents.

2.3.14 Land Clearing

Some area residents at the general input meetings for the Land Use Plan expressed concern that lots are oftentimes "indiscriminately cleared" prior to issuance of building permits and the commencement of construction. In their view, such clearing practices destroy the natural beauty of the

Outer Banks.

Views expressed by the County Planning Board were mixed on the issue, but leaning in the direction of greater controls. The issue probably requires special discussion and attention, apart from the Land Use Plan.

DEVELOPMENTS WHICH PRESERVE THE NATURAL FEATURES OF THE SITE, INCLUDING SIGNIFICANT EXISTING VEGETATION, SHALL BE ENCOURAGED.

Policy 2.3.14

1. Dare County shall investigate the feasibility of establishing a tree protection and landscape ordinance as may be appropriate.

Implementation Actions

Concern was voiced at public meetings related to the Land Use Plan about the deterioration of subdivision streets in the County due to lack of maintenance. Poorly maintained streets are at best an inconvenience for area residents, and at worst a serious handicap to the efficient delivery of emergency services. Many private streets were developed years ago without clear responsibilities for maintenance determined. Many were also developed without adequate standards for construction. They are not included on the State road system, and are therefore not subject to maintenance by NCDOT. The County also does not wish to accept responsibility for maintenance of private streets.

2.3.15 Street Maintenance

Alternative suggestions for the solution of the problem put forth by Planning Board members included: requiring adjacent property owners to maintain streets, requiring Homeowners Associations to accept responsibility; placing County assessments against property owners where the delivery of emergency services is seriously impaired; and simply staying out of the issue.

COUNTY GOVERNMENT SHALL NOT ABSORB THE COSTS OF MAINTAINING PRIVATELY OWNED STREETS.

Policy 2.3.15

1. The County will continue to seek assurances that future privately developed and owned streets shall be properly maintained by those benefiting from the construction and use of such streets.

Implementation Actions

2.3.16 Bikeways/ Walkways

Residents attending the general input meetings for the Land Use Plan held in Duck and at Hatteras identified the need for a bikeway and/or walkway along the highway as a high priority item. In addition, a local bicycle club has been formed, called the Wheels of Dare, and has been active in promoting bicycling on the Outer Banks. In December, 1986, the club announced that it was beginning the process of preparing a long-range plan for bicycle facilities along the Outer Banks under a grant of funds from the Outer Banks Community Foundation. The club has written memorandums and letters to various local government officials along the Outer Banks summarizing several key aspects of the plan and asking for review and comment. The plan will ultimately include bike lanes and bike routes incidental to highway projects, as well as independent bicycle projects.

Policy 2.3.16

DARE COUNTY ENCOURAGES THE DEVELOPMENT OF BIKEWAYS AS PROJECTS INCIDENTAL TO HIGHWAY IMPROVEMENT AND CONSTRUCTION PROJECTS. THE DESIGNATION AND/OR DEVELOPMENT OF OTHER BICYCLE FACILITIES AND ROUTES NOT DIRECTLY ASSOCIATED WITH THE HIGHWAY SHALL ALSO BE ENCOURAGED.

Implementation Actions

1. The County shall request bicycle improvements in the State Transportation Improvement Program for the First District.

2.4 Public Participation Policies

2.4.1 Public Participation

Public participation is important in planning for the future of Dare County. Two key elements must be included to develop an effective public participation program: 1) public education, and 2) public involvement. The most effective format for public participation involves two-way communication between citizens and local planning officials.

The public participation strategy that has been implemented for the development of the Dare County Land Use Plan has provided opportunities for effective communication. Attendance at meetings held in Manteo, Duck, and Hatteras during the early stages of plan preparation were well attended and generated high levels of citizen involvement and issue identification. The issues as identified at those meetings and ranked according to their level of importance are included in Section 5 of this plan. The degree of importance given to each issue has been reflected in the various policy sections contained in the plan.

The land use questionnaire, developed in conjunction with the planning process, received excellent exposure in the County. In addition to the questionnaires that were distributed at the public meetings for the Land Use Plan, the questionnaire was also publicized in its entirety in both areawide newspapers. In total, over 300 questionnaires were received, the majority of which were taken out of the newspaper and mailed in. This willingness to respond to a general newspaper printing of the questionnaire revealed a high level of interest and motivation on the part of Dare County residents, compared to the more traditional mailout questionnaire and self-addressed stamped envelope. The final tabulations are printed in full in Section 5 of this plan.

Finally, the publicly advertised policy development work session of the Dare County Planning Board received a high level of commitment from Planning Board members. A day-long work session was held in which each policy issue identified in the Coastal Area Management Act guidelines was reviewed by the Planning Board members. Individual opinions of each Planning Board member were recorded on worksheets and later translated into a consensus policy statement.

Policy 2.4.1

OPPORTUNITIES FOR PUBLIC INVOLVEMENT WITH LAND USE ISSUES SHALL BE PROVIDED ON A CONTINUING BASIS TO ALL RESIDENTS AND WILL BE SCHEDULED FOR EVENING MEETINGS TO ENCOURAGE THE GREATEST POSSIBLE PARTICIPATION.

Implementation Actions

1. The County will continue efforts to inform, educate and involve the public in planning for the future of the County, primarily through the regular and special meetings of the Dare County Planning Board and Board of County Commissioners.
2. The County will encourage continued representation by a broad cross-section of County residents on all citizen advisory boards.

2.5 Storm Hazard Mitigation, Post-Disaster Recovery and Evacuation Plan

Introduction

According to historical information compiled by the Federal office of Coastal Zoned Management (*Natural Hazard Management in Coastal Areas*, Washington, DC, 1976), Dare County has the highest relative probability of a hurricane strike of any area on the East Coast of the U.S. north of South Florida. One need only look at the configuration of NC's coastline to understand why the barrier island chain in Dare County is particularly susceptible to hurricanes. In addition, the mainland portion of the County, while not as directly exposed to the path of hurricanes, has such low elevations that it is very susceptible to near total inundation during a major storm event.

Unfortunately, the same environmental conditions and geographic location that make the County so susceptible to hurricanes, also make the County very attractive for seasonal, second home, and permanent populations. As noted in Section 1.2.1, the County has had one of the highest growth rates in the State and nation since about the mid-1970s. Nearly all of this new growth has focused on the barrier island chain of the County, the area that is least able to evacuate quickly in an emergency situation.

The purpose of this section of the Dare County Land Use Plan is to document the County's policies on managing development in hazardous areas, and to determine how areas might be rebuilt following the occurrence of a major destructive storm event. Each of these concerns will be addressed in the paragraphs that follow.

