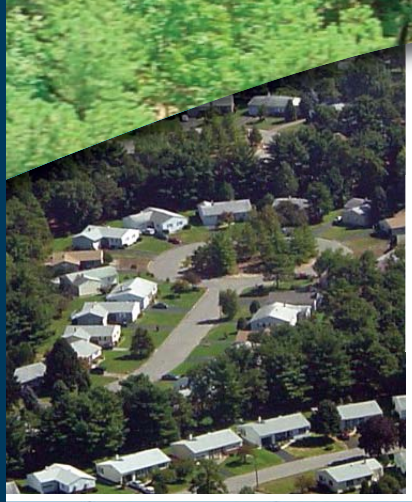
Ocean County Planning Board
Comprehensive Master Plan



Ocean County, New Jersey

Ocean County, New Jersey
2011 Comprehensive Master Plan

December 2011

Ocean County Planning Board
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Toms River, NJ 08754
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December 21, 2011

Gerry P. Little, Deputy Director
Ocean County Board of Chosen Freeholders
101 Hooper Avenue
Toms River, New Jersey 08754

Re: 2011 Ocean County Comprehensive Master Plan

Dear Freeholder Little:

I am pleased to transmit a copy of the 2011 Ocean County Comprehensive Master Plan to you and the other members of the Board of Chosen Freeholders. The document contains an overview of Ocean County and incorporates information from a variety of programs and activities.

The Master Plan is non-regulatory, as county governments do not have the authority over land uses and zoning. However, it serves as a guide to municipalities and incorporates many recommendations based on various state, county and regional programs and initiatives.

As with the previous master plan, there is no specific time requirement to update this document. However, elements of the plan will continue to be updated in response to changing conditions and regulations.

I want to thank you and the rest of the Board of Chosen Freeholders for your continued support of the Planning Board

Sincerely,

Richard Work

Richard Work
Chairman

cc: Members of the Ocean County Planning Board
Carl W. Block, Administrator
David J. McKeon, Planning Director

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Jean J. Coale.....Keyboarding Clerk 3
Nancy B. Toth.....Senior Account Clerk Typist
Darlene A. Tomaino.....Keyboarding Clerk 2
Veronica L. Tompkins .....Keyboarding Clerk 1

RESOLUTION

December 21, 2011

WHEREAS, the New Jersey County and Regional Planning Act (NJSA 40:27 et seq.) authorizes County Planning Boards to prepare and adopt master plans to guide the future development of the Counties; and,

WHEREAS, the Ocean County Planning Board has prepared the **Ocean County Comprehensive Master Plan** which contains land use, environmental and functional recommendations to provide for the orderly and efficient growth of Ocean County; and,

WHEREAS, copies of the **Ocean County Comprehensive Master Plan** were distributed to each of the County's constituent municipalities for review and comment in accordance with the Statue, prior to a public hearing; and,

WHEREAS, on December 7, 1988 the Ocean County Planning Board adopted the last **Ocean County Comprehensive Master Plan** and all the maps contained therein, following the public hearing; and,

WHEREAS, the Ocean County Planning Board has prepared revisions to the **Ocean County Comprehensive Master Plan** which have been distributed to the appropriate officials of the County; and,

WHEREAS, on December 14, 2011 the Ocean County Planning Board conducted a public hearing on the revisions to the **Ocean County Comprehensive Master Plan.**

NOW, THEREFORE, BE IT RESOLVED that the Ocean County Planning Board hereby adopts the revised **Ocean County Comprehensive Master Plan** dated December 21, 2011 and all the maps contained within.

BE IT FURTHER RESOLVED that a certified copy of this Resolution and the **Ocean County Comprehensive Master Plan** and accompanying maps be forwarded to the **Ocean County Board of Chosen Freeholders,** to each municipality in Ocean County and the New Jersey Pinelands Commission.

I certify the foregoing to be a true copy of a Resolution adopted by the Ocean County Planning Board on the Twenty-First Day of December, 2011.

Robin L. Florio

Robin L. Florio
Ocean County Planning Board Secretary

Acknowledgements

The Ocean County Comprehensive Master Plan was prepared by the staff of the Ocean County Planning Board under the direction of County Planning Director David J. McKeon.

Planning, Engineering and Roads Annex at 129 Hooper Ave., Toms River, NJ. Photo by Ocean County Department of Planning.

Special recognition goes to the Master Plan Subcommittee members Donald Reed, Elaine McCrystal, Earl Sutton and County Engineer Frank Scarantino, for their tireless review efforts.

The Planning Board also acknowledges the contribution of other Planning Board members, both past and present, and former staff members whose work has been incorporated into this plan.

Finally, Ocean County would like to thank the many public, private and non-profit partners who work with the various County departments to the benefit of our residents and the protection of our valuable resources.

This document was printed by the Department of Printing and Graphics, under the direction of Carmen F. Amato, Jr., Director.

Table of Contents

Introduction:

Master Plan Chapters:

Appendix:

List of Figures

Introduction

Chapter 1: Regional Location, Municipalities and Historic Sites

Chapter 2: Population and Demographics

Chapter 3: Economic Planning and Workforce Development

Chapter 4: Transportation and Mobility

Chapter 5: Housing

Chapter 7: Land Use

Chapter 8: Agriculture

Chapter 9: Military Land Use Compatibility

Chapter 10: Open Space, Parks and Recreation

Chapter 12: Groundwater, Water Resources and Supply

Chapter 13: Wastewater Management

Chapter 15: Solid and Hazardous Waste

Chapter 16: Air Quality

Introduction

Statutory Authority

A major responsibility of the Ocean County Planning Board is to prepare and adopt a Comprehensive Master Plan to guide the physical development of the County. The statutory authority for the development of a County land use plan is set forth in the New Jersey County and Regional Planning Act, NJSA 40:27-2 et seq.:

"The county planning board shall make and adopt a master plan for the physical development of the county. The master plan of a county, with the accompanying maps, plats, charts, and descriptive and explanatory matter, shall show the county planning board's recommendations for the development of the territory covered by the plan, and may include, among other things, the general location, character, and extent of streets or roads, viaducts, bridges, waterway and waterfront developments, parkways, playgrounds, forests, reservations, parks, airports and other public ways, grounds, places and spaces, the general location and extent of forests, agricultural areas and open-development areas for purposes of conservation, food and water supply, sanitary and drainage facilities, or the protection of urban development, and such other features as may be important to the development of the county. The county planning board shall encourage the cooperation of the local municipalities within the County in any matters whatsoever which may concern the integrity of the County Master Plan and to advise the Board of Chosen Freeholders with respect to the formulation of development programs and budgets for capital expenditures."

Role of the County Planning Board

The Ocean County Planning Board performs subdivision and site plan reviews of proposals submitted by applicants in Ocean County's 33 municipalities for compliance with state enabling legislation, the County Planning Board Resolutions and Ordinances and the County Engineer's design standards. Review and approval of subdivisions and site development plans in Ocean County are performed pursuant to the County and Regional Planning Act N.J.S.A. 40:27-1 et seq. The Act has been modified and legislation introduced which clarifies the powers of the County Planning Boards and ensures greater consistency with the Municipal Land Use Law. The

purpose is to ensure land development within the County proceeds in accordance with the goals and objectives of the County Comprehensive Master Plan and other adopted County plans.

The Planning Board assures that the impact of development proposals on County roads and/or drainage facilities are both anticipated and mitigated as well as ensures that all public and private applications for land development subject to the requirements of the Pinelands Comprehensive Management Plan (N.J.A.C.7:50-4.41 et. seq.) are in compliance. The Board provides a coordinated review of development projects involving various County agencies and departments which have regulatory responsibilities in order to avoid the imposition of duplicative, overlapping or inconsistent requirements on applicants. Such agencies and departments include not only the Planning Board, but the County Engineer, Road Department, and Transportation Services. Additionally, the Board ensures that the development proposals are integrated with County and municipal capital improvement programs.

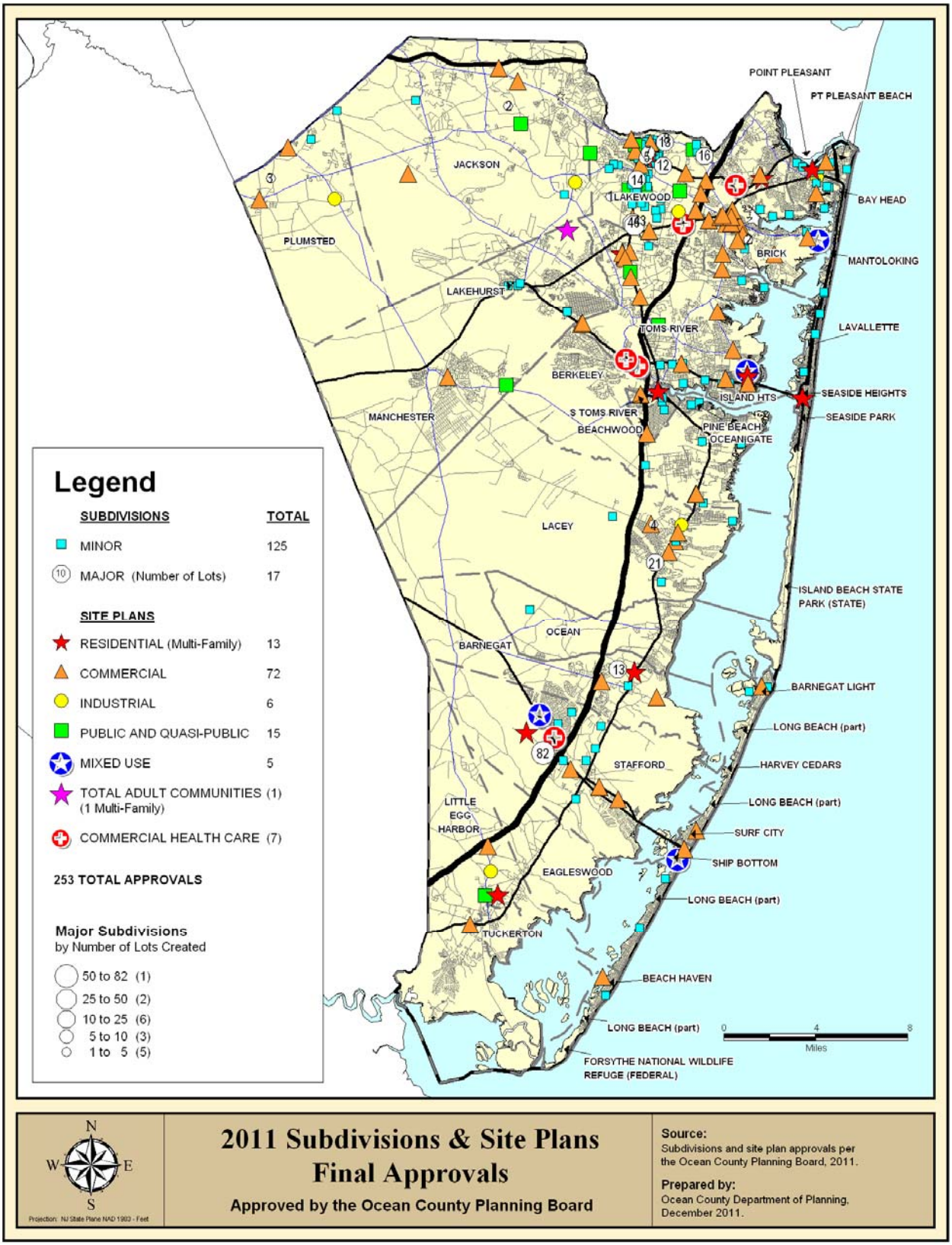
The Planning Board is comprised of nine members, six County residents appointed by the Ocean County Board of Chosen Freeholders, the Freeholder Director, Freeholder liaison and the County Engineer. County Counsel is also present at the Board meetings. Ocean County Planning Board members are appointed to three-year terms. The Board members serve on a volunteer basis and receive no compensation. As of 2012, Planning Board meetings are typically held once a month and occur on the third Wednesday of the month at 6:00 pm in the Engineering Conference Room on the third floor of 129 Hooper Avenue, Toms River. Public notices of the meetings are published in accordance with the Open Public Meetings Act. A Planning Board agenda is posted at the County Administration building and the County Clerk's office, and is distributed to Planning Board members in advance of the meeting. Meetings are subject to change so please contact the Planning Department or check the web site at www.planning.co.ocean.nj.us to confirm specific meeting dates.

A subdivision approval is required for any subdivision affecting a County road or drainage facility, including storm drains and bridges. A site plan approval is required for any site plan located along a County road, a change of use, or modification to site facilities of a commercial or industrial use located along a County road or affecting drainage facilities. Site plan approval is

not required for one and two-family dwellings and developments that are not along a County road that include less than one acre of impervious surfaces. The County Planning Board provides additional reviews for traffic signal impact and impact on County bridges. When warranted, the Planning Board requires payment from applicants for off-tract drainage and traffic improvements. The amount of payment is determined by the County Engineer.

The County shall grant, conditionally grant, or deny approval within 30 days of a complete application, unless an extension of time is granted. It is important to note that the role of the County is different than the role of the municipality in the planning board review and approval process. In New Jersey, the zoning authority is limited to municipalities by both statute and State Constitution. Therefore, only municipalities can determine the type and density of land uses.

Figure I-1: 2011 Subdivisions and Site Plans Final Approvals Map



Purpose of Study

The Ocean County Comprehensive Master Plan is a policy statement, expressed in both written and graphic form, about the future development of the County. The goals and major responsibilities of the Ocean County Planning Board are to prepare and adopt comprehensive objectives embodied in this Plan. The objectives are intended to address issues of regional concern and to provide a regional perspective on land use and other issues facing Ocean County. Historically, the primary responsibility for land use decisions has been entrusted to municipalities through local master planning, zoning and subdivision and site plan controls. The Municipal Land Use Law, NJSA 90:55D-1 et seq. continues that authority in principal. However, over the last 30 years, the State has instituted a number of planning and regulatory programs, including the Clean Water Act of l972, the Pinelands Protection Act, the Coastal Area Facilities Review Act (CAFRA), the Fair Housing Act, and the State Planning Act. These programs have a significant impact on the location, type and intensity of future development. The Ocean County Master Plan seeks to provide some coordination between local planning and state plans and regulations. The master plan also describes various services and programs that the County provides to its citizens.

The Ocean County Planning Board adopted its initial Master Plan in 1966. The Chairman of the Planning Board stated in his letter of transmittal to the Board of Chosen Freeholders that the Plan presented long-range recommendations - looking forward to the time period after 1980 when the there might be 300,000 people living in Ocean County. He also noted that completion of the Master Plan did not imply that the planning program for Ocean County was finished. Continuing review and periodic updating of the Master Plan in light of unforeseen events and new planning concepts was seen as a vital segment of an emerging planning program for the County. This foresight has been confirmed by the changes experienced in Ocean County during the past 45 years. The United States Bureau of the Census determined that there were 576,567 people living in Ocean County in 2010.

The role of the Ocean County Department of Planning has grown along with the population. The original Ocean County Master Plan has been periodically updated to include a number of

subsequent studies such as the Master Plan for Wastewater Treatment Facilities, the 1995 Transportation Plan, and the Ocean County Open Space Plan & Recreation Inventory.

In 1975, the Ocean County Concept Plan revised and refined the land use recommendations of the initial plan. The Concept Plan also served as a framework for completion of the "208" Areawide Water Quality Management Plan in 1979. The Areawide Water Quality Management Plan was the most ambitious and comprehensive planning effort to date and was based on a watershed level. The comprehensive technical elements of the Areawide Plan examined issues such as existing and projected population, land use, environmental resources, stormwater management and drainage, wastewater treatment facilities, groundwater management and surface water quality.

Subsequent studies included the Ocean County District Solid Waste Management Plan, the Robert J. Miller Airpark Master Plan and various transportation and technical studies undertaken as a part of the Subregional Transportation Program. The information, findings and recommendations from these reports were incorporated into the 1982 Ocean County Comprehensive Master Plan. The 1982 Plan strived to achieve a coherent and rational overall plan for the physical, social and economic development of Ocean County. Its completion represented a significant milestone in the continuing planning program of the Ocean County Planning Board.

The Master Plan is intended to be a flexible document capable of responding to changing regional considerations and local requirements while seeking to assure that the Plan's goals and objectives are achieved. After its adoption in 1982, there were significant changes at both the County and State level that affected the Comprehensive Master Plan. Locally, Ocean County continued to develop, maintaining its position as one of the most rapidly growing Counties in New Jersey. Continued growth and development resulted in a need to review the relevancy of the Master Plan's recommendations, particularly with regard to increased demands on the County's transportation system. The County continued to refine and implement several functional plans and programs recommended in the 1982 Comprehensive Master Plan, especially in providing an environmentally sound program for wastewater treatment and solid waste management.

At the state level, several planning related programs affected the goals, objectives and policies of the Planning Board. The establishment of a State Planning Commission in 1985 with the mandate to prepare a State Development and Redevelopment Plan was a major new state planning initiative. Creation of the State Council on Affordable Housing provided authority for the development of a program to address low and moderate income housing requirements for municipalities. Other programs with direct impact on growth and development included the New Jersey Water Supply Management Act, the Freshwater Wetlands Act, the Mandatory Recycling Act, the State Water Supply Master Plan, and the Transportation Infrastructure Program.

In response to ongoing changes at the state and local level, the Planning Board continued to revise the components of the Comprehensive Master Plan. In 1983 and 1987 amendments were adopted to address conformance with the provisions of the Pinelands Protection Act. As required, the Plan was subsequently certified by the New Jersey Pinelands Commission. In December 1988, the Transportation Element of the Master Plan was revised to address municipal and community concerns regarding proposed road improvement projects.

Since 1988, many of the major goals and objectives listed in the last County Master Plan have been achieved. The County has initiated a successful recycling program that has been recognized at the national level. The County initiated a Farmland Preservation Program that purchased development rights from 50 farms as of November 2011. A total of 3,300 acres of the County's valuable farmland area is now permanently protected. The adoption of the County Open Space Plan and Recreation Inventory led to the preservation of over 100 properties under the Natural Lands Trust Fund Program. As of November 2011, over 12,640 acres of undeveloped land had been purchased and will be retained in its natural state. When added to municipal, county, state, federal and privately protected Pinelands, the County Natural Land and Farmland Preservation properties now account for nearly sixty (60) percent of land area in Ocean County.

In 1992, the Ocean County Department of Economic Development was merged into the Department of Planning and programs such as the Community Development Block Program and the HOME Investment Partnership became responsibilities of the Planning Department. In

addition, management of the Robert J. Miller – Ocean County Airport was assigned to the Department of Planning in 1990.

Many of the traditional land use issues facing the County and its municipalities have changed since the adoption of the 1988 Comprehensive Master Plan. This includes the adoption of the New Jersey State Development and Redevelopment Plan in 1992. The Cross Acceptance process used to develop the State Plan and its subsequent updates was similar to the land use planning efforts used to develop the 1988 Comprehensive Master Plan. The primary purpose of the Master Plan Map was to try and reconcile local plans and zoning with state functional plans. In addition, state regulations governing the Ocean County Water Quality Management Planning Program have changed significantly over the last 20 years. The 2007 NJDEP Wastewater Management Planning Rules required Wastewater Plans to incorporate additional land use and environmental features into the evaluation of future sewer and septic areas. The Coastal Zone Management Rules also incorporated a land use element based on the State Plan which determined the appropriate level of impervious coverage permitted in various planning areas of the coastal zone.

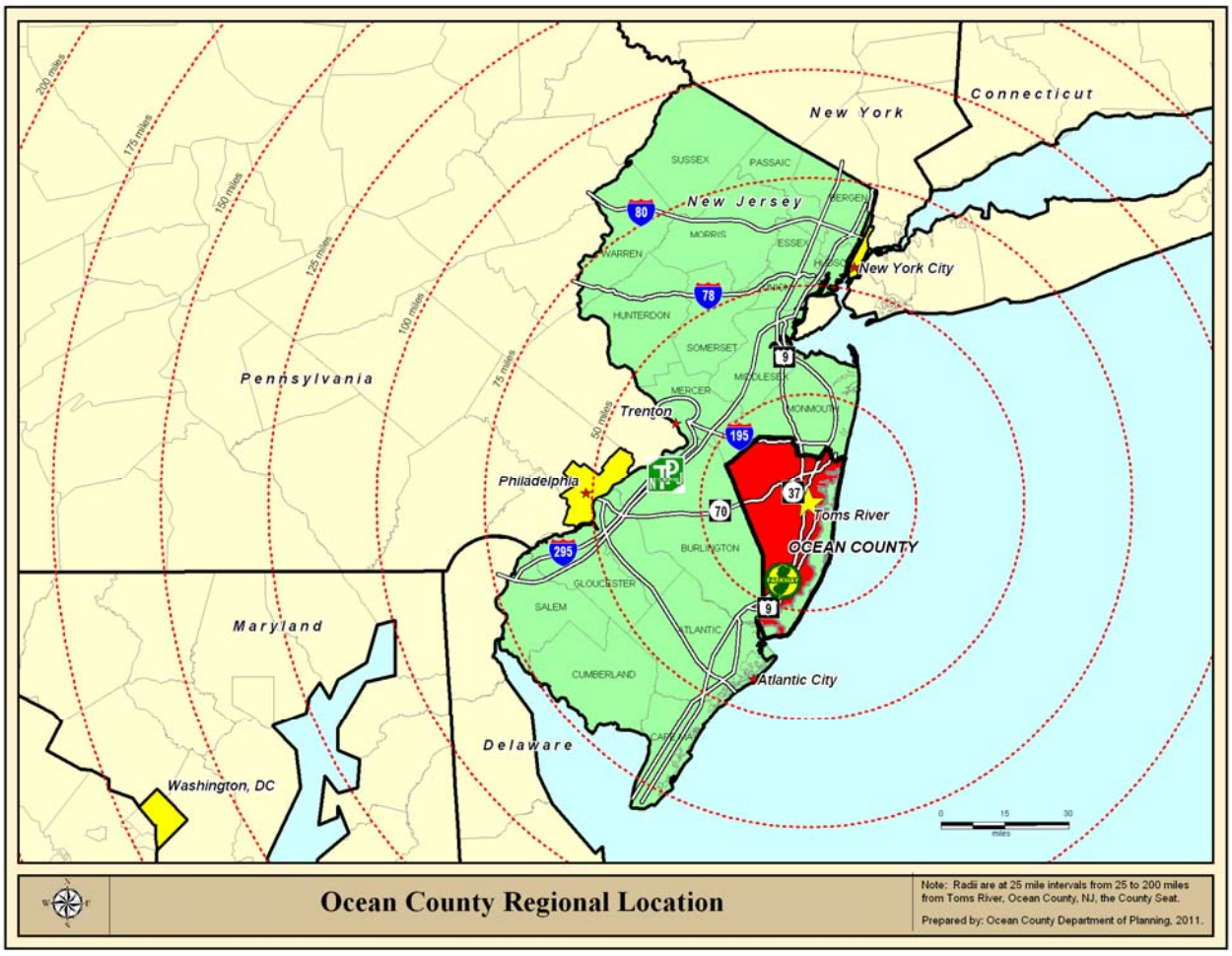
The County Master Plan provides regional, long-term recommendations to coordinate numerous programs and policies and achieve consistency in ongoing development and protection efforts. The plan will continue to evolve as part of an ongoing, comprehensive County planning program.

Chapter 1

Regional Location, Municipalities and Historic Sites

Ocean County is located within the Atlantic Coastal Plain of central New Jersey. It is one of four coastal New Jersey counties and has the longest stretch of coastal beaches. Covering 636.28 square miles, Ocean is the second largest county in the State. It is bordered to the north by Monmouth County, the west by Burlington County, the south by Atlantic County and the east by the Atlantic Ocean.

Figure 1-1: Regional Location Map



Ocean County is in close proximity to two of the Nation's largest metropolitan centers, New York City and Philadelphia. New York is located approximately 60 miles to the north of Ocean County and Philadelphia lies approximately 50 miles to the west. The proximity of these large

metropolitan centers has had a significant influence on the historical development of Ocean County. Over the past 60 years, the New York City area in particular has had a pronounced impact on commuting and development patterns in Ocean County. While the influence of the metropolitan areas will continue, Ocean County is moving toward a more independent identity, with increasing employment and educational opportunities.

In 1850, the County of Ocean was formed out of southern Monmouth County and Toms River was established as the "Seat" of Ocean County Government. At that time, Ocean County only had six municipalities: Brick, Jackson, Plumsted, Stafford, Union (currently Barnegat Township), and Dover (Toms River) townships. During the late 19th and early 20th centuries, Ocean County experienced the formation of many new municipalities. This is especially the case on the barrier island beaches, as new resort areas were developed. On the mainland, many of the existing communities were incorporated as boroughs. Other municipalities were established by real estate promoters in order to attract residents from the urban areas. Some towns, such as Island Heights, were originally established as religious communities.

