



2.2 DEMOGRAPHICS

2.2.1 INTRODUCTION

Delaware is the second smallest state in terms of land area at 1,309 square miles. As of the 1990 census, it was the seventh most densely populated state at 366.9 persons per square mile and the thirteenth fastest growing state. Household size was 2.59 persons per household, reflecting the national trend of falling household size. Population is projected to increase by roughly 142,000 persons between 1995 and 2020, to a total of nearly 860,000. The need to provide housing, infrastructure, and employment for these additional persons is likely to increase pressures on land and other resources. The established growth pattern in Delaware is a suburban sprawl that consumes much more land per capita, and is more costly, on a per-capita basis, than traditional mixed-use growth patterns.

Eleven percent of the state is considered urban, and less than 16 percent, rural. The remaining 73 percent of the state, with the exception of preserved agricultural, natural, and park land, is the rural-urban fringe where urbanization is proceeding. Urbanization in Delaware is stimulated by easy access to the eastern Boston-Washington, DC megalopolis and by comparatively lower land values and lower cost of living. According to Vaughn (1994), only four subdivisions in central Delaware along the western state boundary can be truly considered rural. These are the Felton, Harrington, and Kenton divisions of Kent County and the Bridgeville-Greenwood division in Sussex County. Of the towns in the Basin, the three largest are Georgetown, Laurel, and Seaford.

2.2.2 MAPS

2.2.2.1 Land Use

The land-use maps (*Map 2.2-1 1984 Land Use*, *Map 2.2-2 1992 Land Use*, and *Map 2.2-3 1997 Land Use*) summarize the data from the 1982, 1992, and 1997 Land Use – Land Cover surveys. For these maps, the Anderson Land Use Classification System was used to combined the various land uses into the following simplified categories to show their areal extent: Urban/Residential; Agricultural; Confined Feeding Operation; Brushland/Forest; Water/Wetlands; Barren/Other. It is important to note that some of the differences between the maps are artifacts of the different mapping procedures that were used. For instance, a 10-acre minimum mapping unit was used on the 1982 aerial photography, while a 4-acre minimum mapping unit was used in the interpretation of the 1992 and 1997 photography. A greater total acreage for wetlands is evident on the 1992 and 1997 maps (*Map 2.2-2. 1992 Land Use* and *Map 2.2-3. 1997 Land Use*) than on the 1984 map (*Map 2.2-1. 1984 Land Use*) because of the smaller minimum mapping unit size and new categories added to recognize “forested wetlands.”

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2.2.2.2 Agricultural Preservation Districts

The Delaware State Legislature has made available tax incentives, regulatory tools, state funding, and intergovernmental coordination to preserve agricultural land. Most comprehensive plans identify currently farmed areas with good soils and designate them for continued agricultural use, but all too often, implementation of the plans is weak. *Map 2.2-4 Agricultural Preservation Districts* shows those lands that are currently enrolled in the state’s Agricultural Preservation Program.

When the possibility exists for extending sewer into a particular area, Delaware’s agricultural preservation program

is not an effective mechanism for protecting such land. Sewer availability is a strong incentive for selection of certain land uses, which are incompatible with permanent agricultural preservation. The Delaware Agricultural Lands Preservation Foundation is incorporated as a non-profit organization whose mission is to help preserve farmland.

Some advantages of farmland protection include:

- ◆ Stabilizing the state economy because it is not affected by the same business cycles, labor strikes, etc., as manufacturing and other sectors;
- ◆ Low energy costs for transportation and production where large blocks of agricultural lands are preserved from urban sprawl;
- ◆ Smaller costs for public services and facilities;
- ◆ Recharge of ground-water systems;
- ◆ Recreation and scenic values;
- ◆ Cleaner air; and
- ◆ Preserving large blocks of farmland, providing a system of connected open spaces and sometimes habitats.