2.5.1 Storm Hazard Mitigation

Storm hazard mitigation involves "activities which reduce the probability that a disaster will occur and minimize the damage caused by a disaster. Such activities can range from the establishment of a nationwide hurricane tracking system to the adoption of local land use regulations which discourage residential construction in floodprone areas. Mitigation activities are not geared to a specific disaster; they result from a long-term concern for avoiding the damages of future natural disasters." (McElyea, et al, *Before The Storm: Managing Development to Reduce Hurricane Damages*, 1982)

For the Dare County Land Use Plan, primary emphasis will be on those mitigation activities that are within the authority of the County.

Composite Hazards Map

For the purposes of this study, a composite hazards map has been prepared in accordance with the CAMA guidelines, and included in the back of this report. The composite hazards map shows all areas of Dare County that are not subject to storm surge inundation during a FEMA Category 1-2 storm and not included in any CAMA estuarine or ocean hazard AEC. In other words, the dark areas on the map are the only areas of the County that would not be under water in the event of a Category 1 storm.

It should be noted that a Category 1 storm is the least intensive of the three types of hurricanes that the Federal Emergency Management Agency uses to classify storm intensities. In the event that a Category 3 storm should strike Dare County, only a very few parts of the entire County would not be under water. Those relatively high ground areas include the following locations: north end of Roanoke Island, a narrow strip of Duck and Southern Shores, a very small part of Colington, and some significant parts of Kill Devil Hills and Nags Head.

The previously referenced Dare County Carrying Capacity Study completed in 1985 contains some useful information regarding development and assessed evaluation by local jurisdiction in Dare County. According to that study, there were approximately 17,000 single family homes, hotel rooms, apartments, and condominiums in Dare County in 1985. Using these statistics, and the existing Land Use Survey of 1987, it can be estimated that at least one-third of the County's total residential housing units and accommodations would be subject to flooding during a Category 3 storm event. It should also be emphasized that this percentage is a conservative estimate. The following table shows the relative amounts of property by assessed valuation located in each of the small area jurisdictions within the County.

Dare County Assessed Valuation
(In $000)

1985

Jurisdiction	
Nags Head	$273,460
Kill Devil Hills	$261,455
Kitty Hawk	$113,225
Southern Shores	$117,512
Manteo	$34,749
Total Incorporated	$800,401
Duck/North	$135,846
Colington	$49,312
Roanoke Island	$104,589
Mainland	$22,436
Rodanthe/Salvo/Waves	$45,142
Avon	$48,277
Buxton	$29,405
Frisco	$32,374
Hatteras	$36,135
Total Unincorporated	$503,518
Grand Total	$1,303,919

If we assume that the one-third estimate from above is true, and that it is also conservative, then we should be able to estimate that no less than one-third of the County's total tax base would also be subject to flooding during a Category 3 storm. It is recognized that commercial developments are more likely to concentrate in the relatively high ground areas of Kill Devil Hills and Nags Head adjacent to the highway. Therefore, while the total housing unit count subject to inundation may range from 33 to perhaps 40% of the total count, assessed valuation subject to flooding is conservatively estimated at 33% or perhaps slightly less.

DARE COUNTY SHALL DISCOURAGE HIGH INTENSITY USES AND LARGE STRUCTURES FROM BEING CONSTRUCTED WITHIN THE 100-YEAR FLOODPLAIN, EROSION-PRONE AREAS, AND OTHER LOCATIONS SUSCEPTIBLE TO HURRICANE AND FLOODING HAZARDS. **Policy 2.5.1(a)**

Policy 2.5.1(b)

DARE COUNTY, IN COOPERATION WITH THE STATE OF NORTH CAROLINA, SHALL CONSIDER PURCHASING PARCELS LOCATED IN HAZARD AREAS OR RENDERED UNBUILDABLE BY STORMS OR OTHER EVENTS, FOR THE PURPOSES OF SHORE-FRONT ACCESS. DEVELOPERS MAY ALSO BE REQUIRED TO PURCHASE SUCH PROPERTIES FOR PUBLIC ACCESS AS A CONDITION FOR PROJECT APPROVAL.

Policy 2.5.1(c)

DARE COUNTY SHALL REQUIRE ALL NEW CONSTRUCTION TO CONFORM TO CURRENT COASTAL CONSTRUCTION STANDARDS, PARTICULARLY THOSE PROVISIONS WHICH REQUIRE CONSTRUCTION TO MEET WIND RESISTIVE FACTORS, I.E., DESIGN, WIND VELOCITY.

Implementation Actions

1. The County shall continue to enforce the State Building Code and CAMA setback requirements.

2.5.2 Post-Disaster Reconstruction

Post-disaster reconstruction involves the full range of rehabilitation and reconstruction activities which seek to return the community to normal. These include financial assistance to cover property damages, economic recovery plans, reassessment of the community's land development policies and the repair, reconstruction, and relocation of damaged structures and utility systems. Recovery activities may continue for years after a particular disaster.

Dare County has an officially adopted Disaster Relief and Assistance Plan which was completed in April of 1984. The document is a "comprehensive plan dealing primarily with disaster prevention and mitigation, communications and warning, shelter responsibilities, and damage assessment and recovery operations. It includes an annex for each major disaster which could affect Dare County, in addition to plans for setting up shelter operations, damage assessment teams, and disaster assistance centers." (George Spence, Emergency Management Coordinator, August 1984)

The 1984 plan includes a detailed description of the "Dare County emergency mangement control group" including the names and phone numbers of primary members and alternates for each local government jurisdiction in Dare County. Also included are area coordinators by different parts of the County, and a "support group" comprised of line agencies such as the Sheriff's Department, Social Services,

public schools, the Health Department, the tax office, and others. Contact persons and phone numbers for all volunteer fire departments as well as local police departments are also included.

In addition to identifying all of the key agencies and persons involved in a disaster situation, the plan also includes clear lines of communication for both pre-event and post-event timeframes.

The Disaster Relief and Assistance Plan also includes a Damage Assessment Plan specifying operations that are to occur during a) pre-disaster, b) during the disaster, c) post-disaster conditions. In addition to detailed written procedures, the plan includes an organization chart indicated how various experts from different disciplines will work together to survey four categories of property: 1) public property, 2) business and industry, 3) private dwellings (percent of value method), and 4) private dwellings (direct dollar method).

Detailed forms and procedures for preparing damage assessment reports are included in the plan. The following classification system is also included for determining the degree of damage to structures immediately following a disaster:

Destroyed - more than 80% of value to repair; unusable, uninhabitable.
Major Damage - more than 30% of value of structure; uninhabitable.
Minor Damage - 30% or less of the value of a structure; uninhabitable.
Habitable - damage amounting to 15% or less of value of structure; usable for intended purpose

The plan includes methods and forms to determine damage to essential public services including: public streets, stream/drainage channels, bridges, water control facilities, public buildings, equipment, and communications, public water and sanitary sewer, and medical or other emergency facilities.