A comprehensive chronology of Ocean County's development can be found in "Ocean County: Four Centuries in the Making", written by Pauline S. Miller. Additional information can be found at http://oceancountytourism.com/history/.

Today, Ocean County is made up of thirty-three municipalities. The following table is a list of all Ocean County municipalities from oldest incorporated to the newest.

Figure 1-2: Municipal Dates of Incorporation

Municipality	*Year Incorporated*
Stafford Township	1749
Toms River Township (Dover Township – renamed 2006)	1767
Little Egg Harbor Township	1798
Jackson Township	1844
Plumsted Township	1845
Barnegat Township (Union)	1846
Brick Township	1850
Manchester Township	1865
Lacey Township	1871
Eagleswood Township	1874
Berkeley Township	1875
Ocean Township	1876
Point Pleasant Beach Borough	1886
Bay Head Borough	1886
Island Heights Borough	1887
Lavallette Borough	1887
Beach Haven Borough	1890
Lakewood Township	1892
Surf City Borough (Long Beach)	1894
Harvey Cedars Borough	1894
Seaside Park Borough	1898
Long Beach Township	1899
Tuckerton Borough	1901
Barnegat Light (Barnegat City)	1904
Mantoloking Borough	1911
Seaside Heights Borough	1913
Beachwood Borough	1917
Ocean Gate Borough	1918
Point Pleasant Borough	1920
Lakehurst Borough	1921
Pine Beach Borough	1925
Ship Bottom Borough (Ship Bottom Beach, Arlington Borough)	1925
South Toms River Borough	1927
Island Beach *	1933

* *Abolished July 6, 1965*

( ) Municipalities' original name at time of incorporation

Figure 1-3: Municipal Locations

Historic Sites

The National Register of Historic Places is the official list of the nation's historic resources. Congress established the first historical registry in 1935 through the passing of the Historic Sites Act. This act directed the Secretary of the Interior to designate properties of national importance as National Historic Landmarks.

The National Historic Preservation Act of 1966 (80 Stat. 915, as amended) established a National Register of Historic Places to include significant districts, sites, structures, buildings, and objects of local, state, and national interest. The act instructed the governor of each state to appoint a State Historic Preservation Officer (SHPO) to work in partnership with the U.S. Department of the Interior's National Register Office. The SHPO for New Jersey is the Commissioner of the Department of Environmental Protection and the Historic Preservation Office provides the professional staff.

The NJDEP Historic Preservation Office prepares and updates the New Jersey and National Registers of Historic Places. The Register is the official list of New Jersey's historic resources of local, state, and national interest. Both the state and national programs have the same eligibility requirements.

There are numerous historic sites and structures throughout Ocean County. Some are of local interest only, while others are included on both the National and State Registers of Historic Places. In 1981, the Ocean County Cultural and Heritage Commission prepared the New Jersey Historic Sites Inventory for Ocean County. The purpose of this inventory was to locate, describe, record and photograph Ocean County's existing historic resources. While some of the sites are on the National and State Registers, others may or may not be eligible for the lists.

Strand Theater, Lakewood, NJ.
Photo by Ocean County Department of Planning.

The New Jersey Register of Historic Places lists properties that have been found eligible for such listing, although they are not officially on the State Register or National Register lists. New Jersey is one of the few states certified to add properties to the National Register list. The current list of all listed and eligible properties can be found at www.nj.gov/dep/hpo/.

The following selection criteria are used to determine if a site is eligible for the National and State Registers:

- The site must have an association with events that have made a significant historical contribution to history; or
- an association with the lives of significant historic persons; or
- it embodies the distinctive characteristics as a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- has yielded, or would likely yield, information important in prehistory or history.

The following Ocean County sites are on the State Register only:

Figure 1-4: State Historic Sites, Ocean County

Historic Resource	*Municipality*	*State Register Date*
Sherbourne Farm	Beach Haven	4/20/1983
"Lotus"	Brick	7/9/1985
"Bat"	Island Heights	7/9/1985
"Mary Ann"	Island Heights	7/91985
Rova Farms Historic District, County Route 571	Jackson	6/25/1982
Mullica River/Chestnut Neck Archaeological Historic District	Little Egg Harbor	10/1/1976
Willits-Andrews Farmstead Site/Pulaski Monument	Little Egg Harbor	3/5/1993
80 East Water Street	Toms River	6/17/1981
"Spy"	Toms River	7/9/1985
Williams House	Toms River	6/17/1981

Source: NJDEP Historic Preservation Office, 2011.

In Ocean County, thirty-two sites have been included on both the National and State Registers lists; see Figure 1-5.

Figure 1-5: National and State Historic Sites, Ocean County

Historic Resource	*Municipality*	*National Register*	*State Register*
Barnegat City Public School (Barnegat light Museum)	Barnegat Light	6/7/1976	12/8/1975
Barnegat Light House	Barnegat Light	1/25/1971	9/11/1970
Mary Etta Cox House	Barnegat	3/9/2005	1/6/2005
Bay Head Historic District -Bound by Delaware Avenue (North), Atlantic Ocean (East), Boro Boundary (South) and Undefined extent west of Main Street	Bay Head & Point Pleasant	2/1/2006	11/18/2005
Beach Haven Historic District – Atlantic, South Atlantic, Beach, North Beach, Engleside avenues; Amber, Centre, Coral, Pearl, Second and Third Streets	Beach Haven	7/14/1983	4/20/1983
Converse Cottage	Beach Haven	7/14/1983	4/20/1983
Dr. Edward H. Williams House	Beach Haven	7/14/1983	4/20/1983
Double Trouble State Park Historic District	Berkeley	2/23/1978	10/14/1977
Manitou Park School House	Berkeley	3/15/2005	12/6/2004
U.S. Lifesaving Station Number 14	Island Beach State Park	1/30/1978	3/7/1977
First Baptist Church of Laurelton	Brick	8/10/1977	1/10/1977
Island Heights Historic District	Island Heights	7/8/1982	2/23/1981
Cassville Crossroads Historic District – County Routes 571 & 528	Jackson	8/26/1982	6/25/1982
Double Trouble State Park Historic District	Lacey	2/23/1978	10/14/1977
Torrey-Larrabee Store	Lakehurst	2/21/1997	12/31/1996
Georgian Court (George Jay Gould Estate)	Lakewood	12/20/1978	8/2/1978
Strand Theatre	Lakewood	4/22/1982	3/27/1981
Hanger No. One, Lakehurst Naval Air Station	Manchester	5/23/1968	5/27/1971
Whitesbog Historic District County Route 530, northwest of NJ Route 70	Manchester & Plumsted	10/27/1988	6/17/1988
Falkinburg Farmstead	Ocean	8/12/1993	7/71993
Cavalry Cottage	Stafford	9/22/2006	8/6/2006
Manahawkin Baptist Church	Stafford	4/3/1973	5/1/1972
Captain Amos Birdsall House	Toms River	5/13/1982	6/17/1981
A.A. Brant House	Toms River	5/13/1982	6/17/1981
Crawford House	Toms River	5/13/1982	6/17/1981
Captain George W. Giberson House	Toms River	8/12/1982	6/17/1981
Horner House	Toms River	5/13/1982	6/17/1981
Ocean County Court House	Toms River	8/16/1983	6/17/1981
Ocean County Jail	Toms River	8/16/1983	6/17/1981
Stewart House	Toms River	5/13/982	6/17/1981
Stoutenburgh-Minturn House	Toms River	5/13/1982	6/17/1981
Little Egg Harbor Friends Meeting House	Tuckerton	12/9/2002	10/18/2002

Source: NJDEP Historic Preservation Office, 2011.

Laurel-in-the-Pines, a grand hotel in Lakewood, circa 1890- 1967. (No longer in existence)
Postcard from Ocean County Cultural and Heritage Commission.

Inclusion on the New Jersey and National Registers provides several benefits, including protection from public encroachment and eligibility for financial programs. Section 106 of the National Historic Preservation Act of 1966 provides for the assessment of potential impact to historic properties by any federally licensed, financed or assisted undertaking. Inclusion on the National Register enables the property owner and some lessees to take a tax credit on the cost of rehabilitating such buildings for industrial, commercial or rental residential purposes. The rehabilitated building must be a certified historic structure and the rehabilitation must be certified as meeting standards established by the National Park Service.

The New Jersey Register law requires the review of historic properties for any state, county, or municipal undertaking. The Historic Preservation Bond Fund provides matching grants and low interest loans for rehabilitation and restoration of properties for use by state, county, municipal agencies, and non-profit agencies.

Both Federal and State programs are designed to prevent destruction or damage of historic resources by public agencies. Local landmark and historic district regulations may affect actions by private property owners and are separate from the New Jersey and National Register regulations.

Registered historic properties located in the Pinelands are automatically designated as "historic resources of significance" and are subject to review by the Pinelands Commission. In addition, the New Jersey Pinelands Commission has the authority to designate certain historic, archaeological or cultural resources and districts. These areas would represent or reflect significant elements of the Pinelands cultural, social, economic, political, and architectural history and prehistory. Guidance on the identification, analysis and cultural resources of the

Pinelands is provided in the Pinelands Comprehensive Management Plan and the Pinelands Cultural Resource Management Plan. In addition, the Pinelands Commission provides model historic preservation ordinance language, guidelines for cultural resource surveys, and a list of prospective cultural resource consultants. Figure 1-6 lists "Pinelands Historically Significant Properties" that are included on the National and State Registers.

Figure 1-6: Historically Significant Properties within the Pinelands Jurisdiction

Historic Resource	*Municipality*	*National Register*	*State Register*	*Other Classification*
Double Trouble State Park Historic District	Berkeley Lacey	2/23/1978	10/14/1977	
Manitou Park School House	Berkeley	3/15/2005	12/6/2004	COE: 1/9/2005
Building 120 Naval Air Engineering Station Lakehurst	Lakehurst			SHPO: 3/10/1993
Lighter Than Air Historic District - Naval Air Engineering Station Lakehurst	Lakehurst			SHPO: 6/27/1995
Torrey-Larrabee Store	Lakehurst	2/21/1997	12/31/1996	
Bass River State Forest Historic District	Little Egg Harbor			SHPO: 9/28/2004
Garden State Parkway Historic District	Barnegat Berkeley Eagleswood Lacey Little Egg Harbor Ocean Stafford			SHPO: 10/12/2001
Mullica River/Chestnut Neck Archaeological Historic District	Little Egg Harbor	10/1/1976	9/16/2002	
Hanger Number One, Lakehurst Naval Air Station	Manchester	5/23/1968	5/27/1971	
Building 9726, ***Range Road*** Fort Dix	Manchester			SHPO: 3/7/2003
Whitesbog Historic District (County Route 530, northwest of NJ Route 70)	Manchester, Plumsted	10/27/1988	6/17/1988	
Andrews House Site	Tuckerton			SHPO: 7/30/1997
Bartlett-Rockhill-Bartlett House	Tuckerton			COE: 6/26/2008
234 Center Street	Tuckerton			SHPO: 7/10/1991
Little Egg Harbor Friends Meeting House	Tuckerton	12/9/2002	10/18/2002	
Tuckerton Historic District - At US Route 9 and County Route 539, roughly between Parkers Landing and Pohatcong Lake	Tuckerton			SHPO: 7/10/1991

Source: NJDEP Historic Preservation Office, 2011.

The County's historic resources represent valuable social and economic investments that contribute to the identity of its communities. The County and its municipalities should continue to assist in identifying and enhancing its historic resources. Such efforts often result in numerous benefits, including increased tourism, increased demand for commercial and residential properties in the historic areas, and an improved quality of life.

The life-saving service which became the national standard was developed by Captain Hugh McClellan on Island Beach (later Island Beach State Park). Photo from Ocean County Cultural and Heritage Commission.

Local initiatives have far reaching effects on preserving historic resources for future generations. Historic preservation activities may take the form of master plan elements, comprehensive zoning ordinances, regulated code enforcement, or public education and outreach programs. Local stewardship can often be the most effective way to protect historic resources and promote an area's architectural and archaeological heritage. Ocean County and many of it municipalities have formed historical societies to accomplish this mission. Figure 1-7 lists historical societies in Ocean County, as of November of 2011.

Women working in the cranberry industry. Photo from Ocean County Cultural and Heritage Commission.

Figure 1-7: Local Historical Societies in Ocean County

Historical Society	*Address*	*Website*
Ocean County Historical Society	26 Hadley Avenue ▪ P.O. Box 2191 Toms River, N.J. 08754-2191 (732) 341-1880	www.oceancountyhistory.org
Barnegat Historical Society	West 5th Street & Central Ave. P.O. Box 386 Barnegat Light, NJ 08006 (609) 494-8578	www.lbi.net/nonprof/blhist.htm
Bay Head Historical Society	Bay & Bridge Avenues Bay Head, NJ 08742 (732) 892-0223	http://www.bayheadhistoricalsociety.com/
Berkeley Twp. Historical Society	759 Atlantic City Blvd. Bayville, NJ 08721 (732) 269-9527	
Brick Twp. Historical Society	521 Herbertsville Road P.O. Box 160 Brick, NJ 08742 (732) 785 – 2500	www.bricktwphistoricalsociety.com
Island Heights Cultural & Heritage Association	105 Simpson Avenue Island Heights, NJ 08732-7870 (732) 929-2646	www.islandhts.org
Lacey Historical Society	126 South Main St. ▪ PO Box 412 Forked River NJ 08731 (609) 971- 0467	N/A
Lakehurst Historical Society	300 Center Street Lakehurst, NJ 08733 (732) 657- 8864	www.lakehurstnj.org
Lakewood Historical Society	655 Princeton Ave. Lakewood, NJ 08701 (732) 364-2500 Ext.5283	N/A
Long Beach Island Historical Association	Engleside & Beach Avenues P.O. Box 1222 Beach Haven, NJ 08008	http://www.lbimuseum.org
New Egypt Historical Society	125 Evergreen Road P.O. Box 295 New Egypt, NJ 08533 (609) 758-8111	www.newegypthistoricalsociety.com
Ocean Gate Historical Society	Cape May & Asbury Avenues Ocean Gate, NJ 08740 (732) 269- 8040	N/A
Point Pleasant Historical Society	416 Jersey Avenue P.O. Box 1273 Point Pleasant Beach, NJ 08742 (732) 892 -3091	www.pointpleasanthistory.com
Stafford Twp. Historical Society	50 West Bay Avenue Manahawkin NJ 08050 (609) 597 – 5947	http://staffordhistory.org/
Tuckerton Historical Society	35 Leitz Blvd. & Wisteria Lane Little Egg Harbor, NJ 08087 (609) 294 – 1547	www.tuckertonlehhs.org/schoolhouse.php
Waretown Historical Society	Wells Mills Road ▪ PO Box 138 Waretown, NJ 08758 (609) 693 – 5666	www.townshipofocean.org/historical_society.html
Toms River Seaport Society	78 East Water St. ▪ PO Box 1111 Toms River, NJ 08754 (732) 349 – 9209	www.tomsriverseaport.org
Naval Lakehurst Historical Society	Joint Base MDLNAES Route 547, P.O. Box 328 Lakehurst, NJ 08733-0328 (732) 244-8861	www.nlhs.com

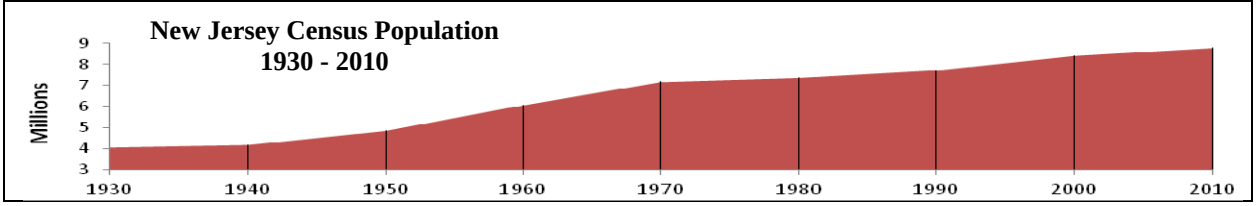
Chapter 2

Population and Demographics

Ocean County's population has grown and transformed significantly since its formation in 1850. The area was sparsely settled throughout the 1800's and the population grew slowly until after the 1940's. A primarily rural county with a population of 33,069 in 1930, the population had reached 576,567 in 2010 according to the US Census Bureau. During much of the last four decades, Ocean County was the fastest growing County in the State. Figure 1 illustrates this increase in population compared with the other Counties in New Jersey.

Figure 2-1: Historical Population Trends in New Jersey, 1930 - 2010

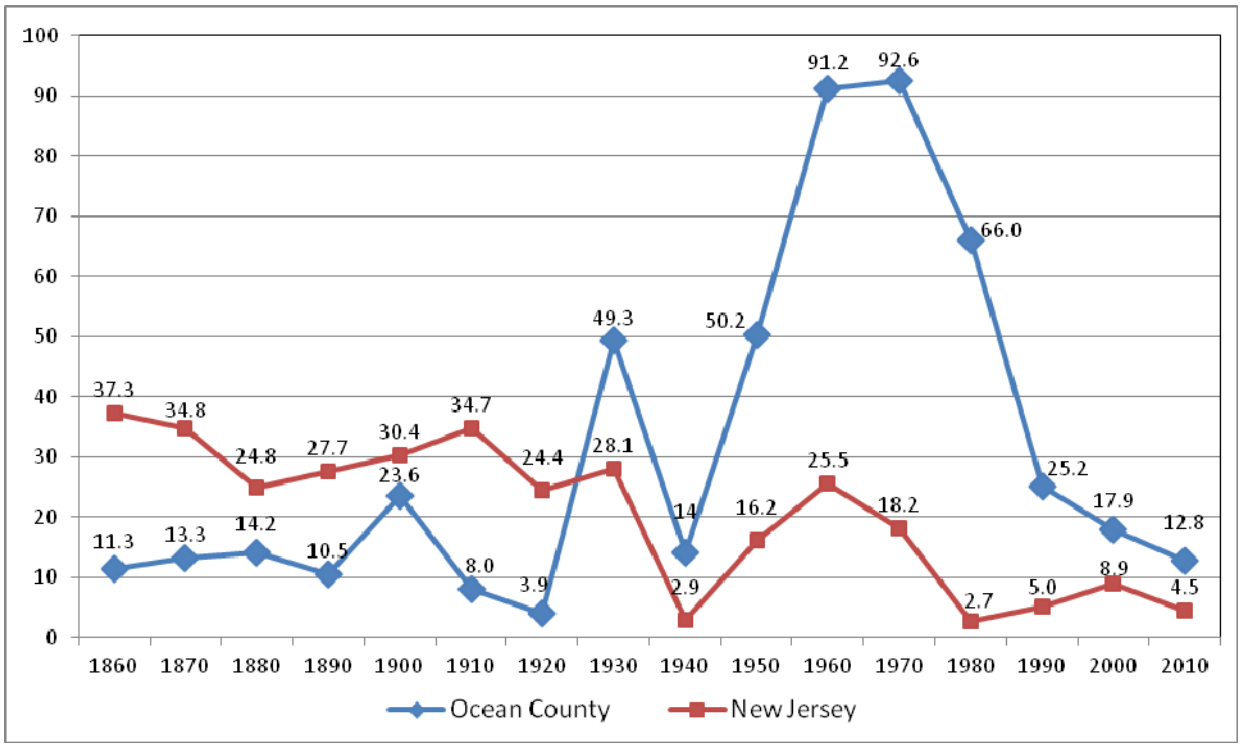
										1930-2010	
Municipality	*1930*	*1940*	*1950*	*1960*	*1970*	*1980*	*1990*	*2000*	*2010*	*Change*	*% change*
Atlantic	124,823	124,066	132,399	160,880	175,043	194,119	224,327	252,552	274,549	149,726	120%
Bergen	364,977	409,646	539,139	780,255	897,148	845,385	825,380	884,118	905,116	540,139	148%
Burlington	93,541	97,013	135,910	224,499	323,132	362,542	395,066	423,394	448,734	355,193	380%
Camden	252,312	255,727	300,743	392,035	456,291	471,650	502,824	508,932	513,657	261,345	104%
Cape May	29,486	28,919	37,131	48,555	59,554	82,266	95,089	102,326	97,265	67,779	230%
Cumberland	69,895	73,184	88,597	106,850	121,374	132,866	138,053	146,438	156,898	87,003	124%
Essex	833,513	837,340	905,949	923,545	932,526	851,304	778,206	793,633	783,969	-49,544	-6%
Gloucester	70,802	72,219	91,727	134,840	172,681	199,917	230,082	254,673	288,288	217,486	307%
Hudson	690,730	652,040	647,437	610,734	607,839	556,972	553,099	608,975	634,266	-56,464	-8%
Hunterdon	34,728	36,766	42,736	54,107	69,718	87,361	107,776	121,989	128,349	93,621	270%
Mercer	187,143	197,318	229,781	266,392	304,116	307,863	325,824	350,761	366,513	179,370	96%
Middlesex	212,208	217,077	264,872	433,856	583,813	595,893	671,780	750,162	809,858	597,650	282%
Monmouth	147,209	161,238	225,327	334,401	461,849	503,173	553,124	615,301	630,380	483,171	328%
Morris	110,445	125,732	164,371	261,620	383,454	407,630	421,353	470,212	492,276	381,831	346%
Ocean	***33,069***	***37,706***	***56,622***	***108,241***	***208,470***	***346,038***	***433,203***	***510,916***	***576,567***	***543,498***	***1644%***
Passaic	302,129	309,353	337,093	406,618	460,782	447,585	453,060	489,049	501,226	199,097	66%
Salem	36,834	42,274	49,508	58,711	60,346	64,676	65,294	64,285	66,083	29,249	79%
Somerset	65,132	74,390	99,052	143,913	198,372	203,129	240,279	297,490	323,444	258,312	397%
Sussex	27,830	29,632	34,423	49,255	77,528	116,119	130,943	144,166	149,265	121,435	436%
Union	305,209	328,344	398,138	504,255	543,116	504,094	493,819	522,541	536,499	231,290	76%
Warren	49,319	50,181	54,374	63,220	73,960	84,429	91,607	102,437	108,692	59,373	120%
New Jersey	**4,041,334**	**4,160,165**	**4,835,329**	**6,066,782**	**7,171,112**	**7,365,011**	**7,730,188**	**8,414,350**	**8,791,894**	**4,750,560**	**118%**



Source: U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Table PL1, and 2010 Census Redistricting Data (Public Law 94-171) Summary File, Table P1; NJ Department of Labor and Workforce Development, February 3, 2011. Prepared by: Ocean County Department of Planning, February 2011.

Figure 2-2 depicts the population growth rate of Ocean County as compared to the growth rate of New Jersey from 1850 to 2010.