2.2.3 INFRASTRUCTURE-INDUCED GROWTH IN AGRICULTURAL AND CONSERVATION AREAS

Sewers affect land use by increasing the amount of land available for development. The extent of growth depends on the amount of vacant land the sewer serves and the sewer's excess capacity. Sewers are built to manage waste and as a result maintain or improve water quality. However, sewers can lead to the conversion of large areas of land to residential development. This development, if improperly managed, can have numerous environmental impacts. Examples of these are erosion and sedimentation problems, flash flooding due to more impervious land cover, degradation of stream habitat, and increased air pollution (Council on Environmental Quality, 1976).

As with sewered areas, highway access is also a major stimulus for the suburbanization of rural areas. According to the *Delaware Department of Transportation Capital Improvement Program, Fiscal Years 1999–2004*, studies have been funded to determine the traffic needs/implications of the following:

- ◆ Harrington Truck Bypass;
- ◆ US 301 Major Investment Strategy;
- ◆ Sussex East/West Feeder Routes (SR 5, 9, 16, 18, 20, 24, 26 and 54);
- ◆ Laurel Bypass – Evaluation of East/West Traffic Flow;
- ◆ Seaford Bypass.

2.2.4 GROWTH MANAGEMENT STRATEGIES MAP

New development should be directed to where it makes the most economic, environmental, and social sense. The strategies for doing so are based on common-sense distinctions between highly developed areas, rural areas, and the transition areas between them. Although most decisions concerning land use remain at the local and county level, the state can influence the way development occurs through its spending and management policies. By making sensible decisions about building and managing highways, water and sewer systems, and other public facilities (commonly called “infrastructure”), the state can reduce the negative effects of unfocused growth.

By promoting development and redevelopment in places where adequate infrastructure exists or is planned, the state can reduce congestion, preserve farmland, enhance community character and protect important state resources. In short, it can preserve Delaware's high quality of life. To do so, state agencies have to work closely with county and municipal governments. *Map 2.2-5 State Investment Areas* depicts the preferred areas for future growth within the Basin.

2.2.5 QUANTIFICATION OF NANTICOKE RIVER SELECT LAND-USE CHANGES

The Division of Water Resources is developing a strategy to identify riparian wetlands within the Nanticoke River watershed, which should be given priority acquisition status because of their relative natural resource values and their vulnerability to adverse impacts. A major portion of this initiative involves determining land-use changes within the watershed between the years 1982 and 1992.

Land-use types (uplands and wetlands) were mapped at a minimum mapping unit of 1 to 3 acres using a modified Anderson classification system through interpretation of 1982 and 1992 aerial photography. Land use types were digitized into a GIS which is being used to determine select land-use changes. Priority wetlands acquisition sites will be identified by integrating:

- ◆ Land-use trends which indicate areas of high, adverse land-use changes;
- ◆ Data on wetlands' relative value; and
- ◆ The extent of wetlands protection (regulatory or via existing conservation acquisitions).

While this initiative focuses on identifying priority wetland acquisition sites, the land-use data and related analyses address a broad range of land-use types and has additional applications.

2.2.5.1 Trends

The following tables summarize land-use changes that have occurred since 1984.

Table 2.2-1
LAND USE/LAND COVER—CHESAPEAKE BASIN

CLASSIFICATION	1984 ACRES	PERCENT OF BASIN	1992 ACRES	PERCENT OF BASIN	1997 ACRES	PERCENT OF BASIN	1992 – 97 CHANGED
Urban Built-Up	12,481	3%	29,114	6%	34,797	8%	146,83
Agriculture	232,096	52%	244,869	50%	218,138	49%	-26,731
Confined Feeding Operation	509	<1%	5,966	1%	6,536	1%	570
Brushland and Forest	199,151	44%	94,694	19%	86,052	19%	-8,642
Water and Wetland	3,292	<1%	112,446	23%	100,698	22%	-11,478
Barren and Other	490	<1%	1,704	<1%	2,533	<1%	829
Total	448,019	>99%	488,793	>99%	448,754	>99%	