Policy 2.5.2(a)

THE BOARD OF COUNTY COMMISSIONERS OF DARE COUNTY SHALL BE ULTIMATELY RESPONSIBLE FOR SUPERVISING THE IMPLEMENTATION OF POLICIES AND PROCEDURES CONTAINED IN THE DISASTER RELIEF AND ASSISTANCE PLAN,

AND THE POST-DISASTER RECOVERY POLICIES OF THE LAND USE PLAN.

Policy 2.5.2(b)

IN THE EVENT OF A DAMAGING HURRICANE, OR OTHER DISASTROUS EVENT, THE BOARD OF COUNTY COMMISSIONERS MAY DECLARE A MORITORIUM OF UP TO 180 DAYS ON THE ACCEPTANCE OF ANY REQUEST FOR REZONING OTHER THAN FOR REZONING TO A LESS INTENSE USE, UNLESS THAT REZONING REQUEST IS INITIATED BY THE COUNTY.

Policy 2.5.2(c)

IN THE EVENT OF EXTENSIVE HURRICANE DAMAGE TO PUBLIC UTILITIES REQUIRING REPLACEMENT OR RELOCATION OF THESE UTILITIES, EFFORTS SHALL BE MADE TO LOCATE DAMAGED UTILITIES AWAY FROM HURRICANE HAZARD AREAS OR TO STRENGTHEN THEIR CONSTRUCTION.

Policy 2.5.2(d)

PRIORITY SHALL BE GIVEN TO THOSE REPAIRS THAT WILL RESTORE SERVICE TO AS MANY PERSONS AS SOON AS POSSIBLE.

Policy 2.5.2(e)

THE BOARD OF COUNTY COMMISSIONERS MAY DECLARE A MORITORIUM OF UP TO 180 DAYS ON THE PERMITTING OF ANY NEW CONSTRUCTION, INCLUDING NEW UTILITY HOOKUPS, OR REDEVELOPMENT CONSTRUCTION THAT WOULD INCREASE THE INTENSITY OF THE LAND USES EXISTING BEFORE THE HURRICANE.

Implementation Actions

1. Copies of this Land Use Plan and Policies, particularly regarding Storm Hazard Mitigation, Post Disaster Recovery and Evacuation, shall be made available to appropriate local emergency management groups and agency representatives.

2.5.3 Evacuation Plan

Evacuation refers to the range of activities involvedin the assignment of evacuation routes and shelter locations, the determination of when to issue an evacuation order, the procedures for notifying the public of both the evacuation routes and the order to evacuate, and the implementation of the evacuation during the storm event. Evacuation activities are related to both specific storm events (e.g., actual evacuations) and storm events in general (e.g., establishment

of evacuation routes and shelter locations; notification of the public of routes and shelters).

Dare County's Hurricane Evacuation Plan, prepared by the County Emergency Management Agency, is dated May 31, 1977 and was revised in August of 1983. The plan establishes an organization for managing evacuation in the event of a storm event. At the heart of this organization are three groups which may be described as follows:

1. A Control Group, whose mission is to "exercise overall direction and control of hurricane evacuation operations including decisions to institute countywide increased readiness conditions and such other action necessary due to the situation." The Control Group is comprised of the highest elected officials of each local government jurisdiction in Dare County, plus the superintendent of the National Parks Service, and is chaired by the chairman of the County Board of Commissioners. The County Civil Preparedness Coordinator also serves as an advisor.
2. The Support Group, whose mission is to "provide personnel and material resources for the implementation of pre-planned actions and actions as directed by the control group and area coordinators; provide direction to personnel engaged in operations; and to provide information, data, and recommendations to the control group and area coordinators." The Support Group is comprised primarily of the highest level local government managers for each major line agency in the County, and other appropriate volunteer, State and local agencies. The County Manager serves as the Support Group Coordinator.
3. Area Coordinators, whose mission is "to be responsible for their area under direction of their Control Group; to provide direction to personnel engaged in operations; and to provide information, data, and recommendations to the Control Group." Area Coordinators are determined primarily by geographic distribution, and their base of operations is typically in a town hall, fire department, law enforcement office, or community building.

In general, the established organization for handling emergency evacuations appears to be adequately structured.

A single sheet supplement to the Dare County Hurricane Evacuation Plan has also been developed by the Dare County Emergency Management Agency in conjunction with the NC Division of Environmental Management. This summary sheet is appropriate for widespread distribution and explains the basics of hurricane safety rules, hurricane facts, and includes a map of hurricane evacuation routes.

The 1985 Dare County Carrying Capacity Study contains an analysis of the capability of the County's current transportation system to handle emergency evacuations. The major findings of the study may be summarized as follows: "The road and bridge network will not be able to handle traffic demands on a timely basis in the event of a hurricane evacuation. The evacuation routes, of necessity, are limited to the major arteries in the County, and it is estimated that it will take 20-27 hours to evacuate Dare County during peak season; 13-18 during the off-peak season. These estimates are based on a single lane of traffic on the bridges leaving the island. These estimates have significant impacts on hurricane evacuation planning inasmuch as the National Weather Service can provide only 12 hours notice, with limited accuracy, as to when and where the hurricane will make landfall."

The report also notes that the key to the successful evacuation of the Outer Banks area of the County rests with the ability of the Route 158 and 64 bridges to accept the evacuation traffic.

Policy 2.5.3

DARE COUNTY SHALL CONTINUE TO WORK CLOSELY WITH EMERGENCY MANAGEMENT AGENCY PERSONNEL IN THE PREPARATION OF THE COUNTY'S EVACUATION PLAN. THE COUNTY SHALL ALSO CONTINUE TO PRESS FOR NECESSARY IMPROVEMENTS FOR EFFECTIVE EVACUATION OF THREATENED AREAS.

Implementation Actions

1. The County shall lobby for transportation improvements with emphasis on adequacy of evacuation routes.

Section 3: Land Classification

3.1 Purpose of Land Classification and Relationship to Policies

A land classification system has been developed as a means of assisting in the implementation of the policies adopted by the County. By delineating land classes on a map, local government and its citizens can specify those areas where certain policies (local, State, and Federal) will apply. Although specific areas are outlined on a land classification map, it must be emphasized that land classification is merely a tool to help implement policies and not a strict regulatory mechanism. The designation of land classes allows the County to illustrate its policy statements as to where and at what density growth should occur, and where natural and cultural resources should be conserved by guiding growth. Where the County has enacted zoning controls which apply in the various land classification areas, appropriate land uses are specified by the zoning map and ordinance.