Figure 2-2: Population Growth Rates in Ocean County and New Jersey, 1850-2010

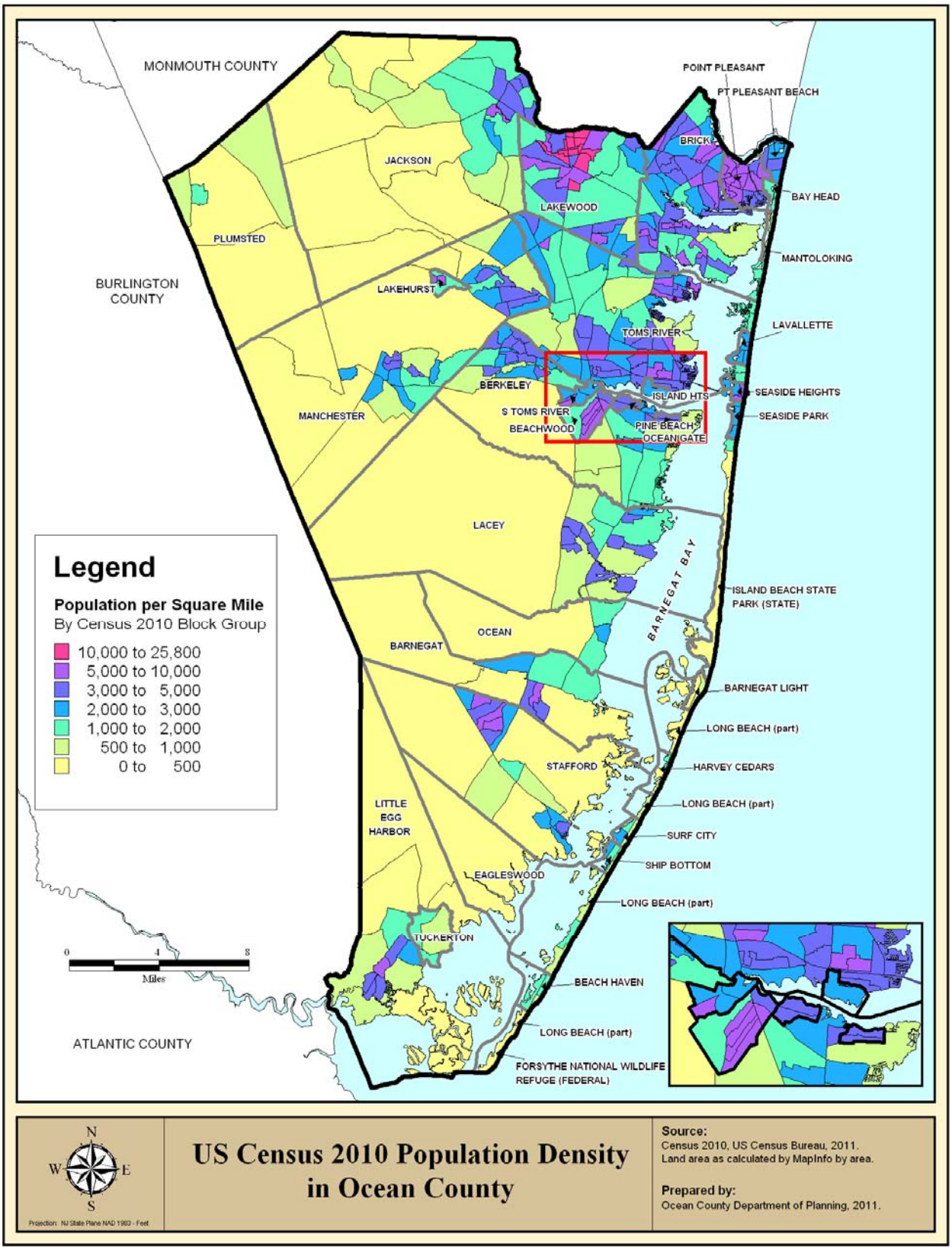


Source: US Census Bureau; US Census 2000, Historical Population Counts, 2001; US Census 2010, 2011.

Many factors contributed to Ocean County's large rate of growth. After World War II, there was a nationwide shift in population from the urban centers to suburban areas. The rise of the automobile was a primary factor and allowed many people to continue to work in the cities, but live further out into rural areas. The opening of the Garden State Parkway in 1954 resulted in a significant migration of people to Ocean County, since a large amount of relatively inexpensive land was now easily accessible to commuters. Not surprisingly, almost all of Ocean County's population growth since the early 1900's was due to immigration, rather than the natural increase of population. Other factors that contribute to Ocean County's continuing population growth are discussed in more detail within the Housing Characteristics subsection.

The map in Figure 2-3 illustrates population density by Census 2010 block group.

Figure 2-3: Ocean County Population Density, 2010

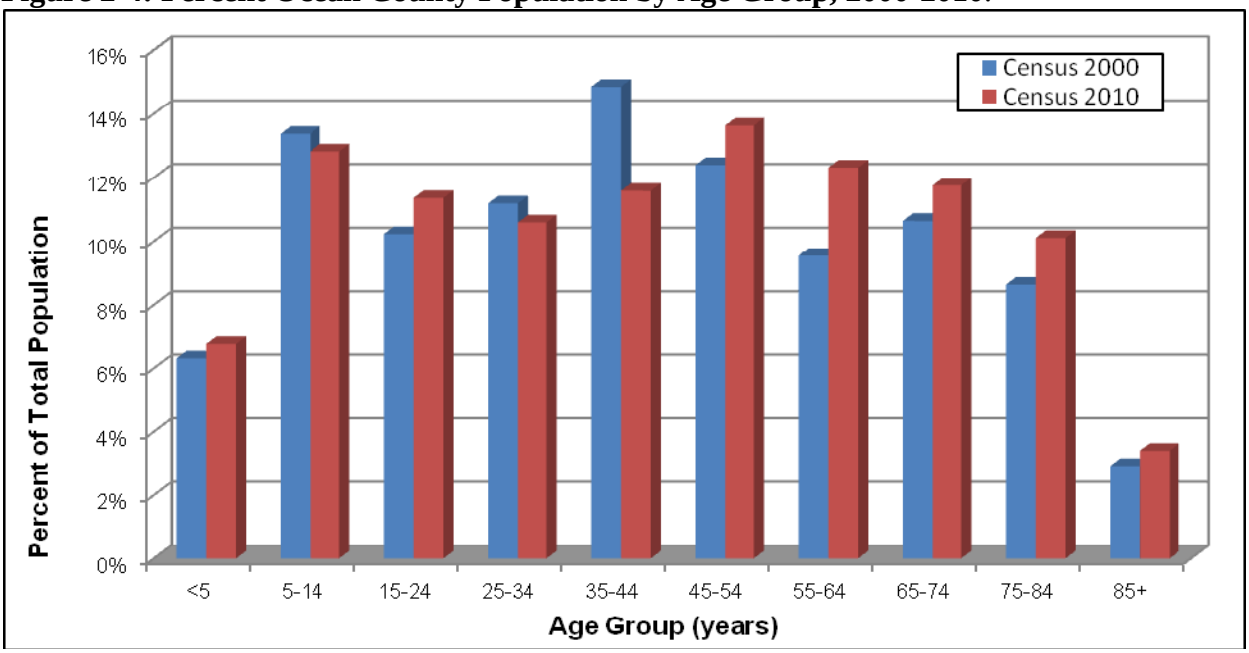


Population is concentrated in the northeastern and central municipalities, along the barrier island beaches and along the Route 9 corridor. Lakewood Township has the highest population, followed by the Townships of Toms River, Brick, Jackson, Manchester and Berkeley. Much of the southern and western areas of Ocean County are located in the Pinelands Comprehensive Management Area and are primarily rural. However, the overall number of County residents living in areas classified as rural is decreasing as a percentage of the County's total population.

The latest age breakdown statistics for Ocean County show the movement and aging of the baby boom generation from 2000 to 2010 and the general increase of population across most of the age groups. Over the past 50 years, Ocean County has attracted a large number of young families in search of starter homes. Ocean County also maintains a large population of senior adults, many of whom chose to retire in one of the many adult communities. The 65+ year population represents just over 23% of Ocean County's 2010 population. Figure 2-4 illustrates the trends in the County's age distribution for 2000 and 2010.

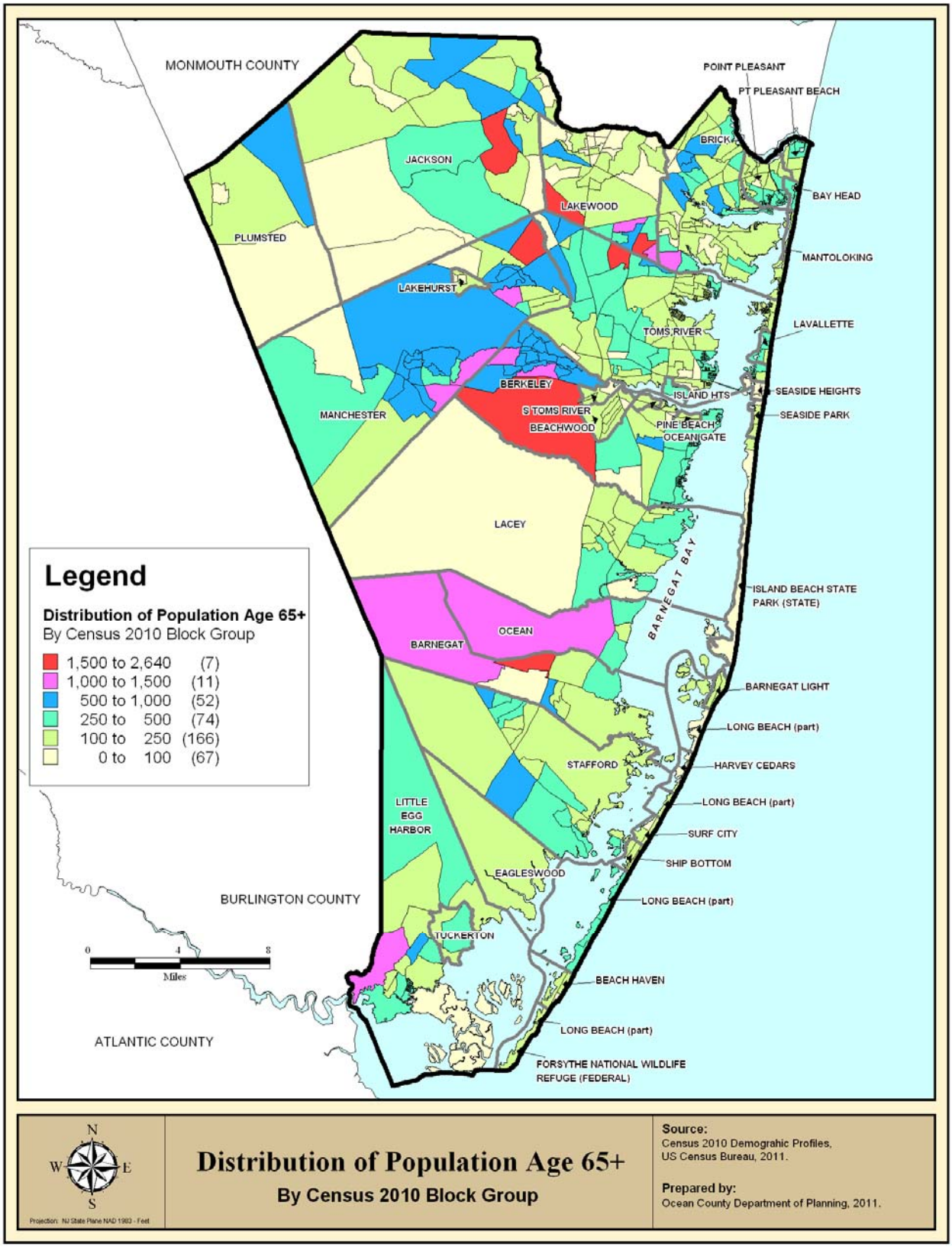
As illustrated in the map (Figure 2-5), the current senior population is concentrated throughout many areas of Ocean County, including Berkeley, Barnegat, Manchester, Lakewood, and Ocean Townships. Those towns are also where most of the adult communities are located.

Figure 2-4: Percent Ocean County Population by Age Group, 2000-2010.



Source: Census of Population and Housing. Census 2000 and 2010, U.S. Census Bureau, May 2011.

Figure 2-5: Distribution of People Age 65+ in Ocean County, 2010



The largest concentrations of minorities are in Lakewood Township and South Toms River Borough. The minority population of Lakewood Township totals 29,226, or 31%. In South Toms River, the minority population totals 1,737, or 47% of the total. Other higher minority concentrations are in Toms River, Jackson, Brick, Berkeley and Manchester. Figure 2-7 shows the complete racial population breakdown for all 33 municipalities in Ocean County, as well as County totals.

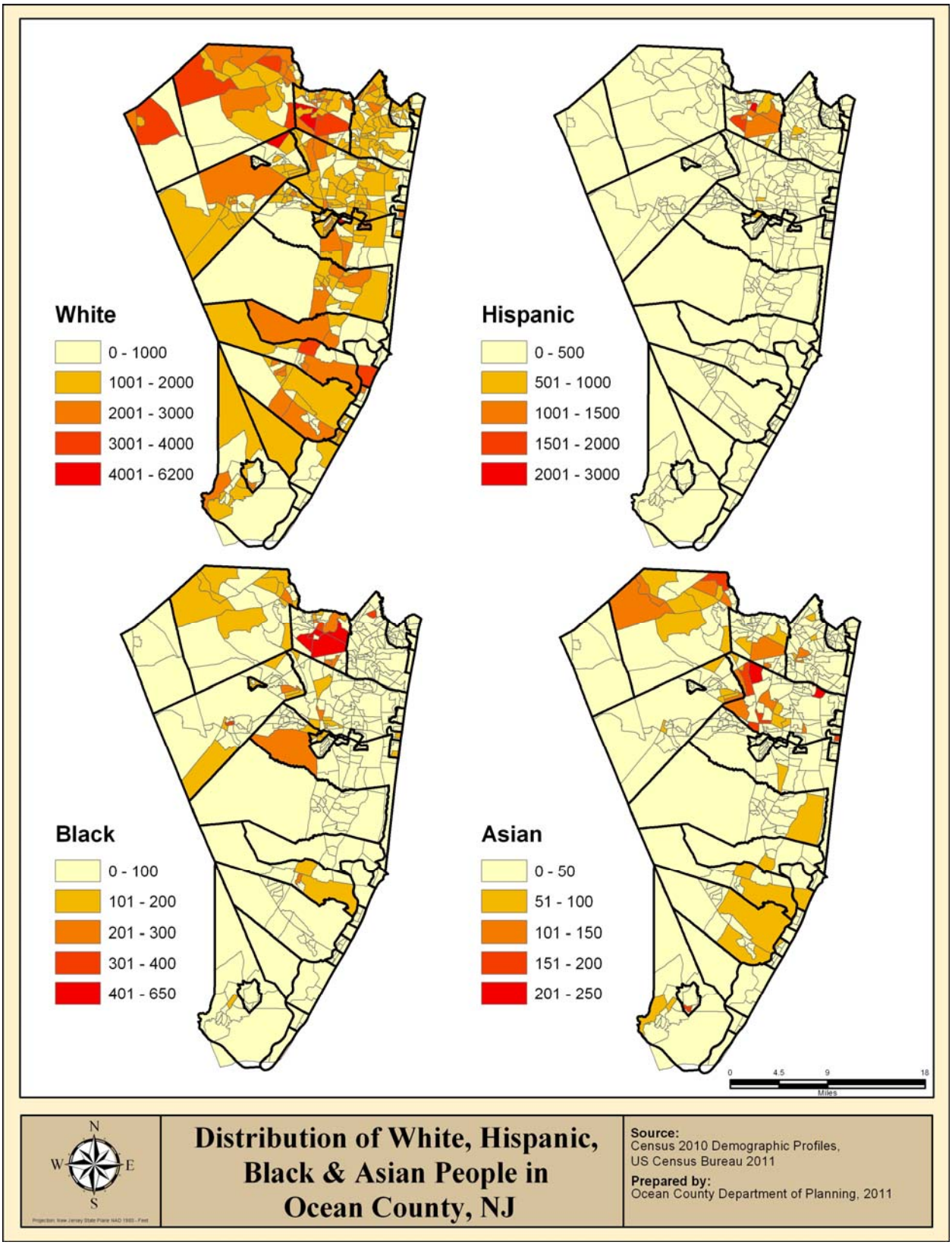
Figure 2-6: Population by Race and Hispanic Origin, 2010

Municipality	*2010 Total Population*	*White*	*Black*	*Am. Indian Eskimo Aleutian*	*Asian & Pacific Islander*	*Other*	*Hispanic Origin**
Barnegat Township	20,936	19,214	681	30	364	265	1,420
Barnegat Light Borough	574	561	6	0	0	6	11
Bay Head Borough	968	954	5	0	7	0	10
Beach Haven Borough	1,170	1,084	4	0	9	69	116
Beachwood Borough	11,045	10,251	198	8	167	269	898
Berkeley Township	41,255	39,129	723	46	471	465	2,028
Brick Township	75,072	69,856	1,502	104	1,200	1,350	5,301
Eagleswood Township	1,603	1,546	14	1	10	16	54
Harvey Cedars Borough	337	334	2	0	1	0	3
Island Heights Borough	1,673	1,603	4	2	23	6	40
Jackson Township	54,856	48,765	2,664	57	1,634	696	4,295
Lacey Township	27,644	26,581	167	38	228	316	1,310
Lakehurst Borough	2,654	2,050	287	17	62	97	347
Lakewood Township	92,843	78,290	5,898	276	791	6,199	16,062
Lavallette Borough	1,875	1,835	2	0	10	19	56
Little Egg Harbor Township	20,065	18,899	271	33	251	303	1,047
Long Beach Township	3,051	2,959	8	1	15	48	126
Manchester Township	43,070	39,623	1,654	38	778	479	2,062
Mantoloking Borough	296	281	5	1	1	7	7
Ocean Township	8,332	8,061	49	11	91	38	230
Ocean Gate Borough	2,011	1,914	27	1	4	42	128
Pine Beach Borough	2,127	2,052	8	3	30	15	79
Plumsted Township	8,421	7,932	152	27	75	104	498
Point Pleasant Borough	18,392	17,666	75	24	139	305	935
Point Pleasant Beach Borough	4,665	4,308	39	7	40	211	421
Seaside Heights Borough	2,887	2,331	193	17	44	201	516
Seaside Park Borough	1,579	1,532	15	0	6	14	54
Ship Bottom Borough	1,156	1,074	15	2	5	46	106
South Toms River Borough	3,684	2,490	712	21	23	263	718
Stafford Township	26,535	25,077	278	42	402	445	1,410
Surf City Borough	1,205	1,151	16	0	11	17	61
Toms River Township	91,239	82,035	2,465	156	3,283	1,785	7,231
Tuckerton Borough	3,347	3,139	25	3	35	69	203
Ocean County	**576,567**	**524,577**	**18,164**	**966**	**10,210**	**14,165**	**47,783**

Source: U.S. Census Bureau, 2010 Census Redistricting Data, February 2011.

* Hispanic origin is defined as a person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture regardless of race.

Figure 2-7: Distribution of Race and Hispanic Origin in Ocean County, 2010



Future growth will be limited by the amount of remaining developable land. Some of the remaining land is considered sensitive and protected through regulations. Other land has been purchased for permanent protection by a number of organizations as described later within this report. Population projections reflect a declining rate of growth in Ocean County, although a significant amount of infill development is projected to continue. The elderly population will also continue to grow as the remaining "baby boom" generation ages.

In 2005, the North Jersey Transportation Planning Authority (NJTPA) released population projections for 2035. The projections for Ocean County estimate a population of 776,300 by 2035.

Chapter 3

Economic Planning & Workforce Development

Economic planning is a primary component of local and regional planning. Communities must have a proper balance of businesses and employment centers to serve the population. While many of Ocean County's historic economic sectors remain important, there has been an increasing emergence of new fields, such as Health Care and Green Technology, which provide increasing opportunities for Ocean County residents. This section provides an overview of Ocean County's current labor force, industry trends, and assistance programs available to residents, students and business owners.

The State of Ocean County's Economy

The continued growth of Ocean County provides opportunities for various segments of the population. Ocean County gained an additional 65,651 residents from 2000 to 2010. The County's largest age group, 25-44 year-olds are expected to be the fastest growing age group in the foreseeable future. This productive age group will increase the demand for high salary jobs. The second and third largest age groups, 45-64 year-olds and those older than 65, respectively, will also grow in size, resulting in a greater demand for health care services.

Current Job Sectors

According to the NJ Department of Labor's 2010 Annual Private Sector Report, education and health services added the most jobs in New Jersey in 2010 (+7,400). The public sector lost 22,200 jobs, in response to budgetary concerns over the last recession.

Employment within Health Care Services has increased significantly over the last two decades and is projected to remain at the forefront of job growth in Ocean County. This sector includes ambulatory health care, nursing and residential care and social assistance. Since Ocean County has a large population of senior citizens, and an increasing population of 45-64 year-olds ("baby boomers") advancing toward retirement, demand for these services will continue to increase.

Many of these jobs require higher education levels and pay higher annual salaries than the household median incomes.

Retail and Trade Services have historically employed a large segment of the workforce and this is projected to continue. Many of these jobs are in the seasonal tourism industry which remains very popular in Ocean County. The local tourism industry generated $3.35 billion to the local economy in 2010. Ocean County was third in the State behind Atlantic and Cape May Counties, which are more heavily reliant upon seasonal and gaming revenue.

Industry Trends

While health care services and retail trade continue to dominate the job sector in Ocean County, there are some sectors that are experiencing a decline in employment viability. According to the *Ocean County Community Fact Book*, manufacturing jobs in Ocean County declined by 21.9% from 2004 to 2009. This is a slightly higher rate in job loss than the 20.9% decline experienced by the state. The reduction in manufacturing jobs in the County can be attributed to the out-migration of a number of manufacturers of durable and non-durable goods to other regional locations. However, Ocean County's relatively small manufacturing industry does benefit from its nine industrial parks located in Berkeley, Brick, Eagleswood, Jackson, Lacey, Lakewood, Plumsted, Stafford and Toms River.

The construction industry has been seriously impacted by the housing recession of the last several years. New construction in the residential and commercial markets was broadly impacted and experienced a loss of 2,029 jobs in Ocean County from 2004 to 2009.

Current County Efforts to Promote Economic Viability

OCWIB: Under the Workforce Investment Act of 1998, Ocean County established the Ocean County Workforce Investment Board (OCWIB). This board is a local partnership of private and public sector representatives that provides coordinated planning, policy guidance, & oversight of all workforce readiness programs in Ocean County (Ocean County Workforce Investment Act

Strategic 5 Year Plan). This board meets monthly to discuss and shape program management and resource allocation through the One-Stop System, and to oversee six committees designed to address all major areas of workforce development. The committees support and coordinate with the private and public workforce in many ways.

The Youth Investment Counsel (YIC): This committee focuses on the relationship between the local school systems and the professional workforce. It gives disadvantaged young adults between ages 14 and 21 the opportunity to communicate with professionals in the local business community and prepares them to be productive and successful. The committee works with various vocational schools, career academies, and high schools to offer grant funding for literacy training, work experience, and occupational training. This is in addition to the programs available at the Ocean County Vocational Technical School and Ocean County College, which are supported by the Ocean County Board of Chosen Freeholders. Ocean County has been working with various high schools, the Jackson Academy Digital Program and the Lakewood Freshman Academy to promote interest in the local business community for young graduates. These programs, with funding through the American Recovery and Reinvestment Act (ARRA) and the Workforce Investment Act (WIC), focus on digital media and technology, language arts, mathematics, sciences, and social studies through classroom and work experience training sessions. Ocean County continues to oversee this Counsel through the OCWIB on a monthly basis and has produced successful results.

The One-Stop Committee: Ocean County currently has two One-Stop Career Centers located in Toms River. Under the direction of the WIB, the One-Stop Committee is in charge of the establishment of the physical locations for the centers, along with the planning and workforce policy pertaining to the One-Stop system. The goal of the One-Stop career system is to provide a site where the public can access a variety of key services for their workforce development needs. The Ocean County One-Stop Centers assist employers, students, and job seekers as they prepare to make better decisions with their careers, and should continue to do so in the future. Ocean County should be open to the implementation of new centers in areas where demand for these services may increase.

Economic Development Committee (EDC): This committee is in charge of making policy recommendations to strengthen economic development in Ocean County. The EDC covers a broad spectrum of related issues, and provides for communication and coordination with other government agencies, counties, businesses, and non-profit organizations. It specializes in locating federal and state grant funding, and coordinating with other economic programs throughout the state.

The Ocean County EDC is heavily involved with planning for the dissolution of Fort Monmouth. The final closing of the fort, which occurred on September 15th, 2011, displaced roughly 50 to 60% of the workers out of state. Many of these workers were residents of Ocean County. Efforts are being made with Monmouth County through the Fort First campaign to facilitate job transfers from Fort Monmouth to Joint Base NJ.

Marketing Committee: Ocean County utilizes the Marketing Committee to communicate the strategies and goals of the OCWIB and the One-Stop Career Centers. Their main publication is a newsletter that is currently distributed quarterly, and provides information on the Business Resource Center (BRC), One-Stop Career Centers, employer assistance, and job seeker resources.

Welfare to Work Advisory Committee: Ocean County works under the WorkFirst New Jersey program to provide assistance and services to needy families. Funding for temporary financial assistance is available for families through the Temporary Assistance for Needy Families (TANF) program. New Jersey is also one of the few states to offer assistance to individuals and couples with no dependant children. Ocean County continues to assist qualifying residents with these important services.

Literacy Committee: Ocean County is actively involved with a variety of programs that promote literacy for students and adults. The Committee works with State programs that coordinate and offer grant funding for GED testing, adult education, work readiness, basic computer skills, and workplace competency. Currently, the Literacy Committee receives over $200,000 dollars per year in Workforce Literacy Link funding which can be used for a variety of programs. This

committee has produced successful results with GED testing, adult education consortium programs, summer programs, and workforce preparedness workshops. Legislation entitled the Adult Education and Economic Growth Act (AGGEA) was recently introduced to more closely coordinate Adult Education Title II programs closer to WIA workforce programs.