Table 2.2-2
LAND USE/LAND COVER—NEW CASTLE COUNTY PORTION

CLASSIFICATION	1984 ACRES	PERCENT OF BASIN	1992 ACRES	PERCENT OF BASIN	1997 ACRES	PERCENT OF BASIN	1992 – 97 CHANGED
Urban Built-Up	697	2%	2,977	8%	3,611	12%	614
Agriculture	18,487	62%	20,185	55%	15,662	52%	-4,523
Confined Feeding Operation	0	0%	80	<1%	52	<1%	-28
Brushland and Forest	10,010	34%	5,049	14%	4,349	14%	-700
Water and Wetland	171	<1%	7,519	21%	5,522	18%	-1,997
Barren and Other	251	<1%	700	<1%	863	<3%	163
Total	29,616	>99%	36,505	>99%	30,059	>99%	

Table 2.2-3
LAND USE/LAND COVER—KENT COUNTY PORTION

CLASSIFICATION	1984 ACRES	PERCENT OF BASIN	1992 ACRES	PERCENT OF BASIN	1997 ACRES	PERCENT OF BASIN	1992 – 97 CHANGED
Urban Built-Up	3,552	3%	7,425	5%	8,009	6%	584
Agriculture	64,801	51%	73,679	52%	65,577	51%	-8,102
Confined Feeding Operation	219	<1%	995	<1%	1,015	<1%	20
Brushland and Forest	58,307	46%	19,342	14%	16,747	13%	-2,595
Water and Wetland	126	<1%	39,700	28%	36,093	28%	-3,607
Barren and Other	0	0%	261	<1%	341	<1%	53
Total	127,005	>99%	141,372	>99%	127,755	>98%	

Table 2.2-4
LAND USE/LAND COVER—SUSSEX COUNTY PORTION

CLASSIFICATION	1984 ACRES	PERCENT OF BASIN	1992 ACRES	PERCENT OF BASIN	1997 ACRES	PERCENT OF BASIN	1992 – 97 CHANGED
Urban Built-Up	8,232	3%	18,712	6%	23,177	8%	4,465
Agriculture	148,808	50%	151,005	48%	136,898	47%	-14,107
Confined Feeding Operation	290	<1%	4,891	2%	5,469	2%	578
Brushland and Forest	130,834	45%	70,303	22%	64,956	22%	-5,347
Water and Wetland	2,995	1%	65,257	21%	59,083	20%	-6,174
Barren and Other	239	<1%	747	<1%	2,157	<1%	1,410
Total	291,398	>99%	310,916	>99%	291,740	>99%	

2.2.6 POPULATION DATA

2.2.6.1 General Population Trends

New Castle County's population is projected to rise by 85,428 persons, an increase of 19 percent, and 61,578 households, an increase of 37 percent, from 1990 to 2020. Kent County's population is projected to rise by 32,137 persons, an increase of 28 percent, and 19,623 households, an increase of 50 percent, from 1990 to 2020. Sussex County's population is projected to rise by 67,348 persons, an increase of 59 percent, and 36,318 households, an increase of 81 percent, from 1990 to 2020.

2.2.6.2 Census Data

Population in the Chesapeake Basin Study Area was measured through a GIS exercise using the 1990 census blocks with the Chesapeake Basin boundaries superimposed over it. Based on this exercise, approximately 63,000 persons live in the Chesapeake Basin.

Uncounted persons such as transient agricultural workers may introduce inaccuracies into population

data and underestimate the magnitude of some localized environmental problems such as substandard housing, access to clean drinking water, and approved wastewater management.

2.2.7 REFERENCES

- Delaware Department of Transportation. May 1998. *Capital Transportation Improvement Program: Fiscal Years 1999–2004*. Dover, DE.
- Council on Environmental Quality. May 1976. *The Growth Shapers: The Land Use Impacts of Infrastructure Investments*. Washington, DC: U.S. Government Printing Office. 71 pp.
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