While North Carolina's Coastal Area Management Act Guidelines for Land Use Planning suggest a general format for the land classification system, local governments may modify the system within reason to meet local area needs.

3.2 Land Classification System

For Dare County, seven general land classes have been devised to cover all parts of the County. The various classes are shown on the land classification map and may be described as follows:

Municipal

The Towns of Kill Devil Hills, Manteo, Nags Head, Southern Shores, and Kitty Hawk are covered by plans prepared by each local government. For the purpose of the County plan, all are shown on the land classification map as Municipal. The reader is referred to each Town's individual plan for details.

Transition

The purpose of the Transition class is to provide for future urban development within the ensuing 10 years on lands that are most suitable and that will be scheduled for provision of necessary public utilities and services.

For the 1987 update to the Dare County Land Use Plan, the land areas in Transition remain largely unchanged from the 1982 plan. Included in the Transition class are the following areas: Colington and the area outside Kill Devil Hills, portions of Roanoke Island outside the Town of Manteo, as well as parts of Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, and Hatteras.

It should be noted that the boundaries of the Transition areas have been refined somewhat from the 1982 plan, due to the availability of the National Wetlands Inventory Mapping from the U.S. Fish and Wildlife Service. These refinements should have no appreciable impact on the amount of available developable land, due to the fact that the areas not included in Transition will, in most instances, fall under the permitting jurisdiction of the U.S. Army Corps of Engineers and the CAMA permitting officials.

Community

The purpose of the Community class is to provide for clustered land development to help meet housing, shopping, employment, and public service needs within the rural areas of the County.

This class includes all land north of the Town of Southern Shores to the Currituck County line (i.e. Duck). It also includes the mainland villages of East Lake, Manns Harbor, Stumpy Point, and Mashoes. In addition, an area of Roanoke Island south of the Transition area outside of Manteo is classified as Community, reflecting the fact that the area does not have public water.

Community Residential

Community Residential is a subclass of the Community land classification. The Community Residential classification is intended to provide for primarily single family residential and passive recreational land uses. Public water and sewer services will not be provided in these areas unless they are required to correct a public health problem.

For the 1987 Update to the Land Use Plan, the Community Residential class has been applied to the north end of Roanoke Island (the same as for the 1982 plan).

Rural

The purpose of the Rural class is to provide for agriculture, forest management, mineral extraction, and other low intensity uses. Residences may be located within Rural areas where urban services are not required and where natural resources will not be permanently impaired.

The amount of land in Dare County dedicated to the Rural classification has been steadily declining with each update of the Land Use Plan. For example, in the 1976 Land Use Plan, most of the interior of Dare County's mainland was classified as Rural, surrounded by a substantial fringe of conservation land. For the 1982 Land Use Plan, the amount of land in the Rural class was pared down considerably to identify primarily those areas that were under consideration for large-scale agricultural use.

As noted previously in this plan, most of Dare County's mainland has now been transferred in ownership to the Alligator River Wildlife Refuge. Therefore, for the 1987 plan, only those parts of the mainland that are not specifically included in the Wildlife Refuge have been retained in the Rural classification. These areas, of course, do not include those areas specifically dedicated to the Community class.

Conservation

The purpose of the Conservation class is to provide for effective, long-term management of significant limited or irreplaceable areas. This management may be needed because of its natural, cultural, recreational, productive or scenic values. The Conservation class should be applied to lands that contain: major wetlands; essentially undeveloped shorelands that are unique, fragile, or hazardous for development; necessary wildlife habitat or areas that have a high probability for providing necessary habitat conditions; publicly owned water supply, watersheds and aquifers; and forestlands that are undeveloped and will remain undeveloped for commercial purposes.

For Dare County, the Conservation class includes all State and Federally owned lands, including the Cape Hatteras National Seashore, the Pea Island Wildlife Refuge, the Alligator River Wildlife Refuge, all present and future public acquisitions of the Buxton Woods Forest, and parts of Roanoke Island. The Conservation class also includes by reference all CAMA AECs, and all wetland areas under the jurisdiction of the U.S. Army Corps of Engineers 404 Permit Program.

Special development standards for the Conservation class were created by the Planning Board for the 1982 plan and are set forth below as additions and clarifications to the definition of Conservation as established in the CAMA guidelines:

Development or alteration of land, including the construction of single family residences on suitable land, is appropriate within conservation areas where it can be shown that:

1. The proposed development will not destroy or irretrievably alter a) wetlands, b) frontal dunes, c) beaches, d) estuarine or impounded surface waters, e) prime wildlife habitat, f) unique natural areas, historic or archaeological sites.
2. The proposed development will not encroach upon or be endangered by: a) areas of special flood hazard, b) oceanfront erosion areas, c) inlets and areas within range of their migration, d) estuarine erosion areas.
3. The proposed development will not significantly affect the quality or reduce the value of: a) public or privately owned forest, park, gamelands, sanctuaries, or other non-intensive recreation areas, b) aquifers, or aquifer recharge areas, for public water supply watersheds for water supply areas.
4. The proposed development will not require an increase in public utilities or services beyond that provided by the developer.

As noted, the immediately foregoing deals with single family residences. The increasing variety of residential construction types leads occasionally to differences of interpretation as to exactly what constitutes a single family residence. Such distinctions are properly found in the zoning ordinance. As a general rule, however, it is the intent of this plan to encourage only the construction of completely de-

tached residences on individual lots in Conservation areas, if any residential development is proposed. The County will not take any action to encourage other types of residential development in such areas. The density of such development, if any, will be controlled through applicable law.

Limited Conservation

The purpose of the Limited Conservation class is to provide for the management and long-term viability of essentially undisturbed land that is compatible with only a limited range of uses only under a specified set of guidelines. The Limited Conservation class should be applied to lands that contain unique geological, hydrologic, or topographic features and/or plant and animal life that necessitates such guidelines in order to insure that such features are not destroyed or altered to the point where their natural, cultural, economic or scientific values are lost. Land placed in the Limited Conservation class may include, but is not limited to, maritime forests, inland dunes, heavily wooded areas, and other land determined by the Board of Commissioners as suitable for the guidelines associated with the Limited Conservation Classification.

Development and land clearing activities in the Limited Conservation class should be managed through the creation of a special use district and permit process, to be established by the Board of Commissioners, and should, at a minimum, conform to the following guidelines:

1. Primary Use - The primary permitted use of land in the Limited Conservation Classification should be detached single-family residential structures and a limited range of service-oriented commercial uses.