Potential for Economic Revitalization & Growth in Ocean County

According to the U.S. Bureau of Labor Statistics, Ocean County has the second lowest weekly wage rate in the state and the highest commuter rate. This is a symptom of an educated workforce, but an insufficient number of higher skill jobs at the local level. The following major focal points could provide a platform for improvement and progress:

- A comprehensive review of potential economic growth corridors and correlating improvement strategies throughout the County:

  One area where the Planning Department can be used is in identifying growth corridors throughout the County. The Planning Department works alongside many State agencies to delineate growth areas suitable for commercial and industrial development. The Planning Department can identify transportation corridors that are better suited for commercial and industrial uses. The County Planning and Engineering Departments can also target where future transportation monies are spent to increase safety and circulation.

  Ocean County will actively work with the State of New Jersey in the implementation of the new State Strategic Plan which was released at the end of 2011. The plan provides for the identification and promotion of economic nodes and focal points. Ocean County's growing health care industry and the research and development opportunities presented by Joint Base McGuire-Dix-Lakehurst should be prime candidates for this effort.

- Coordinate various programs at the state and local level to minimize potential conflict with economic growth.

Ocean County participates in a number of planning initiatives, such as wastewater management, military land use compatibility, and subregional transportation planning. While protecting environmental integrity, these programs ensure that economic development potential is not lost in key growth areas of the County.

- Incorporation of additional transportation alternatives for Ocean County:

The modernization of the Garden State Parkway should continue. The Board of Chosen Freeholders should continue to press NJ Transit and the NJ Department of Transportation to restore new passenger rail service to Ocean County under the Monmouth-Ocean-Middlesex initiative. Grants should be sought to expand County and local bus services, car-pooling programs, truck route facilitating, as well as walking and biking throughout downtown areas.

- Increased education and outreach to potential business investors and local authorities:

Ocean County will continue participation in economic development organizations such as the OCWIB and the Monmouth-Ocean Development Council (MODC). Ocean County officials meet with over 5,000 people yearly about jobs and job opportunities, according to the OCWIB. Ocean County has hosted several programs designed to connect the local workforce and businesses with the needs of Ocean County and Joint Base McGuire-Dix-Lakehurst. Periodic workshops, such as “Doing Business with Ocean County” and “Doing Business with the Joint Base” attracted thousands of attendees.

- Further diversify the education opportunities at high schools, vocational technical schools and colleges. Provide more job training and incorporation of more four-year degree options:

Ocean County College’s partnership with Kean University now allows local residents to enter the county college systems and eventually earn four-year degrees while remaining in Ocean County. Kean University offers 25 undergraduate programs and seven different Masters Degrees. This ongoing partnership will be a vital partner in the economic development of Ocean County. Ocean County will work with these institutions to tailor degrees to emerging business sectors,

such as health care and engineering and research opportunities available with the Joint Base. Partnerships could also be sought between the New Jersey Institute of Technology (NJIT) and Rutgers University to site satellite facilities at various locations. Finally, Ocean County will continue to support the expanding learning opportunities available through the numerous vocational technical schools. The nationally recognized Marine Academy of Technology and Environmental Science (MATES) program, established in 2001, is a prime example of a program tailored to college bound and career orientated students in math and science related fields.

- Efficient communication and collaboration through local and County economic development entities:

Ocean County works with several agencies to promote and administer important economic development initiatives such as Ocean County College, OCWIB, MODC, Joint Base McGuire-Dix-Lakehurst, New Jersey Department of Labor, etc. Whereas these agencies work towards common goals and share information, continued communication and collaboration are key to achieve successful planning initiatives. The OCWIB produces the *Ocean County Workforce Investment Board 5-Year Strategic Plan*. Last updated in 2007, the Strategic Plan includes an overview of the Ocean County workforce, ideas for aligning local workforce development initiatives, and optimizing the workforce development system in the County. This document provides a thorough review of the economy of Ocean County and offers a variety of recommendations and strategies to improve the local workforce. In addition to this document, the Ocean County WIB has produced the Ocean County WIB Business Tool Kit, which is a comprehensive document that serves as a resource guide for businesses, municipalities, or other agencies to analyze, initiate, and coordinate their business ideas. Ocean County should work to assure that the data and input from all economic development entities are included in this document and it is updated regularly to reflect current market conditions in the County.

- A central location to act as a "One-Stop-Shop" for workforce development and business financing information in the County:

Grant funding from State and Federal sources can help support programs that have been mentioned in this section as well as assist in startup and operation of new ideas. It is important to maintain relationships with the various aid agencies and for the OCWIB to continually search for new ways to obtain funding. The County should continue to explore grant opportunities that exist within the New Jersey Recovery & Reinvestment Plan, such as the Community Development Financial Institutions Program, Economic Development Assistance Grants (through ARRA), NIST Construction of Research Facilities, National Emergency Grants (WIA), YouthBuild Program, High Growth & Emerging Industry Sectors Grants, and Clean Fossil Energy Technology Grants. An alternative funding method would be to research and develop tax incentive packages along with impacted municipalities for the identified growth corridors. Such incentive packages will be marketed to prospective businesses. Benefits of this type of program include a return in tax revenue over time and job creation.

The Future of Ocean County

Ocean County achieved a top AAA bond rating from Moody's Investors Service, Inc, which evaluates credit risk of bonded indebtedness. This high standard of fiscal responsibility allows Ocean County taxpayers to benefit from long-term, low interest borrowing. It also demonstrates Ocean County's ability to prioritize spending and other decisions for the overall benefit of its residents. This strong position allows Ocean County to be an effective advocate for the future of the county.

The following sections provide general goals that involve coordination with a number of local and regional partners, including the Ocean County Workforce Investment Board, NJ Office of Planning Advocacy, Ocean County College, the Joint Base, regional organizations such as the Monmouth-Ocean Development Council (MODC) and local chambers of commerce.

NJ Energy Master Plan and the Oyster Creek Nuclear Generating Station

As concerns over the nation's energy supply increase, there has been a corresponding increase in efforts to address shortfalls. The State of New Jersey adopted the NJ Energy Master Plan in

December 2011. The plan recommends a number of alternatives to decrease dependency on foreign resources and ensure energy sustainability in the future.

The Oyster Creek Nuclear Generating Station is the largest power generator in Ocean County. The plant is located on Route 9 in Lacey Township and is the oldest operating nuclear power plant in the country. The plant is currently owned and operated by the Exelon Corporation, headquartered in Chicago, IL. Oyster Creek generates 645 megawatts of electricity and provides enough electricity to power 600,000 homes.

In December of 2010, Exelon announced plans to cease operations at the Oyster Creek station by the end of 2019. This date is 10 years earlier than the period of operations and mandatory closing date that was approved by the Nuclear Regulatory Commission. The earlier closing is consistent with Item No. 1 of the Governor's 10 Point Plan for Barnegat Bay (see Chapter 12).

With the pending closure of Oyster Creek, planning should begin now on the future use of this approximately 700-acre property. Although decommissioning of the nuclear plant will take years to complete and areas of the property will remain off limits for decades, other portions will be available much sooner.

Considering the extensive electric transmission infrastructure in place at Oyster Creek, the property is a prime candidate for other energy production facilities consistent with the New Jersey State Energy Plan. Careful coordination on the redevelopment of the Oyster Creek site could allow for new employment and investment opportunities for the region. Green Energy facilities are well suited for this location and could include related green technology businesses that manufacture related components such as turbines and panels.

A number of different uses can be pursued on a property of this size and early coordination should begin under the NJ State Strategic Plan (see Chapter 7). It will be important to the local economy to replace the large number of technical and high paying jobs that will be lost after the current nuclear plant closes.

Finally, there are areas of the 700 acre property that should be considered for open space preservation. Areas adjacent to existing federal and state landholding would be particularly attractive for direct acquisition.

Green Technology Recommendations

One of the fastest growing industries in today's economy is the field of alternative or "green" energy. The Regional Economic Development Initiative (REDI) is a statewide job development strategy for the focus area of "green" occupations. Ocean County is currently pursuing REDI grant funding for projects associated with training for careers in the alternative energy and technology fields, initiatives to help displaced workers and entry level applicants become green-skills certified, assistance with education resources for students pursuing green degrees at 4-year colleges, and networking and contact services. Due to recent budget constraints, the Ocean County EDC reported that there was a reduction in funding for the REDI initiative by 50% in 2010, but with the recent grant from the U.S. Department of Labor to the New Jersey State Employment and Training Center (SETC) the initiative is moving forward and has begun to target occupational clusters where there is a need for "green" skill development in Ocean County.

Ocean County is also working with the NJ Economic Development Authority (EDA) to promote the Clean Energy Solutions (CES) program which provides low interest funding for businesses interested in incorporating clean and renewable energy solutions, manufacturing clean energy products, or implementing new green technology. These resources are made available to growing businesses at the various workshops offered by the One-Stop System, and at the Business Resource Center in Toms River.

The New Jersey Clean Energy Program (NJCEP) offers financial incentives, programs, and services to municipalities, commercial, and residential customers. Ocean County promotes these programs through the EDC, and has a number of municipalities benefiting from NJCEP services.

Providing education, training, and job preparation for perspective employees is of growing importance in a diversifying economy. Many programs are now available at local high schools, adult high schools, vocational schools, colleges, career academies, libraries, and military bases. The WIB should continue to work with programs that support the education system. These programs include the Student Support Services (SSS) grants, Garden State Employment & Training Association (GSETA), Adult Education Consortium, STAR Awards, Workforce Learning Link, Elevate America Program, Ocean County Private Industry Council (PIC) One-Stop Career Center, Workforce Investment Act Title II grant funding, Ocean County College Center for Business Education & Training, Monmouth/Ocean Small Business Development Centers (colleges & universities), resume workshops, Ocean County Chambers of Commerce, New Jersey Career Development Association (NJCDA), New Jersey Employment Counseling Association (NJECA), Ocean County Consumer Business Expo, and the Ocean County Business Association.

Ocean County was the first County in New Jersey to Develop an Energy Master Plan for its facilities. The plan emphasizes the opportunities for green technology and several implementation projects have been completed to date.

The County should work with various partners to facilitate the development of green technology. The broader application of green energy should be encouraged. Ocean County College, Kean University, and New Jersey Natural Gas have expressed interest in developing partnerships to assist in the development of green corridors. As previously stated, the federal government is pushing for the development of Green Technology and has created grants to assist states, local governments, and the private sector in the development of green technology and infrastructure.

Green technology facilities could be located along highway corridors or within one of the nine existing industrial parks in Ocean County. Green technology businesses include manufacturing and supplying products used to treat deteriorated ecosystems, solar panels, wind turbines, building materials and other new technologies.

Ocean County College and the Vocational Technical schools will continue to tailor programs to train Ocean County residents in the installation of solar panels, wind turbines, bio-fuel systems, etc. Educational programs with strong emphasis on math, science, and technology degrees are well suited for Green corridors. The County should support partnerships with NJIT, Rutgers, Stevens Institute, or other engineering colleges/universities to locate satellite campuses in these areas. Possible locations for satellite campuses are the Ocean County College Campus, the old Ciba-Geigy property in Toms River, or adjacent to Joint Base McGuire-Dix-Lakehurst. An engineering college satellite campus would also be needed for the creation of the Federal Contracting Growth Corridor, to be discussed later in this section. In addition, Joint Base McGuire-Dix-Lakehurst needs scientists, engineers, and other trained individuals to replace their aging civilian workforce. In the 2008 Joint Land Use Report, it was noted that the age of the average civilian worker at Lakehurst was in the mid to late 40's.

Federal Technology Corridor Recommendations

Given its close proximity to the Lakehurst Annex of the Joint Base, the Route 37 corridor in Toms River and Manchester would be a prime location for contractors interested in acquiring federal contracts. Toms River Township and Ocean County should continue to work together to find a solution for the reuse of the Ciba-Geigy property on Route 37. The property is over 1,200 acres, is in close proximity to the Garden State Parkway and has direct rail access. Other possible locations for a Federal Technology Corridor include the Whitesville Business Park in Jackson Township, the Heritage Minerals Property in Manchester Township and the 1,400 acre section of the Clayton Sand Mine Property in Jackson Township, which was recently restricted to non-residential development. Further discussions should be held with the NJ Office of Planning and Advocacy on promoting these and other locations near the Joint Base.

The County has partnered with the New Jersey Institute of Technology's (NJIT) Defense Procurement Technical Assistance Center (DPTAC) located in Newark to establish the "Doing Business with the Military" seminars to train local businesses on the federal procurement process. A satellite DPTAC office could be established at a County site to provide onsite assistance to federal contractors.

Because Ocean County has one of the largest veteran populations in New Jersey, the County maintains a Veterans Service Bureau to assist with on-site employment and counseling services. The County also partners with Vetgroup to provide employment counseling, post traumatic stress counseling, and sheltering. The recent economic downturn has created additional problems with returning veterans trying to find local employment. In 2011, a new office was opened at the Southern Ocean Service Center in Manahawkin to service the residents of Southern Ocean County. The County will continue to sponsor and participate in job fairs targeted to veterans. Ocean County also continues to advocate for a Veteran's Entrepreneur Small Business Administration (SBA) office in Ocean County. The Veteran's SBA and satellite DPTAC offices could create the foundation for a military contractor incubator program.

Ocean County should partner with such organizations as the South Jersey Economic District to help establish a Federal Technology Corridor which would focus on aviation ground support for CERDEC and NAVAIR, as well as additional Joint Base missions. NAVAIR, located on the Lakehurst Annex of the Joint Base, focuses their research on arresting gear. There is also an opportunity for the two aviation parks to collaborate.

Business Incubator Recommendations

An incubator program is a program established to assist start-up companies to develop and grow in the initial years of their existence. In addition, some incubator programs assist smaller established companies in their transition to larger or more diversified businesses.

Ocean County should assist in the identification of both green technology and federal procurement incubator programs. Each incubator program would provide office space, commercial/retail support, and network opportunities for start-up businesses. The programs could also provide consulting services, financing programs, business training and international trade assistance. Some of the consulting services should be coordinated with existing programs such as the Service Corps of Retired Executives (SCORE).

Existing Industrial Park Recommendations

The locations of the growth corridors outlined in this section were based on current transportation infrastructure networks and locations of Industrial Parks. Economic corridors, for instance, could be located near existing industrial parks. In addition, freight rail from the Ciba-Geigy site is available for the transportation of materials to and from the Lakewood Industrial Park.

Collaboration and communication between the Industrial Parks and the Growth Corridors will be important to maximize local resources and ensure efficiency in the transfer of goods and services.
Having warehouse and manufacturing space nearby would allow start-up and relocating companies to save costs and time on goods shipment.

Tourism Corridor Recommendations (Six Flags and Barnegat Branch Trail)

In addition to the coastal areas famous for being tourist attractions along the Atlantic Ocean & Barnegat Bay, there are other tourist attractions throughout the County. The Six Flags Great Adventure, Safari and Hurricane Harbor Theme Park is a major tourist attraction in Jackson Township. In addition, the nearby Jackson Outlets provide tourists with shopping opportunities. Direct access is provided by Interstate 195 and County Route 537. This is an important economic node with ongoing expansion plans.

The Ocean County Barnegat Branch Trail is described in more detail within the transportation section of this report. This regional multi-use trail will eventually extend 15.7 miles from downtown Toms River southward to the historic town of Barnegat. While interconnections with local parks and recreation areas are promoted, there is also an opportunity to promote local business and shopping areas. The trail connects a number of commercial areas and is increasingly used by residents for local trips. Ocean County should continue to work with local officials and chambers of commerce on the opportunities presented by this expanding trail.

Figure 3-1: Existing Industrial Parks

1. Alfred L. Newman
   Industrial Park
   Berkeley Township
   62 acres; Cty. Rte. 530

2. Brick Industrial Park
   Brick Township
   24 acres; State Hwy. 70

3. Eagleswood Business Park
   Eagleswood Township
   2 acres; US Route 9

4. Whitesville Industrial Park
   Jackson Township
   150 acres;
   Cty. Rtes. 527 & 547

5. Lacey Business Park
   Lacey Township
   30 acres; US Route 9

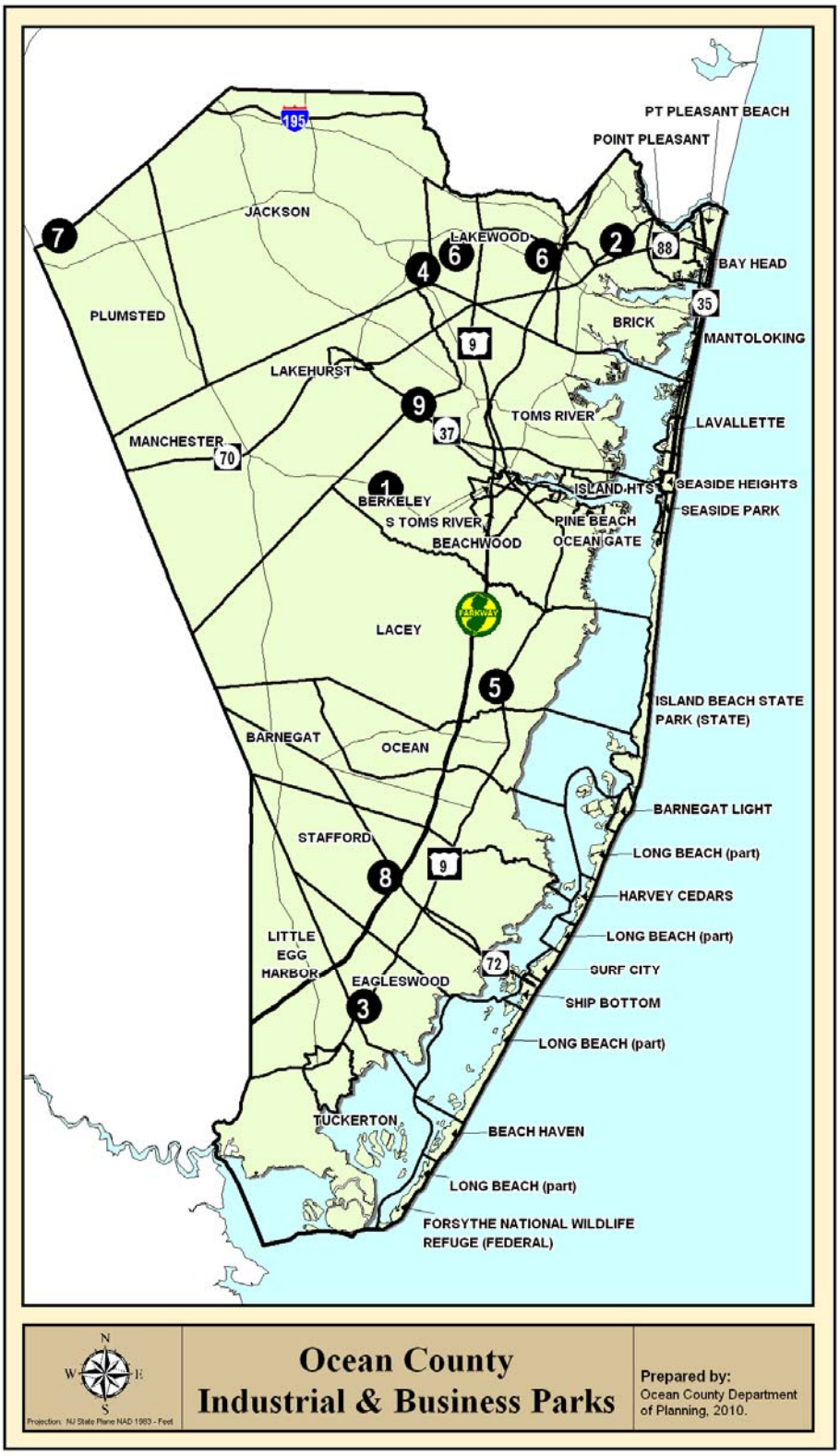
6. Lakewood Industrial Park
   Lakewood Township
   1,800 acres; GSP,
   State Hwys 88 & 70,
   New Hampshire Ave.

7. Plumsted Industrial Park
   Plumsted Township
   50 acres; Cty. Rte. 537

8. Stafford Business Park
   Stafford Township
   236 acres; GSP,
   State Hwy. 72

9. Toms River Corporate Park
   Toms River Township
   153 acres; State Hwy. 37

Note: Acreage is current at the time of printing and may change.



Redevelopment of Existing Downtowns

There are many benefits to concentrating resources on existing downtowns. These areas have existing infrastructure and mixed-use development patterns that connect businesses with local populations. There are often re-use or re-development opportunities that may be eligible for financial assistance. Mixed-use development encourages pedestrian mobility versus traditional growth patterns which are automobile dependent. Ocean County has a number of historic downtown areas that are looking to attract more visitors. These areas can benefit from creating pedestrian-friendly streets that could encourage people to visit and spend time visiting local business and attractions. The Redevelopment Tools section can assist in the redevelopment of existing downtown areas.

The Main Street New Jersey program under the NJ Department of Community Affairs provides participating communities with technical assistance and training for revitalizing historic downtowns. Currently, only New Egypt in Plumsted Township is participating in the program. Other downtowns should consider participating in this important program in the future.

Other towns, such as Toms River, have established Business Improvement Districts (BIDs) to promote downtown events and return locally generated tax dollars to the district. Towns that share a common resource, such as Toms River and South Toms River, may consider partnerships to redevelop and promote the riverfront area. There are numerous business and recreational uses that can be coordinated to enhance the area as a regional attraction.

Downtown Toms River, the County Seat
Photo by Ocean County Department of Planning

Brownfield Site Recommendations

Brownfield Sites are defined by the New Jersey state law as **"**any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant" (N.J.S.A. 58:10B-23.d). There are currently 189 Brownfield Sites in Ocean County (for sites per municipality, please See Chapter 7, Land Use).

The New Jersey Department of Environmental Protection provides funding for the cleanup and reuse of these sites. Large Brownfield sites should be targeted for cleanup and redevelopment by the municipalities. One large site that would be an excellent candidate for the program is the old Ciba-Geigy property on Route 37 in Toms River. Ocean County will continue to make data available through state partners on Brownfield sites.

Chapter 4

Transportation and Mobility

Legislative Updates

Central New Jersey has been designated as a non-attainment area for certain air quality standards. The 1990 amendment to the Federal Clean Air Act placed greater emphasis on reducing passenger vehicle miles and reducing the number of automobile trips as a way to combat air quality problems. In order to improve air quality, Ocean County continues to advocate for transportation alternatives, including rail services, modernization of highways, park and rides, NJ Transit improvements, and ferry service.

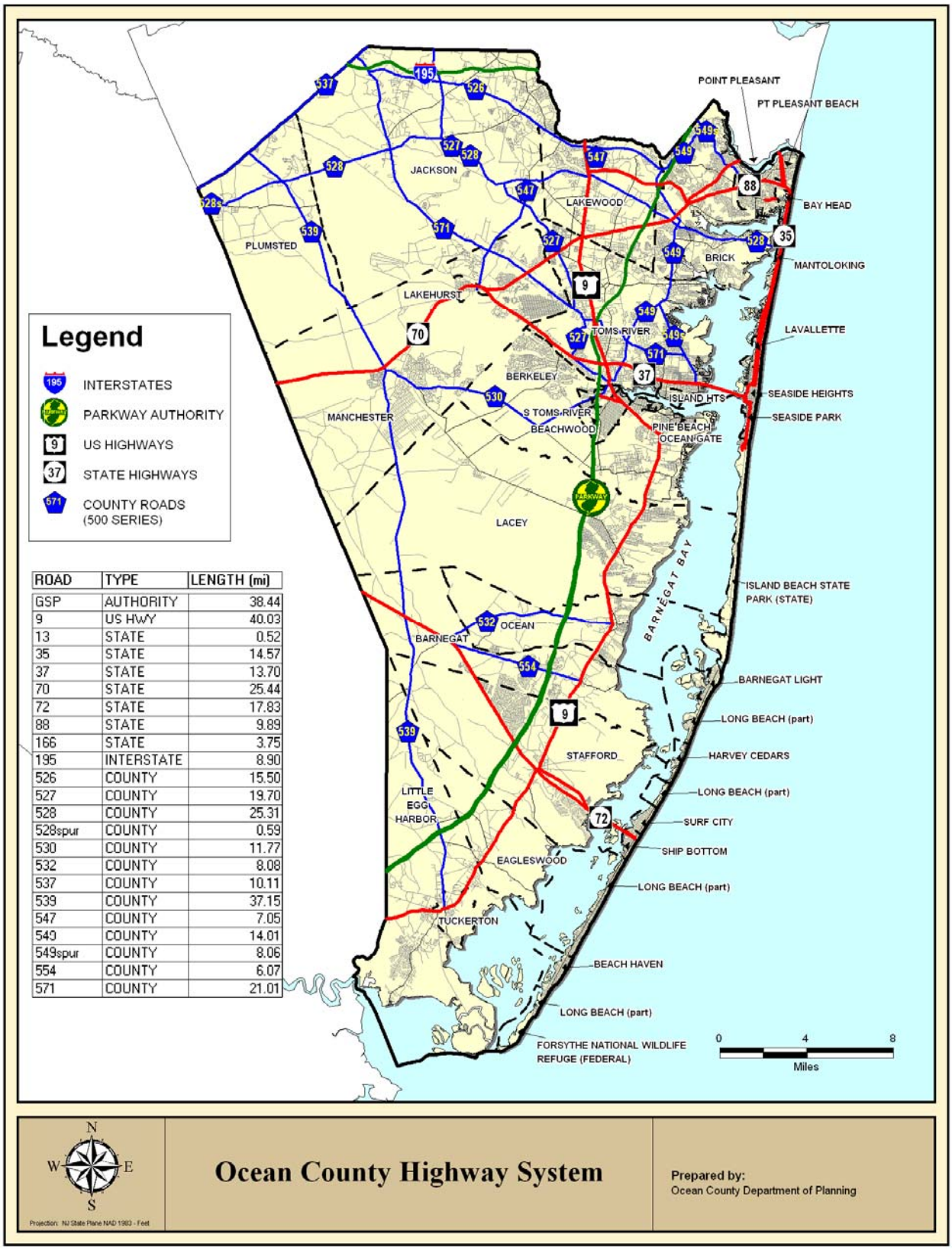
The Intermodal Surface Transportation Efficiency Act (ISTEA) requires federal and state transportation agencies to examine alternatives to building new highways. ISTEA provides greater emphasis and funding for transit and non-traditional transportation modes such as walking and bicycling.

The New Jersey Department of Transportation (NJDOT) adopted a state highway access management code in 1992. This code applies to all state highways and limits access to state highways by promoting the use of shared driveways, access to secondary streets that intersect with state highways, and interconnected parking lots. NJDOT has also developed roadway design standards designating the number of lanes and roadway width.

The New Jersey Transportation Trust Fund Authority (TTFA) was created by the State Legislature as an independent agency of state government whose sole purpose is to finance the annual capital program of the NJDOT and NJ TRANSIT.

Money to reimburse the NJDOT and NJ TRANSIT for Transportation Trust Fund capital project expenditures includes all or portions of taxes applied on motor fuels, petroleum product gross receipts and vehicle sales, which are all constitutionally dedicated to the TTFA. The Legislature has also statutorily dedicated the proceeds of the "Good Driver" motor vehicle registration

Figure 4-1: Ocean County Highway System



ROAD	TYPE	LENGTH (mi)
GSP	AUTHORITY	38.44
9	US HWY	40.03
13	STATE	0.52
35	STATE	14.57
37	STATE	13.70
70	STATE	25.44
72	STATE	17.83
88	STATE	9.89
166	STATE	3.75
195	INTERSTATE	8.90
526	COUNTY	15.50
527	COUNTY	19.70
528	COUNTY	25.31
528spur	COUNTY	0.59
530	COUNTY	11.77
532	COUNTY	8.08
537	COUNTY	10.11
539	COUNTY	37.15
547	COUNTY	7.05
549	COUNTY	14.01
549spur	COUNTY	8.06
554	COUNTY	6.07
571	COUNTY	21.01

surcharge, heavy truck registration fees, and contributions from the two highway toll road authorities. The Authority issues "state contract" bonds with maturities up to 31 years within the bonding cap established by the Legislature. Audited financial statements are published each year by an external auditing firm which summarizes the Authority's revenue, bonding and expenditure results for the preceding 12 month period.

As of 2010, all State TTFA money collected will be used to pay off existing bonds. No new capital programs can be authorized in fiscal year 2012 without additional revenue sources. The County will continue to encourage the state to provide sufficient funding to modernize the transportation system.

Roadway Classification Standards and Public Road Mileage by Jurisdiction

The NJ Department of Transportation (DOT) arranges roadways into a hierarchy and classification system based upon function. This classification system considers the degree of urbanization, intensity of development and population density of the surrounding community. The roadways are then further classified into urban and rural designations used primarily for determining eligibility for funding such as the Aid to Urban Systems Program and the High Risk Rural Roads Program.

The classifications include major and minor arterials, major and minor collectors, local streets and interstates. The following table displays the total amount of roadway for all classifications in Ocean County, provided by the NJDOT.

Major arterials are under State jurisdiction and provide for a vast amount of local and regional traffic flow. These roads are designed to handle substantial volumes of traffic and there should be a limited number of intersections, driveways and frontage. Minor arterials are under County and local jurisdiction and provide for inter-municipal movement at a lower carrying capacity than major arterials. Although these streets handle significant traffic volumes, adjoining land use is often residential in character. As with major arterials, intersections, driveways, and frontage activity should be minimized along these roadways in order to preserve carrying capacity.

Figure 4-2: Miles of Roadway by Functional Class

Functional Class	*Miles of Roadway*
Rural Interstate	0
Rural Principal Arterial	25.05
Rural Minor Arterial	5.06
Rural Major Collector	49.37
Rural Minor Collector	0
Rural Local	102.98
Urban Interstate	8.9
Urban Freeway/Expressway	30.11
Urban Principal Arterial	115.48
Urban Minor Arterial	218.12
Urban Collector	176.61
Urban Local	2157.61
Total	2889.29
Total Rural Mileage	177.49
Total Urban Mileage	2706.5

Source: NJDOT

Major collectors are under County and local jurisdiction and provide access and circulation between various points within the community for moderate volumes of traffic. Because their function is to promote free traffic flow, major collectors should minimize parking and access driveways that may interrupt this flow. Major collectors should be designed for a maximum average daily traffic (ADT) of about 3,000 vehicles. Minor collectors provide access to fronting properties and also collect traffic from developments and carry it to major collectors and arterials. The traffic on these streets should be limited to vehicles collected from intersecting local streets and the small amount generated on the street itself. Minor collectors are not intended to service interstate/interregional, regional, or cross-town traffic. These roadways should be designed to discourage short-cutting by through traffic from outside the neighborhood. Local streets serve to provide access to land activities that front upon them (primarily residential) and serve no network function in terms of long distance or intraregional linkages. They are designed to carry only the traffic generated on the street itself. Private substandard streets are discouraged as they do not permit sufficient emergency access and other public services.

Interstate 195 extends across northern Jackson Township and provides east-west access between Trenton and southern Monmouth County. It also provides a connection to Interstate 295, the NJ

Turnpike, US Route 9 and the Garden State Parkway. Two full Interchanges are located in Jackson Township providing access to County Routes 527 and 571.

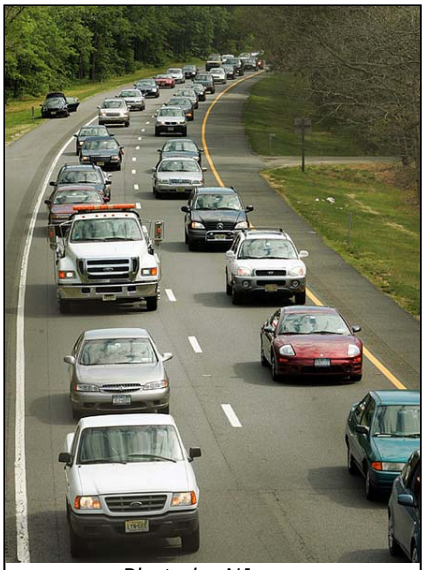


Photo by NJ.com

The Garden State Parkway, Current Conditions and Future Improvements

The Garden State Parkway (GSP) is the major north-south arterial roadway in the County, extending 40 miles from Brick Township to Little Egg Harbor Township. Opened to traffic in the mid-1950's, the GSP is a limited access toll road that runs from the NY State border to Cape May. It provides connections to the state's major east-west arterials including Interstates 195 and 287, the NJ Turnpike and the Atlantic City Expressway. For many years, the Parkway was operated under the NJ Highway Authority. It is now administered by the NJ Turnpike Authority. Ocean County contains the longest segment of the Parkway of any County in New Jersey and significant improvements have been completed in recent years. Some of the improvements were to the 16 interchanges in Ocean County listed below:

Figure 4-3: Parkway Interchanges in Ocean County

Interchange	*Location*
91	Route 549 Lakewood/Brick
90	Route 549 Brick/Lakewood/Pt. Pleasant
89	Route 528 Northbound, Airport Road South
88	Route 70 Lakehurst/Lakewood/Brick
83	Route 9 Pleasant Plains/Wildwood
82A	Lakehurst/Camden
82	Island Heights/Seaside Heights
81	Lakehurst Rd.
80	Beachwood/So. Toms River
77	Berkeley
74	Forked River/Waretown
69	Route 532 Waretown/Forked River
67	Route 554 Barnegat/Chatsworth
63A	Route 72 West Camden/Chatsworth
63	Route 72 East Manahawkin/Long Beach Island
58	Route 539 Tuckerton/Trenton

Source: NJ Turnpike Authority

As of the summer of 2011, there were three lanes in each direction from Interchange 91 in Brick Township to Interchange 63 in Stafford Township. A recent widening and modernization project was completed from Toms River to Stafford which significantly improved vehicular circulation. Construction on the second phase of widening from mileposts 48 to 63 commenced in October 2011 and is scheduled for completion in mid-2013. The last phase of the widening project will be south of Ocean County and has yet to be scheduled. Because of the lack of capacity improvements to State Highways and the uncertainty of additional passenger rail service, Ocean County continues to strongly support the Parkway improvements to address commuter, tourist and evacuation needs of residents and visitors.

The County has partnered with the NJ Turnpike Authority over the past 15 years to upgrade and enhance interchanges by adding on-off movements and multiple access points. Agreements were put in place to advance the improvements of Interchanges at Mile Posts 67, 69, 77, 83, 89 and 91. Over the years, improvements have been completed at 67, 69, 77, and 89.

The County has successfully secured federal funds to underwrite its share of costs for two of the most expensive upgrades (Interchanges 63 and 91).

In October 2011, the County awarded a contract for $3.692 million to improvements to Interchange 83. These improvements, which include a connector road, are designed to improve traffic flow at the intersection of Routes 9 and 571.

The New Jersey Turnpike Authority is scheduled to widen the Garden State Parkway for the restoration of shoulders between Milepost 83 in Toms River Township, Ocean County and Milepost 100 in Wall Township, Monmouth County. The existing roadway will be expanded within these limits by constructing 12 foot shoulders on each side of the northbound and southbound roadway, along with widening or replacing bridges and other infrastructure improvements. Ocean County will be entering into cost sharing agreements in late 2011 with the New Jersey Turnpike Authority to replace six bridges, two at each location, along Old Freehold Road and Church Road in Toms River Township and Chambers Bridge Road in Brick Township.

The bridges will be widened to accommodate the future County road widening projects at all three locations.

The cost sharing agreements are consistent with an ongoing partnership between Ocean County and the NJ Turnpike Authority. Since most interchange improvements on the Garden State Parkway involve County Roads, the Ocean County Engineering Department has taken the lead on the design and permitting phases for each project. Once permits have been secured, the Turnpike Authority reimburses Ocean County for its share of the project. This arrangement has streamlined the permitting process and resulted in a significant savings in both time and money.

Route 9 Initiative

Constructed in 1926, Route 9 is a 522 mile highway stretching across state boundaries from Laurel, DE to Champlain, NY. Route 9 is especially important to Ocean County, as it runs through 13 municipalities and borders some of the busiest commercial cores in the County. As a Parkway alternative, Route 9 continues to see large traffic volumes. Various citizen organizations and stakeholder groups have also formed throughout the years and remain vocal in support of widening Route 9. However, for the foreseeable future, available funds and a commitment by the State to widen Route 9 remain uncertain.

Despite this stalemate, Ocean County continues to urge the NJ Department of Transportation to retain the current Design Typical Standard (DTS) for Route 9. Ocean County has also worked with the affected municipalities to recognize the DTS for Route 9 in the development review process to ensure that the buffers to Route 9 are protected. If new development is allowed to encroach on the DTS, the cost to acquire these properties for an eventual widening would be prohibitive.

With current restraints on the widening of Route 9, Ocean County encourages municipalities to create circulation plans and consider traffic improvements on local roads that may offer various routes to and from key destinations such as shopping centers, schools and large residential subdivisions. Ideally, local trips should be kept off of Route 9 and proper connections should be

created and/or maintained in areas where residents can walk or bike on local roads to destinations instead of driving vehicles.

In 2011, the North Jersey Transportation Authority (NJTPA) initiated a Congestion Relief Study of Route 9 through Toms River and Lakewood Township. Also in 2011, the NJDOT initiated a design project to coordinate all traffic signals along Route 9 in Toms River and Lakewood Townships to improve traffic flow. Ocean County is partnering with the NJTPA and the NJDOT Authority to advance many modal improvements along this corridor. This Congestion Relief Study could lead to the development of an Access Management Plan for this segment of Route 9.

Access management, which defines standards for driveways and other means of physical access to and from State highways to preserve the capacity of the State highway system and mobility in highway transportation corridors, is also key to development along the route. Shared parking between commercial sites on the roadway will cut back on access driveways on Route 9 and aid in speed maintenance. Municipalities should encourage the "park-once" initiative allowing for shoppers to walk to and from various sites in safe and accommodating pedestrian walkways. Secondary access roads running parallel to Route 9 and located behind busy commercial sites are also encouraged to allow for vehicular trips generated by neighboring residential development to and from sites while avoiding Route 9 whenever possible. Locating parking in the rear of buildings will further encourage use of rear access roads by accommodating those who wish to avoid Route 9.

Local jurisdictions should consider leveraging development approvals on Route 9 to require developers to consider the effects of additional vehicles trips and incorporate mobility enhancements that could offset this rise. New development should lay out a plan for:

- Pedestrian walkways and complete sidewalk connections to improve pedestrian safety;
- Shared parking between neighboring sites;
- Bicycle paths on local intersecting roads as well as on-site bike facilities;
- Enhancements at local park-and-rides and bus stops;
- Addition of rear access roads and rear parking;
- Planning board support of right of way preservation for future expansion through Design Typical Standards (DTS).

Since municipal zoning, land uses and development intensities on Route 9 change from town to town, local officials should consider development approaches that work best for the specific location. Design characteristics should not rely solely on automobile traffic, but should incorporate elements such as aesthetic integrity, consistency, bicycle and pedestrian mobility and general safety.

Safety improvements on Route 9 have never been more important. In May of 2010 the Tri State Transportation Campaign ranked Ocean County as the fifth-most dangerous County in the tri-state region (NJ, southern NY and Connecticut) for pedestrians ages 60 and up. A major part of this ranking was due to pedestrian fatalities involving senior citizens on Route 9 from 2006 to 2008. Route 9 is not the only roadway in the County seeing senior citizen pedestrian related accidents and fatalities, and because of this, the County intends to work with the Federal Government, the State and municipalities in assessing the accident-prone areas and assisting appropriately in problem mitigation. The County will continue to encourage the incorporation of sidewalks and pedestrian walkways in the local development review process to improve pedestrian safety.

The design and safety concepts discussed above could be utilized for all development and transportation planning projects in the County, be they local, state or federal. For fiscal year 2011, the NJDOT has six improvement projects planned for Route 9 in six different municipalities. While these projects are slated for the 2011 State Capital Program, it is highly unlikely that all will be fully funded and therefore completed. The State acknowledges that Capital Projects need to be ranked based on priority and availability of funds.

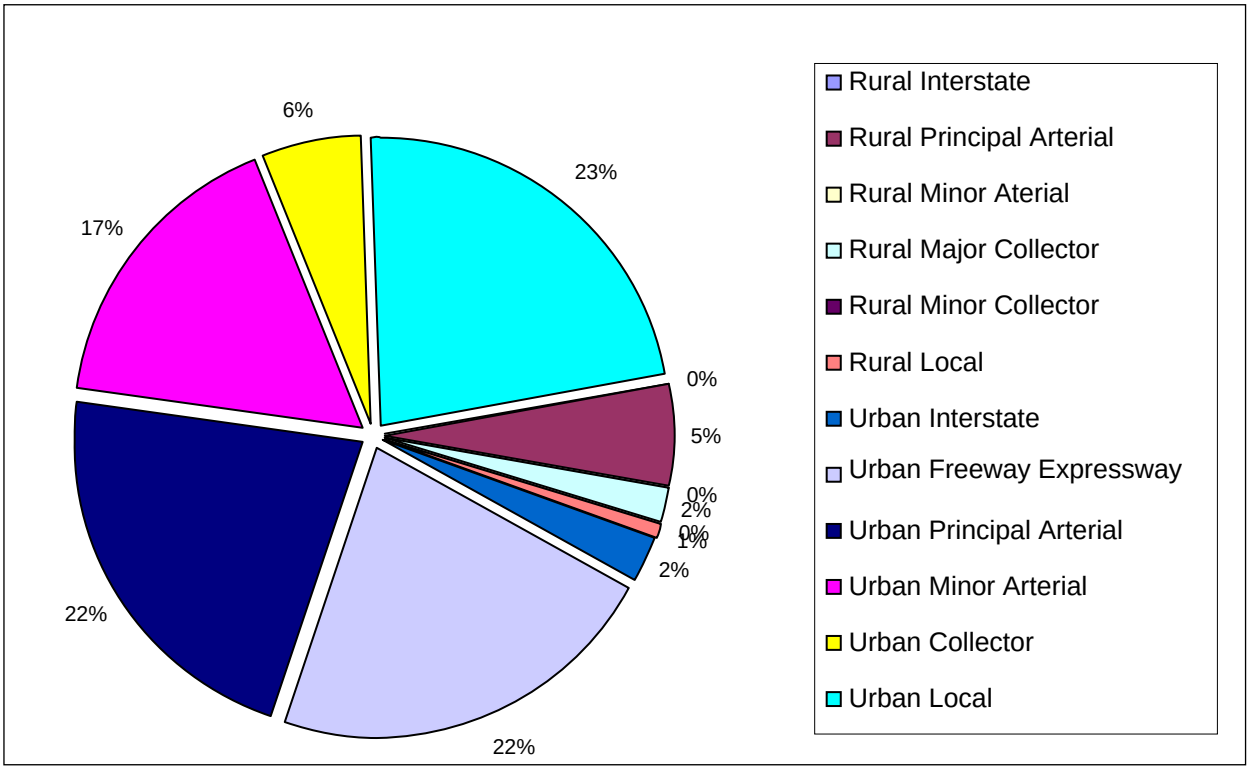
Figure 4-4: FY2011 Route 9 Projects in Ocean County

Municipality	***Project***
Eagleswood	West Creek Drainage Improvements
Lakewood	Bus Rapid Transit
Lakewood & Toms River	Congestion Relief
Ocean Township	Waretown Creek Bridge Project
Pine Beach Boro and Berkeley	Mizzen and Washington Ave Intersection Improvements
Tuckerton	Green St Intersection Improvements

Source & Project Sponsor: NJDOT

Daily Vehicle Miles Traveled (VMT) is a standard measure of activity that is estimated from the traffic volumes recorded on sampled road segments and displays the amount of daily traffic on each roadway classification.

Figure 4-5: Vehicular Miles Traveled (VMT) by Functional Class – 2008



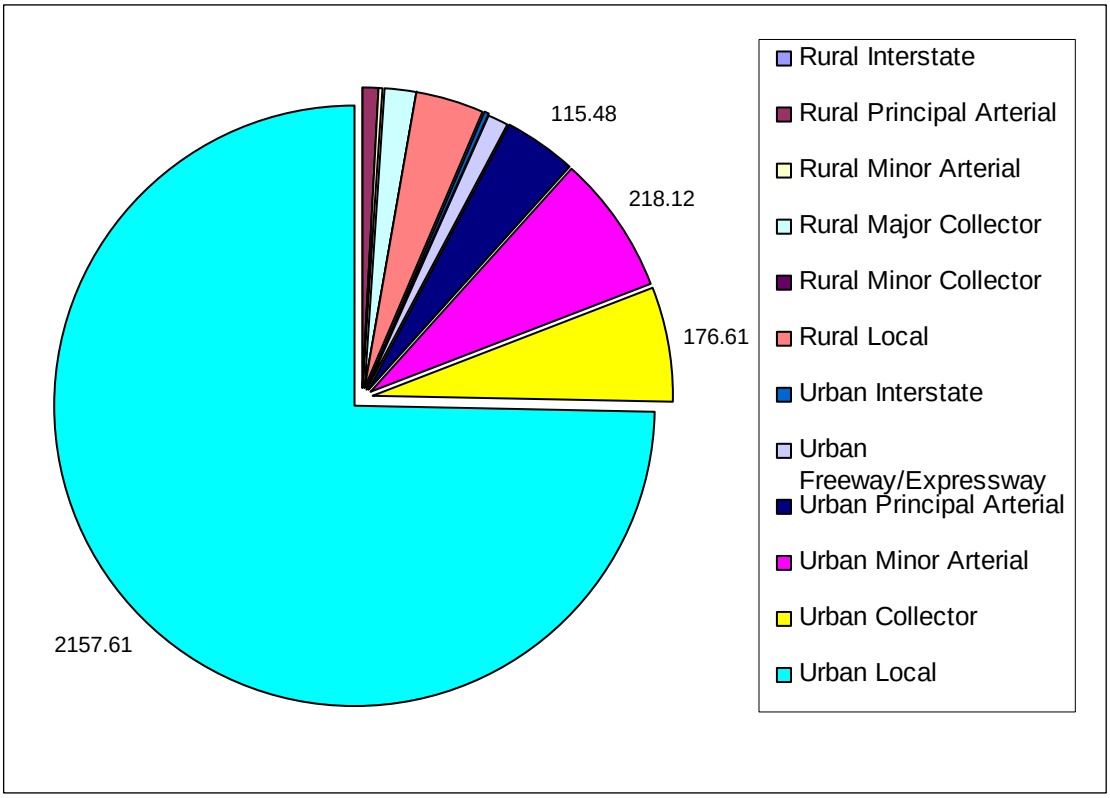
Data Source: NJDOT. Prepared by the Ocean County Department of Planning.

Figure 4-6 shows that the vast majority of the County roads are classified as local urban roads. However, when compared to VMT in the County (Figure 4-5), local urban roads are not experiencing a proportionate level of use.

While there are almost 2,158 miles of local urban roads in the County as opposed to only 115 miles of urban principal arterial roadway, both road classifications accommodate almost three million daily VMT.

In 2008, Ocean County ranked 6th out of all 21 NJ counties in total VMT on all roadways with a total of 12,432,482 VMT. Bergen County had the highest VMT with 20,838,702 and Salem County had the lowest with 2,195,663 VMT.

F igure 4-6: Miles of Roadway by Functional Class



Data Source: NJDOT. Prepared by the Ocean County Department of Planning.

Trucks and Large Commercial Vehicle Movement

Trucks and large commercial vehicles are permitted on the GSP and Route 9 through the entire length of Ocean County. Problems arise when trucks attempt to avoid Interstate traffic and travel on less congested county roads. This can be a particular problem for some of the established downtown areas where truck traffic can conflict with bike and pedestrian movements, particularly near schools. Ocean County will continue to work with municipalities to plan for commercial transportation while maintaining safe roadways for motorists and pedestrians.

Ocean County's Capital Improvement Program

State Transportation Aid funds are appropriated by the Legislature annually for the improvement of public roads and bridges under County jurisdiction. Public transportation and other transportation projects are also included. Counties are allotted funds no less than their funding received from the 1984 apportioned Federal Aid Urban System funds and State match including

their portion of any non-attributable funds made available to Small Urban Areas. The minimum allotment is $300,000.

Each county must develop an Annual Transportation Program (ATP) or Capital Improvement Program (CIP); Ocean County creates a CIP. In accordance with the adoption of revisions to the County Aid regulations N.J.A.C. 16:20A, the CIP shall list a pool of eligible projects by name and location with a brief description of each project and an estimate of the construction cost over a six year period. The CIP must be approved by the Board of Chosen Freeholders and submitted to the Local Aid District Office for approval.

Ocean County's CIP for Fiscal Year 2011 State Aid to Counties was adopted on April 6, 2011 and includes various construction, design, resurfacing and improvement projects in the total amount of $102,941,000 for the six year program period.

The County is moving away from large scale widening projects, and towards strategic investments in safety and capacity enhancements. The new emphasis on "nodal" improvements involving intersections, new signals and signal upgrades is more consistent with the current regulatory environment.