2. Dwelling Density - Residential and commercial structures should be permitted at a dwelling or use density equivalent to one dwelling unit per 40,000 square feet of land area.

3. Lot Coverage - The alteration of any land in the Limited Conservation Classification should not result in a total lot coverage of impervious material greater than 35% of the total surface area of the site being improved or altered.

4. Terrain Alteration and Vegetation Removal - Development or land clearing activity in the Limited Conservation Classification should not alter existing grades or remove existing vegetation any more than shall be necessary to facilitate:

a. The foundation of any proposed structure or improvement, and
b. Access to the site where the structure or improvement is to be located, and
c. The installation of any underground utility improvements associated with the structure or improvement.

5. Pavement Improvement Standards - Subdivision roads installed upon lands included in the Limited Conservation Class shall not exceed a maximum pavement width of 40' and surface drainage of such roads shall not be by curb and gutter systems.

6. Wetlands Alteration - Existing natural wetlands, ponds, and swales within the lands included in the Limited Conservation Class shall not be dredged, filled, or otherwise altered unless authorized as minor road crossings by the U.S. Army Corps of Engineers.

In each case, construction techniques and materials should be of the best available technology to mitigate any potential adverse impacts to the existing vegetation, terrain, or water quality of the land and waters of any Limited Conservation District. Development of land in the Limited Conservation class shall not create a significantly deleterious impact upon any underground water supply, aquifer, or aquifer recharge area used as a source of potable water.

Examples of areas where this class has been applied are the Buxton Woods area and the undeveloped portions of Colington Island on Buzzards Bay.

Interpreting the Land Classification Map

As noted previously, the land classification map contained in the back of this document provides a general description of the location of each of the land classes established in this section. This land classification map should not be utilized for site specific interpretive purposes; its scale precludes such detailed use. Site specific questions concerning properties described on the land classification map should be directed to the Dare County Planning Department.

In addition, at the time of review, the Dare County Board of Commissioners indicated the desire to clarify a long running dispute between various parties concerning the site of the Globe Fish Company docks. It is the position of the Board of Commissioners that this site is a natural deep water port and has been in use for shipping and harbor activities since prior

to the Civil War. Commercial shipping activities at this site pre-date all regulatory agencies and/or land planning documents in Dare County, and the site continues to hold potential for commercial, shipping, loading, and barge docking uses. Given the historical background, it is the Board's opinion that this best use class, Transition, should be applied to this tract despite the presence of indicators that might otherwise lead to the placement of this tract in a more restrictive land use class.

Section 4: Intergovernmental Coordination and Implementation

4.1 Intergovermental Coordination and Implementation

The Dare County Land Use Plan, including the policies for growth and development and the land classification map, will serve as the basic tools for coordinating numerous policies, standards, regulations, and other governmental activities at the local, State and Federal levels. Such coordination is achieved in three ways:

1. State and Federal government agencies are required to review local land use plans when considering any actions or activities under their jurisdiction. Their actions are to be consistent, whenever possible, with the intent of the local Land Use Plan.
2. The policies and land classification system described in the Land Use Plan provide a basis for planning and budgeting for the provision of public facilities and services such as water and sewer systems, roads and schools.
3. The County Land Use Plan can serve as a coordinating instrument in helping to bring together the various regulatory policies and decisions of the local government into one document.

The preparation of the Dare County Land Use Plan and Policies has proceeded in a manner which recognizes the planning activities of other local government jurisdictions, and Federal agencies. In preparing the plan, copies of other local government land use plans were obtained and reviewed, as well as plans and environmental impact statements for Federal areas such as the Cape Hatteras National Seashore, and the Alligator River National Wildlife Refuge. A representative of the local Soil Conservation Service was contacted and consulted, as well as agency representatives in the following areas: National Wetlands, Cultural Resources, Parks and Recreation, Wildlife, local Health Department, Emergency Management, U.S. Army Corps of Engineers, local CAMA permit officer, as well as periodic progress reports with the CAMA land use planning coordinator for the State.

4.2 Area Development Coordination Agency

In response to recommendations received in the 1985 Dare County Carrying Capacity Study, the County has established an Area Development Coordination Agency. The agency consists of top elected officials of the separate governmental bodies in Dare, plus 10 citizen members who were selected in an attempt to represent various career and professional backgrounds.

Areas of concern recommended for consideration by the agency include:

1. coordination of the development of area-wide services, such as water supplies, subject to service demands generated by individual jurisdictional development decisions.
2. coordination of land use policies adopted by individual jurisdictions which impinge on the preogatives of neighboring jurisdictions.
3. coordination of local policies concerning services and facilities, such as streets and highways, which are provided by third party agencies.
4. monitoring of key development and financial indicators against predicted performance. Appropriate revisions of goals or of programs may be recommended as a result of such monitoring activites. Coordination of such other matters as may be brought before the agency by one of its constituent members.

Also recommended is the production of an annual Development Information Report summarizing growth activities in the area, to be reviewed by the Area Development Coordination Agency.

As of the writing of this plan, members of the ADCA have been appointed and are beginning their responsibilities. Mr. Glen Miller, a resident of Duck, has been appointed as agency chairman.

Section 5: Public Participation

5.1 Public Participation

Since its inception, North Carolina's Coastal Area Management Act Program has placed a high level of emphasis on public participation in the development of local land use plans and policies. The intent is to insure that the resulting plan and policies reflect, as closely as possible, the will of the people in the community. Much of the public participation strategy employed for the development of the Dare County Land Use Plan is discussed in Section 2.4 of this document. However, the following concise summary of program phases/key meetings for the 1987 Land Use Plan Update and their respective accomplishments is presented here for the sake of completeness.

Public Participation: Program Phases/Key Meetings

1. **Strategy Development** - The first priority in developing a public participation strategy for the Dare County Land Use Plan was to meet with key local officials to agree upon an overall plan for citizen involvement. For the initial kick-off meeting, the Planning Consultant met with the Chairman of the Planning Board and his staff to identify appropriate boards and commissions in the County, their regular meeting dates, and customs and protocol. From the outset, it was decided that, in accordance with the intent of State planning enabling legislation, the County Planning Board would have primary responsibility for development of the Land Use Plan, but with recognition that the Board of County Commissioners would have the ultimate authority for final review, approval, and adoption.

   Early in the strategy development phase, it was decided that there would be two primary methods for securing public input at the front end of the planning process: 1) Land Use Week, and 2) a questionnaire. Each of these two items are discussed more fully in the paragraphs that follow.
2. **Issue Identification** - Issue identification for the Dare County Land Use Plan consisted of providing the public with the opportunity to make their concerns known about growth and development issues facing the County. The intent was to accomplish this task as early as possible in the planning process, so that these concerns might be recorded and used as a foundation for the preparation of the policies for the Land Use Plan. The following describes the methods by which this public input was obtained.