The Importance of Physical Design in Transportation

Another planning initiative that should be used in the design of safe and predictable streetscapes is Complete Streets. Complete Streets exist where streets are designed and maintained to be safe for users of all ages and abilities, including the elderly, children, and individuals with disabilities. Supporting policies should direct transportation planners and engineers to consistently design and construct the right-of-way to accommodate all anticipated users, including pedestrians, bicyclists, public transportation users, motorists, and commercial vehicles.

Improvements should also consider inclusion of policies included in the following programs and design concepts: Walkable Communities, Safe Routes to Schools, Safe Routes to Transit, Transit Villages and Rails-to-Trails. Ocean County is dedicated to assisting municipalities should they wish to participate in these programs, as well as participating in these programs and workshops

itself. Examples of some of the County-run initiatives in recent years have been Walkable Community Workshops in Toms River, Lakewood and Manchester, the design of the Barnegat Branch Trail and the Subregional Study on Pedestrian Mobility in Downtown Toms River and Rail Trail in New Egypt.

Gateways or entrances of established downtowns, public recreation areas, universities and schools, etc., should be visually recognizable as a transition to an area with a distinct character. The character of these areas generally consists of on-street parking, higher volumes of pedestrians and cyclists, as well as slower traffic moving in and out of numerous entrances and exits to street-fronted buildings. Signage should clearly point out these factors and urge drivers to respect the character of the area, lower their speed, and direct them to facilities and parking. One area where a visible transition is needed is the GSP exit onto Chambers Bridge Road in Brick Township. At this location, cars exit the GSP at high speeds directly in front of the high school, municipal offices, public library and just blocks from the Primary Learning Center and a large senior citizen apartment building. The township and County should work together on streetscape improvements at this site to make it safer for all users and modes of transportation.

Plans for parking should be accompanied by a street capacity analysis to assure for adequate parking by new development, especially in downtowns and around residential areas where pedestrians are more prevalent. Shared parking may be explored by adjoining properties to limit the amount of driveways from adjacent streets. Shared parking also encourages the "park-once" approach in which drivers will be more likely to stay parked in one spot as they visit multiple destinations in the area. This will not only lessen traffic congestion but will encourage a more walkable atmosphere. Parking at the County Complex in Downtown Toms River is a good example of parking that works, as it is centrally located and easily accessible from the downtown area.

Ocean County encourages those municipalities with downtowns to develop thorough downtown circulation plans, which clearly lay out a parking strategy, as well as adequate and safe vehicular pedestrian mobility options. This is especially useful in areas such as Lakewood Township, where the downtown is intersected by Route 9, a major arterial. Another example of an

established downtown in the county being affected by highways of regional and state importance is Route 9 and the Garden State Parkway in downtown Toms River Township. State highways are important to regional transportation and goods movement but their multi-lanes and high speeds require sufficient attention and planning by localities to assure satisfactory and safe pedestrian and bike movement as well as local vehicular trips.

Factors such as highway and local road congestion, truck traffic, seasonal population inflations and the limited availability of funds all make comprehensive transportation planning extremely vital in Ocean County. All transportation projects should take into consideration:

- Integration with surrounding land uses to ease congestion – land use and transportation can no longer be considered two separate initiatives
- Smart growth principals such as walkability and form-based code to heighten connectivity through proper design
- Systems connectivity such as bike paths and bus stops to and from key destinations such as rail to allow for greater access
- Goods movement through truck routing to ease local impacts while supporting industry
- Environmental considerations and lowering of greenhouse gas emissions

Available Modes of Transportation and County Transportation Services

There are numerous travel modes in Ocean County including auto, bus, limited rail, air and waterborne. Each has its own unique set of issues. Ocean County will continue to promote programs that reduce automobile volume and encourage the expansion of alternate services such as passenger rail.

The Census Transportation Planning Package (CTPP) [1] shows that most of the 13 counties under the jurisdiction of the North Jersey Transportation Planning Authority (NJTPA), which is a Metropolitan Planning Organization (MPO), had slight or modest increases in their public transportation mode shares while Ocean's share has remained equivalent, hovering around 2%

[1] Up to and including Census 2000, detailed data was collected by the US Census Bureau in the decennial censuses through the long form, including information incorporated into the Census Transportation Planning Package (CTPP). For Census 2010, the long form was replaced by the American Community Survey (ACS), a more frequent survey with a smaller sample size. The most currently available transportation data is from the 2006-2008 3-year American Community Survey (ACS), September 2010. Note that data is approximate due to margin of error.

from 1990 to 2008. From 1990 to 2000, the average travel time to work in the county increased about 5 minutes from 27 to 32 minutes, and leveled off to an average of approximately 31 minutes as reported in the 2006-2008 CTPP survey. This data suggests that Ocean County residents are limited in their transportation mode choices to places of employment, while travel time to work has possibly begun to peak during this decade.

At 1.75 vehicles per household per the most current data, Ocean County fits right within the state average and reflects its location and character of being between the more urban counties to the north and more rural and suburban counties to the south and west. The number of vehicles per household had increased more than any other county from 1990 to 2000, which may reflect the increased development and economic growth and opportunities for the county's residents in that time period, while in an area with limited public transportation opportunities.

Bus Transportation

NJ Transit currently operates four bus routes that service the Toms River Park and Ride located on Highland Parkway South and Water Street. Destinations include Newark, New York City, Atlantic City and Cape May; additional stops on these routes vary in the County depending on the season.

To assist in-County travel, the Ocean County Department of Transportation Services operates *Ocean Ride*. Ocean Ride is particularly important in Ocean County where 30% of the primary ridership is age 55 and over and 20% is 65 and over. Ocean Ride offers fixed bus routes to and from destinations throughout the County including the Toms River Park and Ride and the Point Pleasant Beach rail station.

The Ocean County Department of Transportation Services maintains current bus schedules and participation guidelines. To receive additional information, contact 732-736-8989 or visit the website at www.co.ocean.nj.us/Transportation.

Waterborne Transportation

There are three inlets in Ocean County that provide direct access to the Atlantic Ocean. The inlets from north to south are the Manasquan Inlet, the Barnegat Inlet and the Little Egg Harbor Inlets. There are hundreds of publicly owned marinas in Ocean County and thousands of recreational and commercial craft. There are also boat rentals and limited water-taxi services to various shore towns provided by private businesses. There is an ongoing need to maintain safe navigation channels which falls under the responsibility of the US Army Corps of Engineers and the NJ Department of Environmental Protection.

Air Travel and Airport Facilities

The R.J. Miller - Ocean County Airport is located within a larger Airpark area and has been administered by the County Planning Department since 1990. This 420-acre general aviation airport is located 5 miles southwest of Toms River in Berkeley Township. The facility features a 6,000-foot runway and accommodates various aircraft, including private planes, small corporate jets, forest fire planes, the Civil Air Patrol and emergency services aircraft.

Ocean Aire is a full-service fixed base operator (FBO) offering complete aircraft maintenance and support services, charter flights, flight instruction and avionics. Other on-site facilities include aircraft hanger storage units and a 10,250 sq. ft. terminal building completed in 2011. Other recently completed projects include a new security camera system, new taxiway LED lights and signage, a new fuel tank and a runway crack repair project.

There are other County facilities located at the RJ Miller Airpark that are not connected to the airport operations. These include the Sheriff's Office of Emergency Management, a Road Department Garage, a NJ Motor Vehicle Commission Road Testing Facility and two County Parks Areas: an off-leash dog park and the County Fairgrounds.

Another airport located in Ocean County is the Lakewood Airport, operated and managed by Lakewood Township's Airport Authority. Aviation services are provided by the FBO, Aviation Charter, Inc. Lakewood Township is planning several improvements which are included within its facilities Master Plan. Eagles Nest Airport in Eagleswood Township re-opened several years

ago. The owners recently completed several improvements which have greatly enhanced this small general aviation airport.

Scheduled Air Service is available to Ocean County at Newark Liberty Airport approximately 60 miles to the north; Philadelphia International Airport 70 miles to the west; or Atlantic City International Airport 45 miles to the south. Although Atlantic City provides only limited service, it is increasingly used by Ocean County residents for flights to Florida and other southern destinations.

Rail Service

There are two rail stations in Ocean County, one located on Osborne Avenue in Bay Head Borough and the other on North Arnold Avenue and Route 35 in Point Pleasant Beach. Both stations are fixed on the North Jersey Coast Line. One NJ Transit bus route services the Point Pleasant Beach station and there is no service at the Bay Head station.

The Monmouth-Ocean-Middlesex Rail Initiative (MOM)

The restoration of passenger rail is critically needed in the Ocean-Monmouth region, one of the fastest growing regions of the State, to provide a convenient, reliable travel choice for commuters, visitors and transit dependent residents. Rail service in the northeast section of the County in Point Pleasant Beach and Bay Head Borough has proven to be inadequate in meeting the County's needs as these locations do not offer regular, direct access to the Northeast Corridor (Newark Airport, Penn Station, Manhattan, etc.)

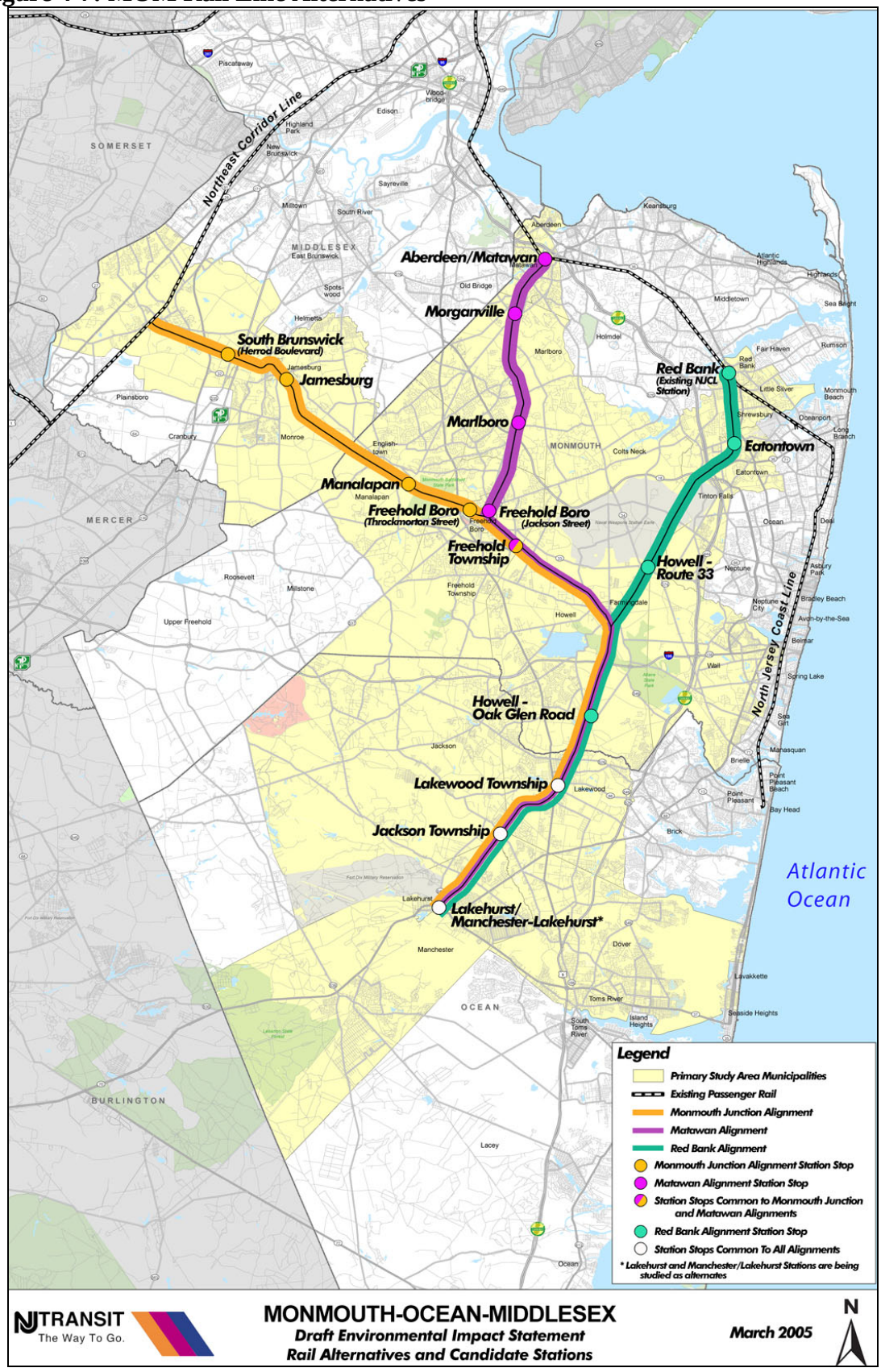
MOM stands for Monmouth-Ocean-Middlesex, the three counties which would see rail service expansions under the project. Three service alignments were studied taking into account existing services, development and redevelopment needs (specifically platform and parking locations) and environmental features in need of protection. The potential alignments include Lakehurst to either Monmouth Junction, Matawan or Red Bank.

Ocean County has long supported the Monmouth Junction alignment which would provide a one-seat ride (no transfer necessary) to Newark Airport, New York City and Washington D.C., among other stops. The Monmouth Junction alignment would provide public transportation to the fastest growing sections of Ocean and Monmouth Counties, of which some municipalities have the fewest public transportation options. Route 9 and Parkway congestion could be greatly reduced by this alignment as the greatest number of residents will be serviced. Also important to note, aside from one short section, the tracks along this route are all currently used by freight trains of Conrail Shared Assets.

By reducing congestion and connecting communities to urbanized areas, MOM service has the potential to create jobs and improve the economic climate in Ocean County. Along with allowing for economic development around County train stations, property values in surrounding communities will benefit from the presence of a direct link to the busiest public transportation route in the entire country. In the Mass Transit Tunnel Project Information Kit, NJ Transit explained that in 2004 researchers at Columbia University studied real estate values around the Morris and Essex Lines after the introduction of the midtown DIRECT Service. They found that homes within walking distance of stations were worth about $90,000 more than comparable homes elsewhere in the same community. That represented a 33% premium for homes near the stations.

NJ Transit has completed its environmental impact study (DEIS) phase of the project. Ocean and Monmouth Counties disagreed with preliminary ridership figures released by NJ Transit during the DEIS process in Spring 2005. As a result, Monmouth County conducted a comprehensive analysis of land use specifically focused on growth potential of developable land areas, proximity to the rail line, local zoning and consistency with the State Development and Redevelopment Plan. In May 2005, Monmouth County Planning Department released ridership projections for each of the three rail alignment alternatives. The Monmouth County projections were significantly higher than the NJ Transit figures. Even higher ridership numbers were projected by AECOM, an independent expert working with the two counties to analyze the preliminary ridership levels prepared by NJ Transit.

Figure 4-7: MOM Rail Line Alternatives



As seen in Figure 4-8, the Monmouth Junction alignment of the MOM Line has the potential to service over 40,000 rides per day, potentially reducing the number of cars on congested roads located throughout the County.

In the past, NJ Transit's Development Work Program listed the MOM project as one of its many projects being allotted money in the 2011 fiscal year.

Figure 4-8: MOM Rail Line Alternatives and Projected Ridership

Rail Alignment	*NJ Transit Projected Ridership*	*Monmouth County Projected Ridership*	*AECOM Projected Ridership*
Monmouth Junction	9,000	40,700	41,000
Matawan	10,900	22,200	25,800
Red Bank	7,900	12,000	20,000

Source: AECOM Report

Proposed Gateway Tunnel Project

As an alternative to Access to the Region's Core (ARC) tunnel project which was terminated in 2011, the Gateway Tunnel Project has now surfaced as the preferred alternative to expand capacity and accommodate the additional train traffic that would be generated by MOM and other pending rail proposals. The current tunnels are now a century old and their two-track design cannot meet the carrying capacity needed to extend service into central NJ. According to NJ Transit, its commuter ridership to New York has more than quadrupled in the past 20 years from, 10 million to over 46 million annual passenger trips.

NJ Transit expects ridership to double again in the next 20 years. In the last decade, NJ Transit and the Port Authority of NJ studied 137 different potential solutions to the Northeast Corridor capacity problem. Alternatives included expanding bus, rail and ferry options as well as building a new auto bridge over the Hudson River. A Trans-Hudson tunnel expansion continues to be the

most viable option to expand rail capacity into and out of New York City and ease congestion on NJ Transit's Northeast Corridor line.

In October 2011, the United States Senate approved $15 million for design and engineering work on the Gateway Tunnel project. This proposed tunnel, from Secaucus, NJ to New York Penn Station, would add an additional 13 NJ Transit trains and 8 additional Amtrak trains. The project is projected to cost $13.5 billion and has a tentative completion date of 2020.

There is currently a competing alternative tunnel proposed by the Mayor of New York City. However, it is too soon to determine which, if any, proposal will be pursued. Regardless, expanded passenger rail service to Ocean County remains a critical regional priority.

Worker Flows and Commuter Data

As shown in Map Figures 4-9 and 4-10, which are based on the 2006-2008 CTPP, more than half of Ocean County residents work within the County. There are also a large number of Ocean County residents who commute to work outside of Ocean County. Most of these commuters are employed in Monmouth, Middlesex and Mercer Counties, while many others are traveling to the metropolitan centers of New York City and Philadelphia. A number of southern Ocean County residents are also commuting to Atlantic City. Most commuters travel by automobile on the Garden State Parkway.

While ongoing economic trends are creating more in-county employment opportunities, there is a critical need for alternate transportation modes for Ocean County residents. The County will continue to advocate for expanded service and highlight this deficiency with the NJ Office of Planning Advocacy.

Figure 4-9: County-to-County Worker Flows

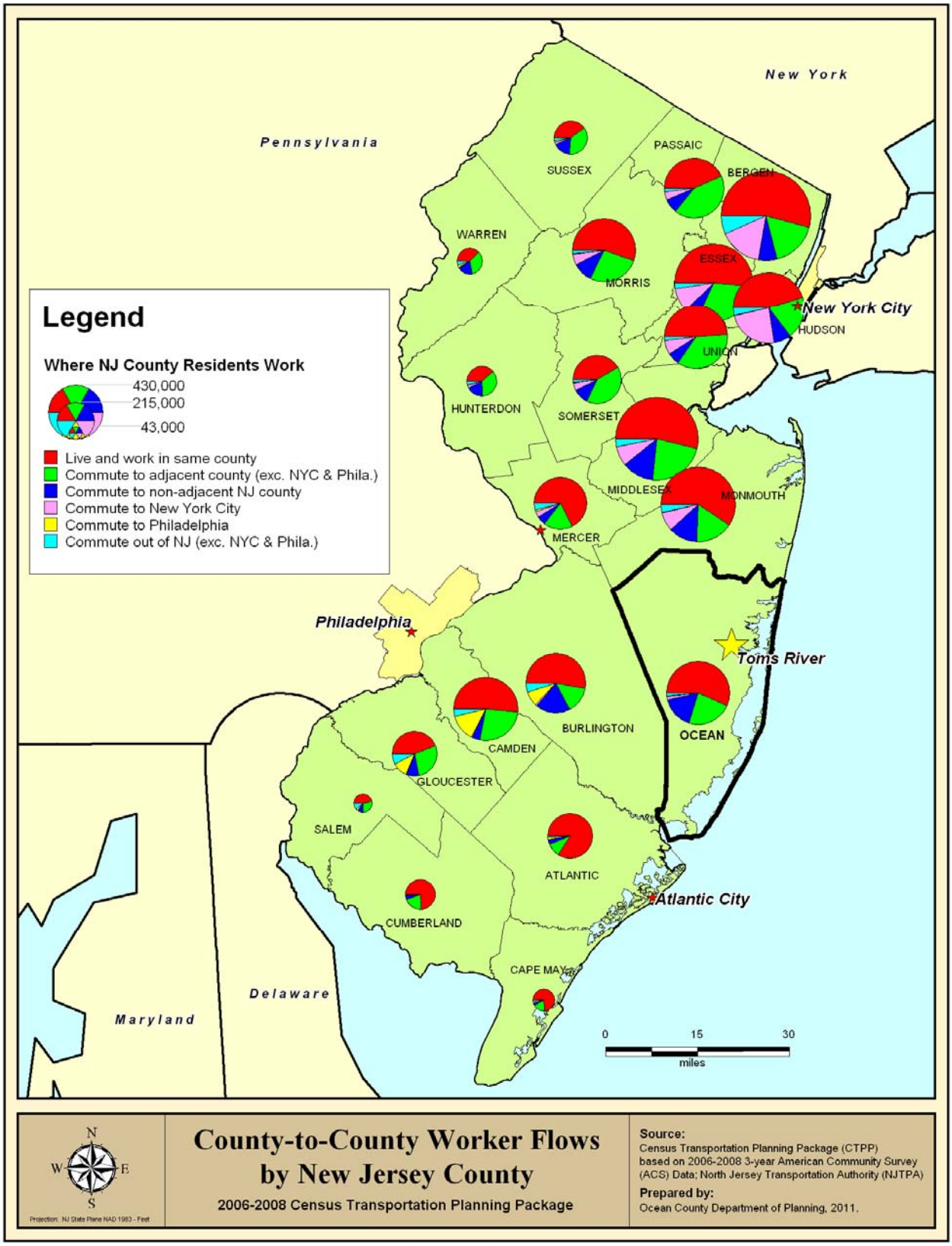
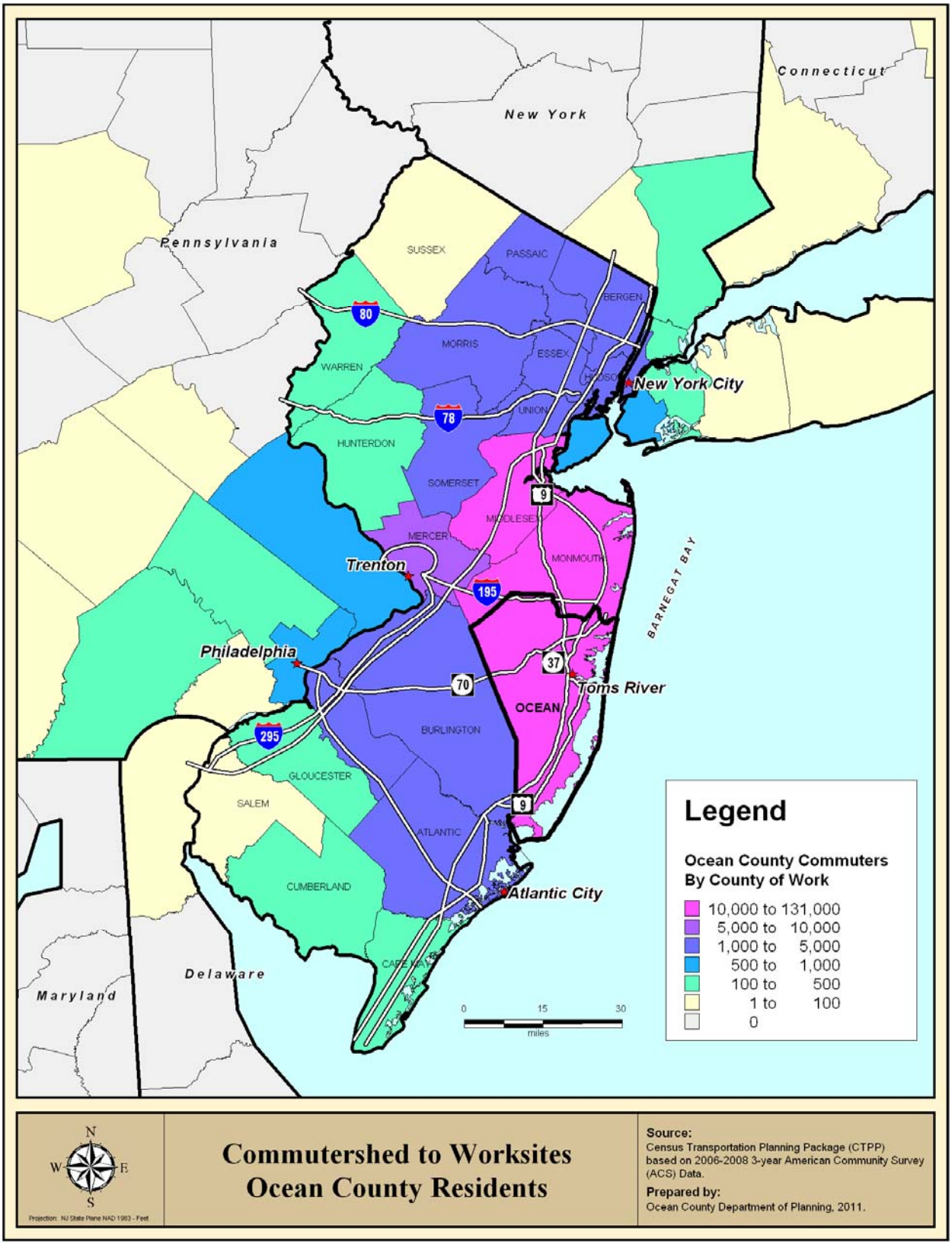


Figure 4-10: Commutershed to Worksites from Ocean County



Bicycle and Pedestrian Mobility Projects

Ocean County continues to support local efforts to increase alternatives for pedestrians and cyclists. A number of municipalities have created local pathways to connect residents with important destinations such as parks and schools. The NJ Department of Transportation and the NJTPA's Subregional Transportation Program have been assisting in these efforts. The County will continue to encourage pedestrian and bike friendly road and bridge designs.

The largest trail project is Ocean County's Barnegat Branch Trail. This 15.7 mile trail follows the alignment of the Barnegat Branch of the Central Railroad of NJ, which ceased rail operations in the middle of the 20th Century. In 2007, Ocean County completed the Conceptual Plan for the Barnegat Branch Trail to provide the framework for the development of this linear park.

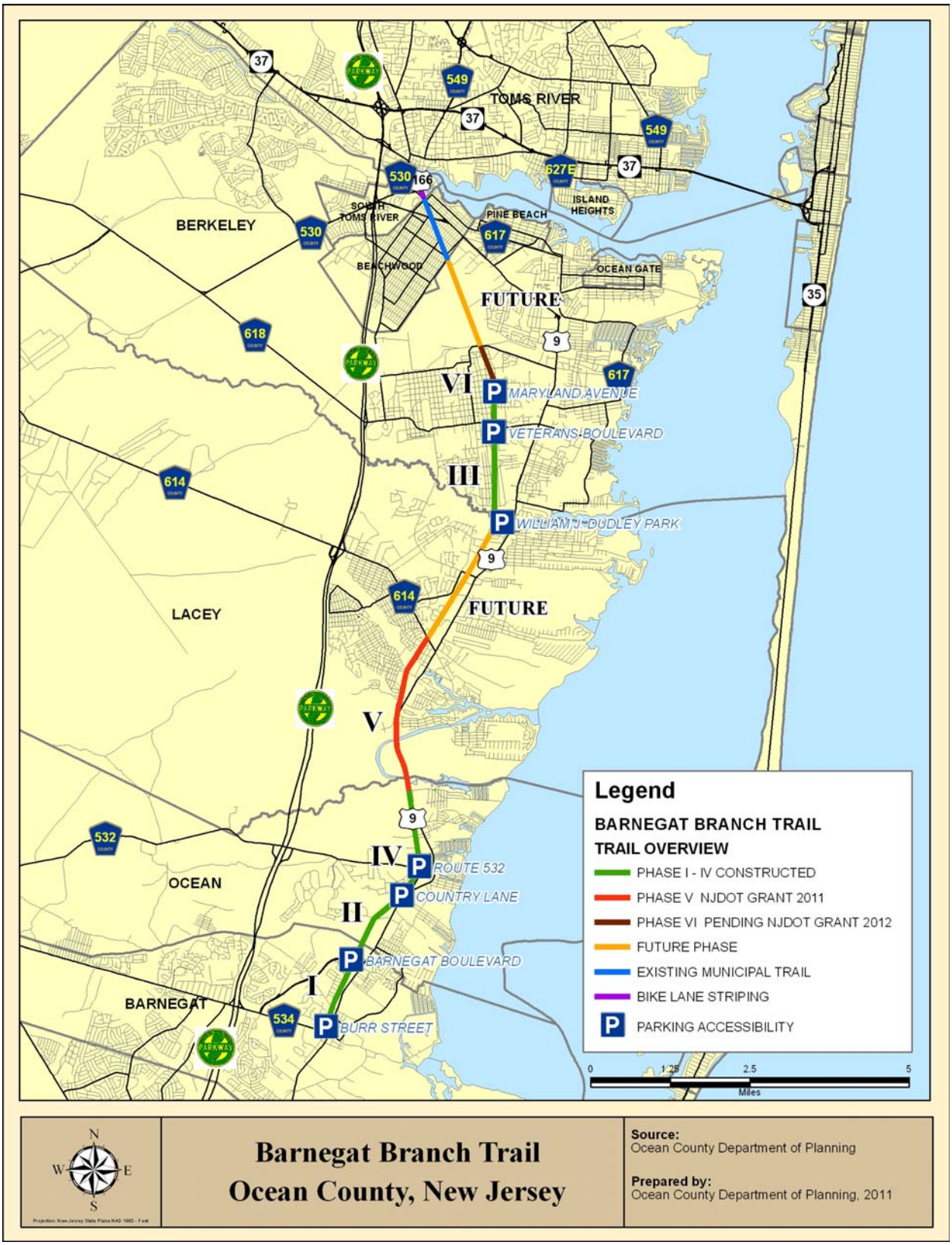
When completed, the trail will serve as the regional spine for a number of local bike and pedestrian routes. Construction of the trail began shortly after the completion of the Conceptual Plan. The phases with the least number of design issues were constructed first.

Construction Update Summary

Barnegat Branch Rail Trail, Trailhead
Photo credit: Ocean County Department of Planning

A number of the sections of the trail have already been completed as of November 2011. More than 5 miles were open to the public in Barnegat, Waretown and Berkeley Townships. Another 1.5 miles of the trail were under construction to complete the northern portion of the trail in Waretown. Many of these phases were partially funded by grants from the NJ Department of Transportation. Due to the historic nature of this rail-to-trails project, the NJ Department of Environmental Protection also provided Ocean County with a grant to install interpretive signage.

Figure 4-11: Barnegat Branch Trail Map



The status of the Barnegat Branch Trail sections as of November 2011 is outlined below:

Phases I & II - 3.1 miles:

West Bay Ave (Barnegat Twp) to Route 532 (Ocean Twp)
OPEN - Parking at Burr Street and Country Lane

Phase III – 2 miles:

Cedar Creek at Dudley Park to Maryland Ave (Berkeley Twp)
OPEN - Parking at Maryland Avenue, Serpentine Drive, and Dudley Park

Phase IV – 1.5 miles:

Rt. 532 (Ocean Twp) to Oyster Creek
Completion anticipated: Summer 2012
Parking planned for Wells Mills Road and at Bay Parkway & Route 9.

Phase V - 2.4 miles:

Oyster Creek to Lacey Road (Lacey Twp)
Awarded NJDOT Grant – Completion scheduled for 2013

Phase VI - .75 miles

Maryland Avenue to Hickory Lane (Berkeley)
NJDOT Grant application pending
Tentative completion date - 2014

It is Ocean County's vision that the Barnegat Branch Trail will be more than a recreational park. Rather, when completed it will be a significant pedestrian and biking corridor as well as a valuable environmental and historic resource and an enormous asset to County residents and visitors alike.

Ocean County will continue to work with municipalities and local organizations to highlight connections between the Barnegat Branch Trail and other parks, historic sites, downtown businesses and other points of interest.

Pedestrian Mobility Study for Downtown Toms River and New Egypt

In the summer of 2011, Ocean County completed a Pedestrian Mobility Study which was funded by the North Jersey Transportation Authority. The study focused on two downtown areas, Toms River and New Egypt. The Toms River portion focused on the difficulties that pedestrians and bicyclists have in navigating the roads of the downtown area. It also recognized that this area of Toms River would be the terminus of the Barnegat Branch Trail and that there was a need to safely direct uses of the trail to various destination points.

The New Egypt portion of the study focused on the abandoned CONRAIL tracks and the opportunity to convert it into a biking and walking trail to connect local residents to schools, government offices and downtown businesses. It will also enhance the town's growing pursuit of agri-tourism activities. The northern portion of the trail would connect to the Crosswicks Creek Greenway in Monmouth County. The study identified problem areas for bicycle and pedestrian crossings and developed preliminary concept plans and recommendations.

Chapter 5

Housing

Housing Supply

In conjunction with Ocean County's steady and significant population growth, there has also been a continual increase in the County's housing stock over the last several decades. In 2000, total housing stock was 248,111 units, an increase of 12% from 1990 and a 43% increase from 1980. According to the 2010 Census, there are presently a total of 278,052 units, an 11.8% increase from 2000. Figure 5-1 depicts the change in housing units and occupied housing units, also referred to as "households", from 2000 to 2010 for all municipalities in Ocean County.

The majority of housing units in Ocean County are year-round, owner-occupied, which account for 65% of the total housing units; 83% of households. A majority (69%) of owner-occupied units are single-family detached dwellings, which are also consistent with traditional residential development. Per the 2006-2010 5-year ACS, about 22% of occupied housing units are multi-family units, which are more usually occupied by renters, although they also include townhouses and condominiums. Renter-occupied households account for about 18% of total occupied housing units and have increased 24%, about twice as much as owner-occupied and total housing units over the past decade.

These housing types represent the typical types of housing development that the Ocean County Planning Board has approved during the significant population increases of the past decades. Although the high population growth rate of the past has begun to level off, population and development are projected to continue to grow, although at a more sustainable rate. Therefore, it is very important to consider the availability of land that will be developed as new housing, and equally as important, what types of development, will best accommodate the needs of current and future County residents.

Figure 5-1: Comparison of Total and Occupied Housing Units, 2000 and 2010

	Total Units			*Occupied Units*			*Percent Occupied*	
Municipality	*2000*	*2010*	*Change*	*2000*	*2010*	*Change*	*2000*	*2010*
Barnegat Township	6,066	9,085	49.8%	5,493	8,128	48.0%	91%	89%
Barnegat Light Borough	1,207	1,282	6.2%	371	274	-26.1%	31%	21%
Bay Head Borough	1,053	1,023	-2.8%	584	459	-21.4%	55%	45%
Beach Haven Borough	2,555	2,667	4.4%	586	531	-9.4%	23%	20%
Beachwood Borough	3,623	3,826	5.6%	3,475	3,682	6.0%	96%	96%
Berkeley Township	22,288	23,818	6.9%	19,828	20,349	2.6%	89%	85%
Brick Township	32,689	33,677	3.0%	29,511	29,842	1.1%	90%	89%
Eagleswood Township	693	760	9.7%	546	621	13.7%	79%	82%
Harvey Cedars Borough	1,205	1,214	0.7%	167	169	1.2%	14%	14%
Island Heights Borough	807	831	3.0%	705	683	-3.1%	87%	82%
Jackson Township	14,640	20,342	38.9%	14,176	19,417	37.0%	97%	95%
Lacey Township	10,580	11,573	9.4%	9,336	10,183	9.1%	88%	88%
Lakehurst Borough	961	943	-1.9%	870	881	1.3%	91%	93%
Lakewood Township	21,214	26,337	24.1%	19,876	24,283	22.2%	94%	92%
Lavallette Borough	3,210	3,207	-0.1%	1,208	945	-21.8%	38%	29%
Little Egg Harbor Township	7,931	10,324	30.2%	6,179	8,060	30.4%	78%	78%
Long Beach Township	9,023	9,216	2.1%	1,664	1,539	-7.5%	18%	17%
Manchester Township	22,681	25,886	14.1%	20,688	22,840	10.4%	91%	88%
Mantoloking Borough	522	535	2.5%	207	162	-21.7%	40%	30%
Ocean Township	2,981	4,291	43.9%	2,446	3,483	42.4%	82%	81%
Ocean Gate Borough	1,152	1,203	4.4%	832	832	0.0%	72%	69%
Pine Beach Borough	872	903	3.6%	767	818	6.6%	88%	91%
Plumsted Township	2,628	3,067	16.7%	2,510	2,936	17.0%	96%	96%
Point Pleasant Borough	8,350	8,331	-0.2%	7,560	7,273	-3.8%	91%	87%
Point Pleasant Beach Borough	3,558	3,373	-5.2%	2,317	1,985	-14.3%	65%	59%
Seaside Heights Borough	2,840	3,003	5.7%	1,408	1,376	-2.3%	50%	46%
Seaside Park Borough	2,811	2,703	-3.8%	1,127	833	-26.1%	40%	31%
Ship Bottom Borough	2,218	2,066	-6.9%	664	555	-16.4%	30%	27%
South Toms River Borough	1,123	1,160	3.3%	1,073	1,098	2.3%	96%	95%
Stafford Township	11,522	13,604	18.1%	8,535	10,096	18.3%	74%	74%
Surf City Borough	2,621	2,566	-2.1%	706	622	-11.9%	27%	24%
Toms River Township	41,116	43,334	5.4%	33,510	34,760	3.7%	82%	80%
Tuckerton Borough	1,971	1,902	-3.5%	1,477	1,396	-5.5%	75%	73%
Ocean County	**248,711**	**278,052**	**11.8%**	**200,402**	**221,111**	**10.3%**	**81%**	**79.5%**

Source: U.S. Census 2010, Redistricting Data File H1, February 2011; Census 2000, General Demographic Profiles, US Census Bureau, 2001. Prepared by Ocean County Planning Department

Figure 5-2: Housing Market and Inventory Conditions in Ocean County, 2006-2010

	Estimate	Estimate Margin of Error	Percent	Percent Margin of Error
HOUSING OCCUPANCY*				
Total housing units	275,793	+/-423	275,793	(X)
Occupied housing units	222,396	+/-1,359	80.6%	+/-0.5
Owner-occupied	183,327	+/-1,500	82.4%	+/-0.5
Renter-occupied	39,069	+/-1,221	17.6%	+/-0.5
Vacant housing units	53,397	+/-1,237	19.4%	+/-0.5
Homeowner vacancy rate	2.3	+/-0.3	(X)	(X)
Rental vacancy rate	6.2	+/-1.2	(X)	(X)
UNITS IN STRUCTURE				
1-unit, detached	206,693	+/-1,187	74.9%	+/-0.4
1-unit, attached	26,626	+/-832	9.7%	+/-0.3
2 units	9,250	+/-748	3.4%	+/-0.3
3 or 4 units	6,724	+/-519	2.4%	+/-0.2
5 to 9 units	5,948	+/-511	2.2%	+/-0.2
10 to 19 units	5,832	+/-590	2.1%	+/-0.2
20 or more units	7,992	+/-536	2.9%	+/-0.2
Mobile home	6,728	+/-372	2.4%	+/-0.1
YEAR STRUCTURE BUILT				
Built 2005 or later	9,101	+/-545	3.3%	+/-0.2
Built 2000 to 2004	25,389	+/-804	9.2%	+/-0.3
Built 1990 to 1999	35,492	+/-915	12.9%	+/-0.3
Built 1980 to 1989	49,727	+/-1,104	18.0%	+/-0.4
Built 1970 to 1979	58,642	+/-1,231	21.3%	+/-0.4
Built 1960 to 1969	42,300	+/-1,196	15.3%	+/-0.4
Built 1950 to 1959	30,191	+/-1,154	10.9%	+/-0.4
Built 1940 to 1949	11,029	+/-663	4.0%	+/-0.2
Built 1939 or earlier	13,922	+/-731	5.0%	+/-0.3
BEDROOMS				
No bedroom	1,711	+/-298	0.6%	+/-0.1
1 bedroom	18,400	+/-951	6.7%	+/-0.3
2 bedrooms	97,133	+/-1,385	35.2%	+/-0.5
3 bedrooms	90,593	+/-1,556	32.8%	+/-0.6
4 bedrooms	51,404	+/-1,315	18.6%	+/-0.5
5 or more bedrooms	16,552	+/-907	6.0%	+/-0.3

Note: Totals will differ slightly from Census 2010 data due to sampling size. Note that data is approximate due to margin of error. Source: 2006-2010 5-year American Community Survey (ACS), 2011.
Prepared by Ocean County Department of Planning, 2011.

Ocean County is a coastal county, which is reflected in its housing stock. It is important to note that of the total housing units in Census 2010, 56,941, or 21%, were reported as vacant; 74% of these units are considered "vacant for seasonal, recreational or occasional use," and located along the coastal communities in the County. Seasonal housing units represent 15% of the total residential structures in Ocean County. According to the Census 2010, about 80% of total housing units in Ocean County are occupied; while the total number of housing units have increased with development, the percentage of occupied units of total units have decreased 1.5% from 2000. Therefore, there is a higher percentage of vacant units, including those for seasonal use. Figure 5-2 details the housing inventory per the 2006-2010 American Community Survey.

In the past, a strong housing market and the availability of relatively low cost housing in comparison to other market areas of the region have been major reasons for Ocean County's growth. According to the 2000 Census, the median home value in the County was $131,300, compared with the median value for Monmouth County at $203,100 and the median value for the State which was $170,800. According to the 2006-2010 American Community Survey, in 2010 the median home value in Ocean County rose to $294,100, while New Jersey's average was still higher at $357,000 and Monmouth County's median home value significantly higher at $424,800. In addition, HUD's fair market rents for Ocean County are traditionally lower than surrounding communities and the State as well. In 2010, the County's fair market rent for a 2-bedroom apartment was $1,271.

A primary factor in determining housing demand is the anticipated increase in the number of households and average household size. Economic conditions and demographic changes within the existing population can influence household size. Although there has been a decreasing nationwide trend in household size since the mid 1900's, there are indications that the trend has reversed, at least temporarily, due to the recent economic downturn.

State of the Housing Market

The current state of Ocean County's housing economy is affected by a variety of factors. Most recently, construction and real estate markets have experienced a significant slowdown given the

recent recession. Other factors contributing to a slowdown in Ocean County include land use restrictions and affordable housing requirements for new developments.

A good indicator of the current state of housing is foreclosure data. From 2005 to the present, the foreclosure rate has been at record highs throughout the nation. New Jersey and Ocean County have not been immune to this problem. According to RealtyTrac, a national website marketplace of foreclosure properties, in December 2010, one in every 718 homes in New Jersey had received foreclosure filings. Ocean County's rate was one in every 741 homes. The good news is that the most recent trend shows the beginnings of a decline in the foreclosure rate, noting that filings were down 26% from December 2009 to December 2010.

Projection of Housing Stock

Over the last 20 years, Ocean County has annually averaged 2,945 new residential units authorized by building permits. In 2010, only 1,264 residential units were authorized. As stated previously, the decrease is primarily due to the economic downturn which has affected the nation over the past several years. Despite the decline, Ocean County has remained above the state average in the number of residential permits authorized. The towns with the highest number of permits were Toms River, Jackson, and Barnegat.

In addition, the Ocean County Planning Board subdivision and site plan application approvals indicate trends for housing stock and demand in the County. Since 2004, there has been a steady decrease in the number of major and minor subdivisions approved with just 173 approvals in 2010. What's more, total approvals are down by nearly half from 2005 to 2010, with 327 total approvals last year. Despite this, the number of multi-family residential unit approvals has actually been increasing. Multi-family development includes apartments, townhouses and condominiums, as well as certain retirement communities. Much of the recent multi-family approvals were approved in Lakewood Township.

Adult Communities

Leisure Village, Lakewood Township
Photo by Ocean County Department of Planning.

As mentioned in Chapter 2, more than one-fifth of Ocean County's population is in the 65 and older age group. The County is home to a large number of adult communities, which are planned developments targeted to retired, semi-retired or soon-to-be retired persons. These communities generally have minimum age requirements and do not allow the permanent residence of school-age children. The communities contain a variety of housing types and feature a range of recreational and community services tailored specifically to the needs and interests of the senior population. Congregate care communities, which combine housing and health care services, have been an increasing housing option for the senior and elderly population in Ocean County.

The construction of adult communities in Ocean County was rapid in the 1970's and 1980's. Currently, there are 90 adult communities in the County, which contain about 65,000 dwelling units. Manchester Township is home to the most adult communities in the County, followed by Brick and Berkeley Township, which is home to the largest adult community of Holiday City.

Projections for this housing type are mixed. In the near term, there is more supply than demand and new construction has dropped dramatically. In fact, a number of adult communities have dropped the over-55 age requirement. However, the demand is expected to pick up due to continued migration from the urban areas surrounding New York City and will be supplemented by the aging population in the baby boom generation. Ocean County is well positioned to attract future retirees for the same reasons it did in the past few decades. Its geographic location on the metropolitan fringe means that retirees can remain close to relatives and the amenities of New York, Philadelphia and Atlantic City, yet be far enough away to enjoy the beaches and natural amenities which are permanently protected in Ocean County.

Figure 5-3: Adult Communities in Ocean County

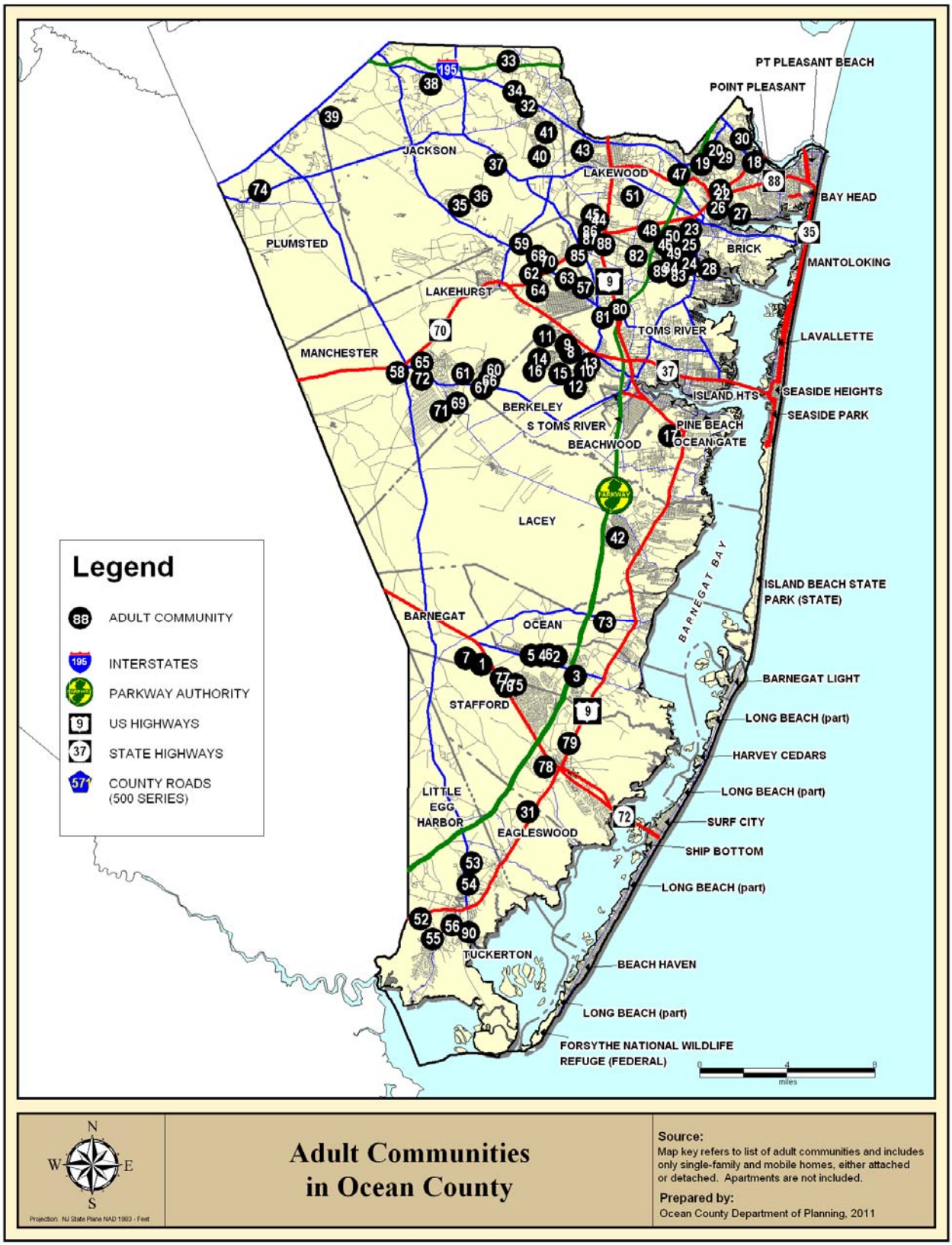
Municipality Key	Adult Community	Units/ Lots
Barnegat Township		
1	Brighton at Barnegat Mobile Homes	275
2	Four Seasons at Mirage	1,229
3	Heritage Bay	292
4	Heritage Point	909
5	Horizons at Barnegat	164
6	Pheasant Run at Barnegat	379
7	Pinewood Estates Mobile Home Park	321
Berkeley Township		
8	Holiday City at Berkeley I & II	3,236
9	Holiday City Carefree	1,616
10	Holiday City South	2,359
11	Holiday City West	1,812
12	Holiday Heights	1,412
13	Silver Ridge Park (East)	592
14	Silver Ridge Park North	779
15	Silver Ridge Park West	1,152
16	Silver Ridge Park Westerly Extension	664
17	Sonata Bay	312
Brick Township		
18	Cedar Village	217
19	Greenbriar I	1,432
20	Greenbriar II	600
21	Laurelton Gardens	220
22	Laurelton Mobile Home Park	88
23	Lions Head North	360
24	Lions Head South	615
25	The Pavilion	190
26	Pinewood Mobile Home Park	79
27	Princeton Commons	388
28	Seaview Village	349
29	Wedgewood Place	145
30	Winding River Village Association	255
Eagleswood Township		
31	Eagleswood Village	56
Jackson Township		
32	Fountainhead Properties Inc.	150
33	Four Seasons at Metedeconk Lakes	795
34	Four Seasons at South Knolls	886
35	Jackson Acres	232
36	Maple Glen Mobile Homes	80
37	Meadowbrook Cooperative Inc.	116
38	Oak Tree Mobile Park	258
39	Pleasant Gardens	51
40	Westlake Golf and Country Club	2,108
41	Winding Ways Homeowner's Assn.	554
Lacey Township		
42	Pheasant Run	434
Lakewood Township		
43	A Country Place	376
44	The Enclave at the Fairways	350
45	Fairways at Lake Ridge	1,100
46	Four Seasons at Lakewood	1,375
47	Horizons at Woodlake Greens	209
Lakewood Township (continued)		
48	Leisure Village	1,433
49	Leisure Village East	1,412
50	Lionshead Woods	281
51	Pine River Village*	90
Little Egg Harbor Township		
52	Cranberry Creek	288
53	Four Seasons at Harbor Bay	387
54	Four Seasons at Sea Oaks	375
55	Mystic Shores Adult Community	525
56	Sunrise Bay	323
Manchester Township		
57	Cedar Glen Homes Inc.	564
58	Cedar Glen Lakes	1,236
59	Cedar Glen West	826
60	Country Walk at Lake Ridge	350
61	Crestwood Village (I-VI)	6,494
62	Leisure Knoll at Manchester	1,626
63	Leisure Ridge	183
64	Leisure Village West	2,692
65	The Meadows at Lake Ridge	350
66	Pine Ridge at Crestwood	1,036
67	Pine Ridge South Mobile Homes	382
68	Renaissance @ Manchester	1,904
69	The Reserve of Lake Ridge	350
70	River Pointe	504
71	Whiting Station at Crestwood	330
72	Whiting Village at Crestwood VII	1,048
Ocean Township		
73	Greenbriar Oceanaire	1,257
Plumsted Township		
74	Jensen's Deep Run	262
Stafford Township		
75	Atlantic Hills	271
76	Fawn Lakes Condominium Association	345
77	Paramount Homes' Escapes Ocean Breeze	680
78	Perry's Lake	472
79	West Bay Village Mobile Homes	42
Toms River Township		
80	Dover Walk	60
81	Gardens of Pleasant Plains	457
82	Greenbriar Woodlands	1,250
83	Holiday City Association Phase I	602
84	Holiday City Organization Phase II	936
85	Homestead Run Mobile Home Park	461
86	Lake Ridge	926
87	Raymore Mobile Park	44
88	Roberts Mobile Home Park	237
89	Shenandoah Commons	58
Tuckerton Borough		
90	Tuckerton Mobile Court	60
OCEAN COUNTY TOTAL	**90 Communities**	**Total Units/Lots** **64,980**