Land Use Plan Questionnaire - A draft questionnaire for use with the Dare County Land Use Plan was prepared during the month of December, 1986, reviewed by the Dare County Planning Board and staff, and revised in accordance with recommendations received. In general, the content of the questionnaire conformed as closely as possible with a similar survey instrument prepared for the 1976 CAMA Land Use Plan Update for Dare County. This close similarity between the two questionnaires was done purposefully to allow for a comparison of responses, as might be desired, for the two timeframes about ten years apart.

So as to maximize public exposure for the questionnaire as well as the Land Use Plan, two local newspapers serving Dare County were approached and agreed to publish the questionnaire in full. The cooperation of the local newspapers also helped minimize the County's costs that would normally be associated with the handling and mailing of a questionnaire. The response of the public to the "newspaper" questionnaires was substantial, with over 300 questionnaires received during late January through mid-February of 1987.

In addition, extra copies of the questionnaire were printed and made available during all public meetings held during Land Use Week. The results of the questionnaire are tabulated in full in the appendix to this section.

Land Use Week - By proclamation dated January 16, 1987, Robert V. Owens, Jr., Chairman, Board of County Commissioners of Dare County, declared the week of January 19-23, 1987 as Land Use Week. The purpose of Land Use Week was three-fold: 1) to call attention to the fact that the Dare County Land Use Plan was being updated, 2) to receive citizen input on the major growth and development issues facing the County, and 3) to educate the public as to the purpose and scope of a CAMA Land Use Plan.

To encourage attendance and input during this phase of plan development, it was decided to hold three separate meetings in geographically dispersed locations in the County. The locations chosen were as follows: Manteo, to serve Roanoke Island and the Mainland; Duck, to serve

the northern beach area; and Buxton, to serve the area of the County south of Oregon Inlet.

The public participation method used to solicit public input was a modified nominal group technique using index cards and display sheets. Following the identification of issues at each meeting, an indication of the relative priority of each issue identified was determined through a simple showing of hands by the audience. In all, a total of some 200 people attended the three meetings during Land Use Week. The meeting size ranged from about 45 in Manteo to over 90 citizens in Buxton. At each meeting, some 60-70 issues were typically identified and assigned relative priorities. A complete listing and ranking of all issues as identified at these meetings is contained in the appendix to this section.

Policy Development - On Monday, February 9, the Dare County Planning Board met in a specially advertised policy development work session. The meeting began at approximately 8:30 a.m. and continued in a charette-type fashion until 5:30 p.m.

Planning Board members reviewed with the Consultant the preliminary results of the questionnaire, as well as the lists of issues and rankings as identified during the public meetings of Land Use Week. Following the review of the issues, the Planning Board addressed each of the policy issues identified in the CAMA guidelines for Land Use Plans. After each required issue was addressed, the Board members then discussed other additional issues that had been identified at the public input meetings, and that were beyond the scope of the CAMA guidelines. During the course of the all day meeting, over 100 policy development worksheets were prepared by the Planning Board members as input and direction to the Planning Consultant in preparing a set of draft policies for the Land Use Plan.

The last item discussed during the work session was the County's current Land Classification Map. The existing map was evaluated on an area by area basis, as to its relevancy to current growth and development conditions and trends. Modifications were suggested as necessary.

Appendix

APPENDIX

DARE COUNTY GROWTH ISSUES
LAND USE WEEK
PUBLIC MEETING - DARE COUNTY ADMINISTRATION BUILDING
MANTEO, NC
JANUARY 20, 1987

(3) 1. The County's ability to provide and pay for services.
(3) 2. Point and non-point water pollution.
(1) 3. Solid waste disposal.
(2) 4. Lack of zoning of unzoned areas.
(3) 5. Controlling the development density on marginal lands.
(2) 6. Lack of adequate water supply.
(1) 7. We don't want to have urban services imposed on us because of the demand created by dense development.
(1) 8. Overdevelopment of commercial development.
(1) 9. Spot zoning (rezoning on demand).
(2) 10. Lack of citizen input in land use planning.
(3) 11. Too much commercial zoning/development. We need to rezone some areas out of commercial and back into residential.
(2) 12. Oceanfront and mainland soil erosion.
(1) 13. Inadequate sewage disposal countywide and its impact on water quality and the density of development.
(3) 14. Insufficient building setbacks from wetlands.
(1) 15. Potential loss of small town charm and historic atmosphere (cultural assets).
(1) 16. It's too easy to change zoning.
(3) 17. Lack of public access to the water.
(2) 18. Curbing development by out-of-county developers.
(2) 19. Protecting the natural environment of the north end of Roanoke Island.
(3) 20. Inadequate roads for emergency evacuation.
(3) 21. Lack of consolidation of county and town services.
(3) 22. More attention to permanent resident needs; less to tourists.
(2) 23. Maintain current rural land classification for north end of Roanoke Island.
(3) 24. Lack of full-time professional staff planner.
(1) 25. Development beyond the natural carrying capacity.
(1) 26. Against rezoning from residential to commercial.
(2) 27. Uncertainty about airport's overexpansion.
(1) 28. Inadequate/unsafe bridge between Manteo and Nags Head.
(3) 29. Uncontrolled signs/signage.
(3) 30. Town's calling upon County to provide services that they should provide.
(3) 31. Stormwater runoff.
(3) 32. Lack of enforcement of septic tank regulations on non-perking properties.
(3) 33. Lack of light industry/jobs other than construction or tourism.
(3) 34. Lack of planning and coordination for new bridge spanning from Dare County line to Currituck County line.
(3) 35. Problem of a no development attitude.
(3) 36. Lack of a comprehensive hydrological study for the mainland and Stumpy Point.
(2) 37. Lack of coordination between towns and the County on development.
(3) 38. Lack of studies of alternative sewage disposal methods (using current technology).
(1) 39. Uncontrolled development.
(2) 40. Unnecessary development of Manteo airport.
(3) 41. Overbuilding on Roanoke Island.
(2) 42. Need for maintenance of inlets and waterways.
(3) 43. Minimum lot sizes for multi-family dwellings.
(2) 44. Increasing the tax base without increasing long-range planning.
(3) 45. Height regulations on buildings.
(1) 46. Protection of the fresh water supply on Hatteras Island.
(2) 47. Providing areas of aquaculture.
(2) 48. Provide adequate school facilities for population.
(3) 49. Development of an industrial park utilizing geothermal water.
(2) 50. Development of desalinization plants.
(2) 51. No land taxes for people 65 years and older.
(3) 52. Enlarge recreational activities and sites.
(3) 53. More control over CAMA.
(2) 54. Town development of senior citizens' sites.
(1) 55. Lack of housing for low income people.
56. Keep purity in estuarine environments, as well as ground water and ocean.
(1) 57. Protection of animal environment, natural environment, and wetlands.
(1) 58. House and highway identification.
(3) 59. Planning for a naval base.

GRH5/68

DARE COUNTY GROWTH ISSUES
LAND USE WEEK
PUBLIC MEETING - DUCK VOLUNTEER FIRE DEPARTMENT
DUCK, NC
JANUARY 21, 1987

(3) 1. Solid waste management.
(1) 2. Road in Duck can't handle traffic; need for widening of Duck Road.
(3) 3. Concern about population impacts on sound as the major estuary.
(3) 4. Insufficient parking for commercial uses.
(3) 5. No planning for summer crowds.
(1) 6. Repair and drainage of present road.
(3) 7. Protection and provision of the potable water supply.
(1) 8. Lack of representation for Duck on the County Commissioners.
(3) 9. Loss of open space.
(2) 10. Insufficient limitation of building heights.
(3) 11. Electrical power outages.
(3) 12. Public beach and sound access.
(2) 13. No more commercial development in Duck.
(2) 14. Concern about more and faster stormwater runoff from dense development.
(2) 15. County Commissioners need to fulfill pledges for Duck.
(1) 16. Prevention of highway along Outer Banks to Virginia Beach.
(3) 17. Law enforcement can't keep up with increased population.
(3) 18. Prior proper planning prevents poor performance.
(3) 19. Alternative methods to bulkheading for soundside erosion prevention.
(1) 20. Protection of the natural environment.
(1) 21. Hurricane evacuation.
(3) 22. Questionableness of central sewer as a cure for density problems.
(1) 23. Spoilage of natural beauty.
(1) 24. Jogway/walkway/bikeway adjacent to highway.
(2) 25. The problem of land use compatibility.
(1) 26. County government doesn't enforce current land use laws.
(1) 27. Lack of coordination between the planning board, the health department and building inspections on permit monitoring.
(3) 28. Development actions taken without proper permits.
(3) 29. No site review board.
(1) 30. Concern about the ability of wells to keep up with water demand.
(1) 31. Representative amount of taxes taken from Duck needs to be returned to Duck.
(3) 32. Advocates conservation uses of Buxton Woods, Nags Head Woods, and the north end of Roanoke Island.
(3) 33. School transportation.
(3) 34. Look at what's happened to Nags Head, Kill Devil Hills, and Kitty Hawk.
(3) 35. Improvement of cultural atmosphere of County.
(2) 36. Too much commercial development.
(1) 37. Need more Town and County participation in agencies.
(2) 38. Need more professional management.
(3) 49. Inadequate school systems.
(2) 50. Shopping traffic controls.
(3) 51. Problems with multi-family developments.
(2) 52. Need to enforce existing zoning ordinance.
53. Need for a comprehensive plan in the overall County to provide services for projected population growth.
(3) 54. Need for protection of the sound waters by communicating with surrounding counties.
(3) 55. Overbuilding along the oceanfront.
(2) 56. Concern about changes in special development permits without proper public participation in government.
(2) 57. Need for a hospital.

GRH5/69

DARE COUNTY GROWTH ISSUES
LAND USE WEEK
PUBLIC MEETING - HATTERAS PUBLIC SCHOOL
HATTERAS, NC
JANUARY 22, 1987

(1) 1. Need for proper permits before clearing land.
(1) 2. Need for levy fines for pollution.
(1) 3. Need for communication between volunteer fire departments and developers on larger projects and buildings.
(2) 4. Adequate educational facilities.
(2) 5. Stop sand mining.
(2) 6. Need for zoning.
(2) 7. Reasonable access to local government representatives.
(3) 8. Good growth with the residents having control, as opposed to CAMA.
(3) 9. Unsanitary garbage collection.
(1) 10. Need to confront water and sewer problems now for the future.
(1) 11. Need for a study into what past actions have done to the water supply.
(3) 12. Rising cost of living for year-round residents, especially housing.
(3) 13. Lack of recreational facilities.
(3) 14. More senior citizens' services.
(3) 15. More law enforcement to accompany new growth.
(3) 16. Controls on dogs and cats.
(1) 17. Need to stop condominium development, especially if they exceed maximum height limits.
(1) 18. Deteriorating subdivision streets with no maintenance responsibility.
(2) 19. Improvement in medical facilities.
(1) 20. Destruction of dunes from traffic and litter.
(3) 21. The increase in growth accompanied by the increase in erosion.
(3) 22. More control by permanent residents over services such as cable and electric, in addition to roads.
(3) 23. Improved access for improved egress in times of emergency.
(2) 24. Consider environmental factors when building.
(3) 25. Tourists and sail boarders interfering with commercial fishermen.
(3) 26. How might zoning affect existing businesses?
(3) 27. Tension between private property rights and public domain; overpopulation densities in land zoning categories.
(3) 28. Lack of usable land for growth.
(2) 29. Need to protect wildlife habitats.
(2) 30. Hatteras needs to develop own character (not like northern beaches) to attract its own kind of tourism trade.
(1) 31. Dumping of trash (toxic and household) all over island where it shouldn't be.
(1) 32. Pollution of shell fishing areas.
(1) 33. Protect the interests of commercial fishermen so they're not squeezed out by development.
(1) 34. Ban on high rise time share units consuming excessive water and other services.
(2) 35. Any new businesses/additions should be attractive and sensitive to the environment.
(3) 36. Assist in economic growth for the seven communities on Hatteras, especially by the parks service and local government.
(2) 37. Repair some of the damage that's already been done to the environment, especially wetlands.
(2) 38. Need for a hydrology study of Buxton Woods.
(3) 39. Advocates use of Buxton Woods (or part of) for a local park or other natural use.
(1) 40. Limit growth density before public sewage is needed.
(3) 41. Land being monopolized by large companies and being sold at inflated prices.
(2) 42. Legislation requiring erosion control by the Department of Interior is needed.
(1) 43. Minimum lot size too small now.
(1) 44. Need no multi-family complexes (apartments, condos, etc.)
(2) 45. Inadequate setbacks from ocean and sound.
(3) 46. Lack of good year-round housing for residents.
(2) 47. Need for rebuilding wetlands.
(1) 48. More local government representation for Hatteras.
(3) 49. The problem of unplanned areas along Route 12.
(1) 50. Need to keep water clean.
(1) 51. Protection of natural resources.
(3) 52. Lack of sidewalks in built-up areas.
(2) 53. Uphold laws in wetlands.
(2) 54. Need to upgrade a power source in the County or on the island.
(2) 55. Need to upgrade the evacuation program.
(3) 56. Need for more multi-family dwellings.
(2) 57. County Commission should work more closely with Planning Board.
(2) 58. Need for better community services for the expanding growth.
(2) 59. Need for sewage treatment facilities.
(1) 60. Need for more growth control.
(1) 61. Need to equalize tax benefits throughout the County.
(3) 62. Need for a permanent dump site somewhere near the Buxton area.
(2) 63. Need for a water system.
(1) 64. Protect the topography of the land.
(2) 65. Call for an end to the grandfather clause for the minimum lot sizes currently platted.
(3) 66. Make lot setbacks fairer along the ocean.
(1) 67. Protection of wildlife.
(1) 68. Bikepath along Route 12.
(2) 69. Stiffer penalties for building violations.

DARE COUNTY QUESTIONNAIRE RESULTS

1. **Check the area of Dare County with which you are primarily associated. (Normally your area of residence or of property holdings.)**

AREA 1: 152 (includes Duck and North, Southern Shores, Kitty Hawk, Kill Devil Hills, Nags Head)
AREA 2: 103 (includes Hatteras, Oregon Inlet South)
AREA 3: 48 (includes North End Roanoke Island, Manteo, Skyco/Wanchese, Manns Harbour, Stumpy Point, East Lake and Other Mainland Areas)
TOTAL: 303

2. **Your age group. Circle one letter.**

A. Below 18: 0	D. 35-44: 70	F. 55-64: 78
B. 18-24: 0	E. 45-54: 50	G. 65 or over: 64
C. 25-34 40		

3. **Are you a Dare County resident? (Includes communities located within Dare County.) Circle one letter.**

A. Yes, and I own or am purchasing a home.	218
B. Yes, and I rent my home.	18
C. I am a nonresident who owns or is purchasing property in Dare County.	59
D. I am a nonresident who does not hold property in Dare County.	7

4. **What is your primary economic relationship with Dare County? Circle one letter.**

A. No income derived from Dare County.	82
B. Agriculture and related business or service.	0
C. Fishing and related business or service.	14
D. Tourism and related business or service.	61
E. Forestry and related business or service.	0
F. Construction and related business or service.	22
G. Business or service not specifically related to any of above.	32
H. Retirement income (if from one of above, indicate which _____).	53
I. Government worker, City/County/State/Federal.	30

5. **Check appropriate answer.**

Were you born in Dare County? Yes: 27
No: 263

Select the three most important reasons for visiting or living in Dare County:

A. Slow pace of living	188
B. Privacy (inaccessibility)	127
C. Freedom from pollution and population pressures	240
D. The natural environment and associated recreational activities	250
F. Believe that there will be future economic expansion which will provide great personal opportunity	20
G. Family	42

6. **Of those reasons you selected for visiting or living in Dare County, which do you believe we are most likely to lose?**

	Most Likely	Next Most Likely
A. Slow pace of living	39	51
B. Privacy (inaccessibility)	32	30
C. Freedom from pollution and population pressures	133	74
D. The natural environment and associated recreational activities	75	97
F. Believe that there will be future economic expansion which will provide personal opportunity	2	3
G. Family	0	0

7. **Indicate your degree of concern with the following which have been cited as problems or potential problems in Dare County. Use only one number beside each item.**

	Most Urgent Concern	Urgent Concern	Not a Problem
A. An adequate water supply	183	80	19
B. Traffic congestion	94	132	52
C. Sewage disposal	154	86	37
D. Trash and garbage disposal (not collection)	91	137	44
E. High rise construction	171	84	27
F. Lack of medical services	33	96	141
G. Limitation on building height	118	93	59
H. Pollution of ocean and sounds	181	81	20
I. Overpopulation	169	84	27
J. Commercialization	164	93	30
K. Lack of access to beaches, sounds, inlets and ocean	34	86	153
L. Unattractive Buildings	50	111	100
M. Small lots & crowded developments	128	121	29
N. Lack of Reserved Space	67	101	101
O. Lack of community recreational facilities	22	72	181
P. Destruction of dunes and beaches	181	81	20
Q. Lack of job diversification	17	50	200
R. Lack of usable land to accommodate growth	34	55	180
S. Lack of comforts & conveniences available in more urban areas (such as TV, radio, supermarkets, shopping centers, etc.)	8	11	259
T. Lack of surface and subsurface drainage	58	116	91
U. Erosion by wind and water	93	110	70

8. Indicate the degree of encouragement or discouragement you believe should be given following, assuming that encouraging one activity may discourage at least one of the others. Use only one number beside each item.

	Encourage	No Changes	Dis-Courage
Agriculture & Related	60	163	39
Fishing Industry & Related	184	87	5
Tourism & Related	58	151	71
Forestry & Related	130	111	33
Construction & Related	11	73	187
Research/Development Industry	65	76	135
Light Industry (warehousing, convention centers, etc.)	42	80	160
Heavy Industry (conversion from Encroachment by Commercial of raw materials)	2	17	265
Residential Development	44	134	100
Single Family Residences	125	140	24
High Rise Residences	2	17	265
Low Rise Multi-Family Residences	26	73	185
Preservation of Open Space	269	14	6
New and Improved Cultural Facilities (libraries, art galleries, theaters)	137	118	26
Increased accessibility to Dare Co.	71	110	97
Improved tourist facilities	31	110	143
Protection of Residential Areas From Encroachment by Commercial or Industrial Enterprise	261	14	19
Preservation of Wildlife Habitat	269	18	4
Regulation of Dunes and Shoreline	249	34	4
Soil Conservation	256	24	4
Beach Access	112	143	33

9. Please indicate your level of agreement or disagreement with each of the following statements.

	Agree	Neutral	Disagree
There is enough economic development under way in Dare County.	232	40	19
Industry in Dare County would improve quality of life.	23	47	220
New industry locating in Dare County should be required to file an environmental impact statement.	284	7	3
A person should be able to do anything he wants with his land.	12	22	262
Planning can minimize conflict between economic development & environmental protection.	273	14	8
We have enough people living in Dare County now.	150	118	26
We should try to attract more permanent residents.	71	111	104
We should give high priority to improved community or county services (central or area water systems, sewage disposal, etc.)	208	49	30
We must control growth to allow services to keep pace with the need.	271	18	5
We must control natural resources to keep Dare County a tourist attraction.	243	27	15

10. Are you pleased with the direction Dare County development is taking?
Yes: 40
No: 232

GRH6/23

NOAA COASTAL SERVICES CTR LIBRARY
3 6668 14111597 4