Notes: *As of 2010, Pine River Village consists of 90 age-restricted units, and 85 non-age-restricted units.
List contains developments that have actually started construction and includes only single-family homes, either attached or detached; apartments are not included. The number of units/lots refer to final build-out, not units sold.

Sources: Ocean County Departments of Planning and Senior Services.

Prepared by: Ocean County Department of Planning, August 2011.

Figure 5-4: Map of Adult Communities in Ocean County



HUD Grants

Ocean County has received annual formula based grant allocations under the Community Development Block Grant (CDBG) and HOME Investment Partnerships (HOME) Programs since 1984 and 1992, respectively, from the US Department of Housing and Urban Development (HUD). The intent of these programs is to enable local community development activities such as affordable housing development, infrastructure and public facility improvements and anti-poverty programs, all of which are directed to persons and families with very low, low and moderate-incomes and/or in low-income designated neighborhoods targeted for such assistance.

The County, which is considered an urban county entitlement community, as well as the Ocean County Consortium, is the lead agency responsible for the administration and monitoring of the CDBG and HOME Programs. Since 1984, Ocean County has received over $42 million in CDBG funds, and since 1992, over $23 million in HOME funds. As of 2010, all 33 municipalities in Ocean County participate in these programs, including the four separate entitlement communities of Brick, Toms River, Jackson and Lakewood Townships, which each receive their own federal funding under the CDBG Program. Although CDBG and HOME funding allocations have been declining slightly each year, all programs continued to be administered efficiently with tangible results with regard to housing in Ocean County.

Public Housing

Public housing in Ocean County continues to be in demand. Ocean County is home to three public housing authorities: Lakewood Housing Authority, Brick Housing Authority and Berkeley Housing Authority. As of 2010, these three authorities, the Lakewood Township Rental Assistance Program, Section 8 and NJ Department of Community Affairs (NJDCA) have a combined total of 7,637 individuals on their existing waiting lists. All but one of these agencies or programs have closed their waiting lists, with periodic openings. Each list is arranged in a first-come, first-served order according to date and time. Figure 5-6 shows the current waiting lists.

Figure 5-5: Ocean County Rental Assistance and Public Housing Waiting Lists, 2010

Agency	*Total*	*Closed*
Lakewood Housing Authority Section 8	1,270	Yes
Lakewood Housing Authority Public Housing	331	No
Lakewood Township Rental Assistance Program	2,954	Yes
Berkeley Housing Authority Public Housing	26	Yes
Berkeley Housing Authority Section 8	30	Yes
Brick Housing Authority Public Housing	75	Yes
Brick Housing Authority Section 8	1,950	Yes
NJ Dept Community Affairs	1,001	Yes
TOTAL:	**7,637**	

Source: Ocean County Planning Department, Public Housing Survey, 2010 Consolidated Plan

In 2010, during the Consolidated Plan planning process, the County Planning staff completed an inventory of affordable housing and identified a total of 606 assisted housing units within the County, specifically located within the Townships of Berkeley, Brick and Lakewood. The following figure depicts the breakdown of the 606 total housing units by agency, number, type and availability of the units administered by each housing authority.

Figure 5-6: Summary of Public Housing Units in Ocean County, 2010

AGENCY	*Total Units*	*Total Vacant*	*Vacancy %*	*0 – 1 Bdrm.*	*2 Bdrms*	*3 > Bdrms*	*4 Bdrms*
Lakewood Housing Authority	268	0	0	203	35	30	N/A
Brick Housing Authority	266	0	0	61 Eff. 205 1-bed	N/A	N/A	N/A
Berkeley Housing Authority	72	0	0	34	14	21	3
TOTAL	**606**	**0**	**0**	**503**	**49**	**51**	**3**

Source: Ocean County Planning Department, Public Housing Survey, 2010 Consolidated Plan

The Lakewood Housing Authority has a total of 268 units with no vacancies and reported that none of the units required rehabilitation. Of the 268 designated units, 206 are for senior citizens or disabled individuals, while 62 are for families. These units are a part of four facilities: John Currey Building, Peter Ward Tower, JFK Apartments and Lulu Duffy Cottages. The Eleanor Levovitz Apartments is a senior citizen housing project developed under the provisions of the HUD Section 202 Program with additional Section 8 housing subsidy. The project consists of 150 units, all of which receive Section 8 subsidy. The Authority does not expect to lose any

units from their inventory for any reason, including public housing demolition or conversion to homeownership.

The Housing Authority of the Township of Brick has three public housing projects with a total of 266 units. All units are designated for senior citizens 62 years and over or disabled individuals. There are no vacancies and the units are in good condition.

The Housing Authority of the Township of Berkeley has two public housing projects that total 72 units. Of the 72 public housing units reported, 25 units were available for senior citizens and disabled families in a project called the Brian Kehoe Apartments. According to the Authority, all units have been repaired and renovated and are in good condition. The other 47 units are located in South Toms River in Magnolia Gardens Apartments. These units are also reported to be in good condition.

All of Ocean County's housing authorities have full-time permanent directors who oversee the daily operations and activities. Management is complimented by staff personnel qualified to assist in the administration of the above referenced programs. All facilities are monitored to ensure that housing quality standards are being addressed.

Fair Housing Act / COAH

In New Jersey, housing and land use have been significantly impacted by affordable housing litigation and subsequent legislation. The New Jersey Supreme Court ruled (in Southern Burlington County NAACP v. Township of Mount Laurel), that "developing municipalities have an obligation to consider the housing needs of all categories of people in devising and applying local land use regulations". The decision declared that it is the constitutional obligation of municipalities to provide the opportunity for low and moderate-income persons to obtain housing which is affordable. As a response to the Mount Laurel ruling, in 1985 the New Jersey State Legislature adopted the Fair Housing Act as a companion to the State Planning Act. The Council on Affordable Housing (COAH) was created to provide an administrative remedy and alternative process to the court system for the provision of affordable housing.

As of August 1, 1988, and since the publishing of the last County Master Plan, the Fair Housing Act requires that every municipality prepare a housing element as part of their municipal master plan. This housing element must address the municipality's "fair share" obligation for low and moderate-income housing. All housing elements must be submitted for approval to COAH in the substantive certification process, where if a town meets the required criteria, that town is protected against litigation from builders' lawsuits alleging Mount Laurel violations. Two Ocean County municipalities have received COAH certification – Stafford Township in December of 2009 and Pine Beach Borough in March of 2010.

The COAH requirements were more easily addressed when development activity was high and affordable units could be incorporated into approved developments. During the 1990's, tens of thousands of affordable homes were constructed in New Jersey. In general, however, COAH regulations have been difficult to incorporate into municipal land use plans and have sometimes conflicted with environmental regulations.

On June 11, 2011, Governor Christie issued a Reorganization Plan eliminating the 12-member Council on Affordable Housing. Recognizing that the Department of Community Affairs is responsible for providing assistance to municipal housing authorities as well as operating various housing authorities themselves, the Governor has transferred the duties and functions of COAH to the Commissioner of the Department of Community Affairs.

As of November 2011, it was uncertain what legislative changes may be made to the affordable housing requirements. Until then, the current "Third Round" requirements from 2008 remain in effect. The following table displays the current rehabilitation share, prior round obligations and growth projections for Ocean County municipalities as issued by COAH in October 2008.

In general, housing conditions in Ocean County over the past 20 years have remained adequate and steady with regard to its capacity to meet housing needs of the County's ever growing population. In addition, Ocean County will continue to explore innovative methods to meet the housing needs of disadvantaged individuals and families entering the workforce.

Figure 5-7: COAH Projections, 2008

REHABILITATION SHARE, PRIOR ROUND OBLIGATION & GROWTH PROJECTIONS PROJECTED Growth Share 2004-18					
Municipality	***Rehabilitation SHARE***	***1987-1999 Prior Round OBLIGATION***	***Housing Projection***	***Employment Projection***	***Projected Growth Share***
Barnegat Light Borough	4	84	2	-2	**0**
Barnegat Township	0	329	1,085	1,967	**340**
Bay Head Borough	5	65	4	-117	**1**
Beach Haven Borough	0	70	43	-236	**9**
Beachwood Borough	19	123	209	170	**52**
Berkeley Township	63	610	2,160	2,005	**557**
Brick Township	92	930	3,726	4,680	**1,038**
Eagleswood Township	2	36	163	1,225	**109**
Harvey Cedars Borough	0	37	0	-19	**0**
Island Heights Borough	0	31	36	27	**9**
Jackson Township	46	1,247	5,885	2,894	**1,358**
Lacey Township	25	580	1,776	2,425	**507**
Lakehurst Borough	2	66	92	-67	**18**
Lakewood Township	350	0	4,615	7,572	**1,396**
Lavallette Borough	0	82	27	-19	**5**
Little Egg Harbor Township	0	194	1,118	1,901	**342**
Long Beach Township	0	41	25	-84	**5**
Manchester Township	38	370	5,061	3,594	**1,237**
Mantoloking Borough	2	59	-3	-25	**0**
Ocean Gate Borough	5	12	4	40	**3**
Ocean Township	11	236	458	748	**138**
Pine Beach Borough	0	41	60	224	**26**
Plumsted Township	9	47	770	210	**167**
Point Pleasant Beach Borough	44	167	37	-133	**7**
Point Pleasant Borough	15	343	54	-343	**11**
Seaside Heights Borough	18	0	89	-100	**18**
Seaside Park Borough	9	52	25	-74	**5**
Ship Bottom Borough	7	71	31	-73	**6**
South Toms River Borough	3	51	145	219	**43**
Stafford Township	24	555	1,669	3,133	**530**
Surf City Borough	4	49	47	-22	**9**
Toms River Township	92	2,233	8,606	8,160	**2,231**
Tuckerton Borough	5	69	389	52	**81**

Source: Council on Affordable Housing (COAH), 2008.

Chapter 6

Design

There are many factors that influence or control the physical design of developments, including municipal zoning ordinances and environmental protection. There is an increasing trend towards the redevelopment of existing areas and the incorporation of design elements that could help create more pedestrian and cycling friendly atmospheres that are less automobile dependent.

Large-Scale Retail Sites

Highway retail development has been a common development pattern in Ocean County for many years. While the sites offer tax ratables for municipalities, they are relatively inefficient and contribute higher traffic volumes to already congested roads. While some towns could be considered *built-out* or have little space left for new development opportunities, these towns may still have redevelopment needs or the ability to accommodate expansion needs of existing businesses. New design techniques that are required for new developments may work well in redevelopment situations to address circulation, aesthetics and stormwater management.

Design improvements that are generally lacking at large-scale retail sites are larger walkways with pedestrian scale lighting, benches and seating areas, bike facilities and modern bus stop shelters. All of these improvements will make visitors feel more comfortable and create the *lingering* effect, which is beneficial to businesses. The longer that shoppers linger, the more likely they are to buy products and services.

Mixed Use Design

Where the character for multi-story buildings already exists, such as in many of Ocean County's established Main Streets and Downtowns, municipalities may wish to consider the benefits of multi-story buildings. Multiple stories offer the opportunity to incorporate mixed uses such as residential, office and retail.

Mixed use development may also include specific open space areas for active and passive recreation. Pedestrian and bicycle needs should also be considered in the design of sidewalks, paths, signage, seating, lighting, and bike parking areas, as well as a safe and effective separation of cars from people. Existing plants and trees should be maintained as much as is practical with visual obstructions of the natural areas kept at a minimum.

The retention of existing natural areas is also an important Low Impact Design (LID) feature that can lower construction costs, minimize environmental disturbances and more effectively address stormwater runoff.

Public Participation

Design concepts should be planned carefully by municipal officials and developers to not only create a coherent, aesthetically pleasing design concept, but also ensure a good mix of uses at development sites and in target areas. As with all planning and design initiatives, one way to ensure a proper mix of uses, acceptable densities, and design is to maximize public input. Municipalities can host design workshops, or *charettes*, to work side-by-side with residents to create design concepts for individual projects, entire downtown areas, or entire municipalities. Public participation further educates the public regarding planning and design initiatives and improves the chances of creating coherent, sustainable plans that garner public support. Various *charettes* or public design workshops have taken place in Ocean County in the past decade and should continue as new planning and development initiatives come to bear.

Chapter 7

Land Use

The regulatory authority for land use decisions lies with municipalities through their master plans and zoning ordinances. The County Master Plan can serve as a guide for municipalities and address issues of regional importance. County Planning Board jurisdiction is confined to impacts on County roads or County drainage facilities, including storm drains and bridges. Development proposals must conform with the County Subdivision and Site Plan Ordinance, which is a technical engineering document, and not a land use plan. County reviews are regional in nature and County Planning Boards cannot overrule or supersede local planning board decisions.

Changes over Time

The NJ Department of Environmental Protection (NJDEP) prepares Land Use / Land Cover (LULC) data based on aerial photograph interpretation. The table below shows the LULC in Ocean County for the last two years for which the data is available and a map depicting the 2007 data is located on the next page. Most of Ocean County is located in the Barnegat Bay Watershed Management Area.

As seen in Figure 7-1, from 2002 to 2007, Ocean County lost over 7,077 acres of forest land while developed land increased by over 7,800 acres, mostly due to residential development. Wetlands losses have been stemmed dramatically from the 1950's, 1960's and 1970's when extensive areas of coastal marshes were filled for lagoon developments. New coastal and freshwater regulations that were approved in 1972 and 1987 were key to protecting these valuable resources.

The adoption of the NJ Pinelands Comprehensive Management Plan in 1980 established a strict land use plan covering 45 percent of Ocean County and further protected much of the environmental resources contained within that area.

Figure 7-1: NJDEP Land Use/Land Cover Level I Data Analysis, 2002-2007

Land Use Type / Acres	*2002*		*2007*		*Net Change*		*Percent Change*	
	Ocean County	*New Jersey*	*Ocean County*	*New Jersey*	*Ocean County*	*New Jersey*	*Ocean County*	*New Jersey*
Agriculture	6,328	594,599	5,835	566,045	-493	-28,554	-7.8%	-4.8%
Barren Land	9,046	59,138	7,818	51,678	-1,228	-7,460	-13.6%	-12.6%
Forest	183,381	1,568,809	176,304	1,526,367	-7,077	-42,442	-3.9%	-2.7%
Urban Land	101,311	1,452,077	109,146	1,532,364	7,835	80,287	7.7%	5.5%
Water	84,333	803,611	85,844	810,541	1,511	6,930	1.8%	0.9%
Wetlands	100,678	1,005,735	100,129	996,675	-549	-9,060	-0.5%	-0.9%

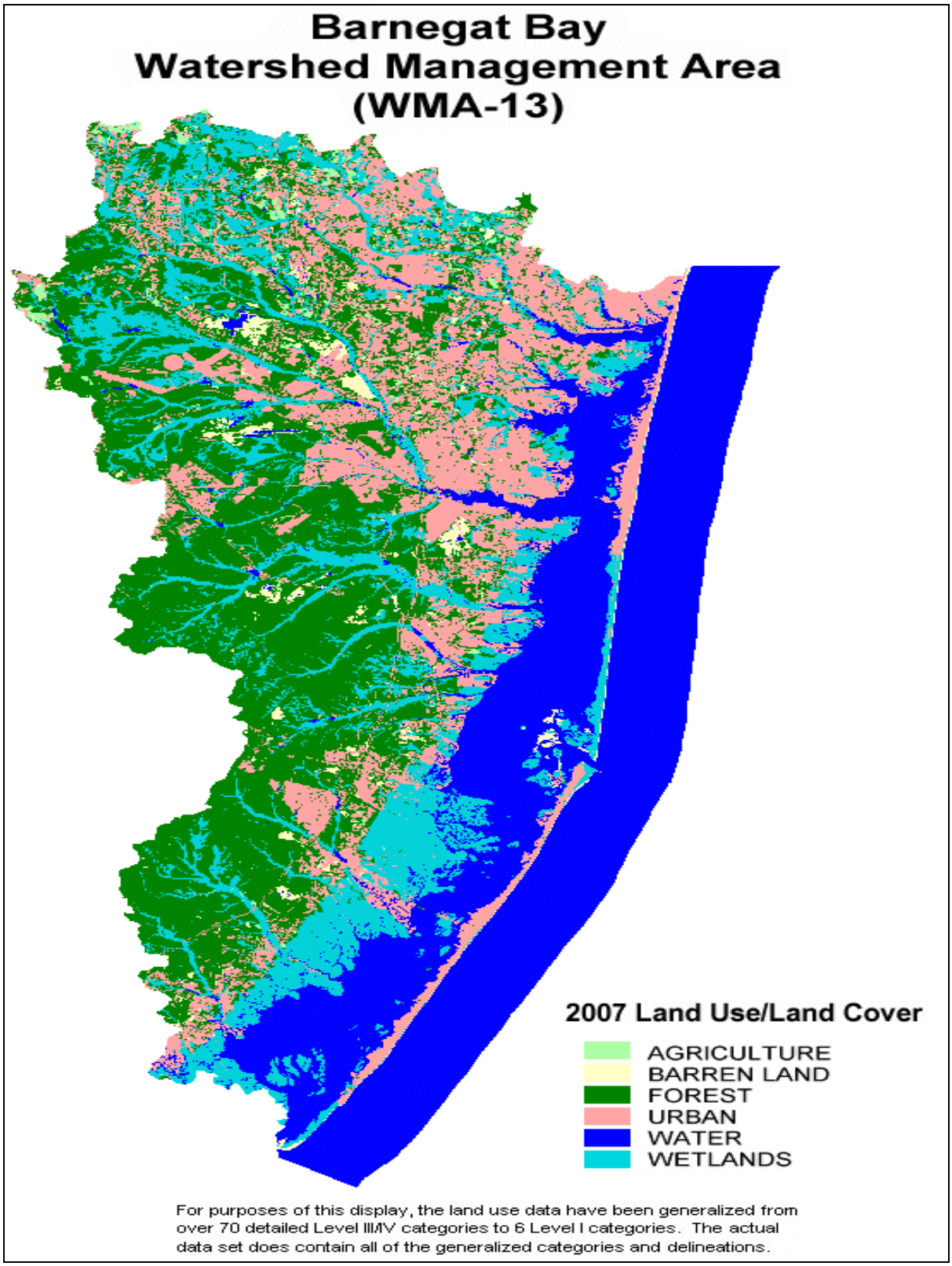
NJDEP Note: This data were generated by intersecting the 2007 land use update data with the updated County boundary layer published by Office of Information Technology (OIT) on 03/11/10. These boundaries may differ than those used for the 2002 update project. In addition, some delineations and land use classifications for the original 2002 mapping were revised during the 2007 update.

The values shown for "Water" in the above table include lakes, ponds, reservoirs, major watercourses, enclosed tidal bays (e.g., Barnegat Bay), and the tidal and non-tidal portions of the Delaware River. The "Water" may include some water areas of Delaware Bay, Raritan Bay or the Atlantic Ocean where county boundaries extend into these water bodies, but does not include all open water areas of Delaware Bay, Raritan Bay or the Atlantic Ocean where the Watershed Management Area boundaries extend beyond the county boundaries.

Finally, open space acquisition programs have permanently protected 185,000 acres of land. Ocean County coordinates its Natural Lands and Farmland Preservation programs purchases with a variety of federal, state, local and non-profit agencies. Particular attention is paid to designated target areas such as river corridors and greenway linkages.

These programs have already preserved almost 60 percent of Ocean County. For further information on the County Natural Lands Program, please refer to *Chapter 10: Parks, Recreation and Open Space*.

Figure 7-2: NJDEP Barnegat Bay Watershed Management Area Map, 2007 LULC



Source: NJ Department of Environmental Protection

The Ocean County Tax Board also tracks land use through tax assessment records. The information is typically reported at the parcel level and not by acreage. The information is further classified as either a ratable or a tax exempt parcel (government / non-profit). The following chart shows the change in the number of parcels from 1998 to 2010:

Figure 7-3: Tax Generating and Tax Exempt Parcel Classifications, 1998-2010

Land Use	*1998 Parcels*	*2010 Parcels*	*Net Parcel Change*
Vacant	45,198	31,428	- 13,770
Residential	203,796	237,549	33,753
Farm (Regular & Qualified)	776	687	- 89
Commercial	5,821	6,684	863
Industrial	464	425	- 39
Apartment	364	347	- 17
Total Exempt	19,818	15,899	- 3,949
Total Ratables	256,419	293,019	36,600
Net Ratables	276,237	308,918	32,651

Source: Ocean County Board of Taxation

From 1998 to 2010, Ocean County lost 13,770 vacant parcels and gained 33,753 residential parcels. The net increase in ratables totaled 32,651 parcels.

NJDEP Brownfield Sites and Redevelopment Opportunities

Opportunities exist in Ocean County for redevelopment projects at underutilized commercial sites or current Brownfield sites. The US Environmental Protection Agency (USEPA) defines a Brownfield as: "*With certain legal exclusions and additions, the term "brownfield site" means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant*." It is important to note that there need only be a *potential* contaminant on the site for it to be labeled a Brownfield. As of June 2011, NJDEP reports 407 known contaminated sites (KCS) throughout Ocean County. Figure 7-4 lists the total number of NJDEP identified KCS by municipality.

Figure 7-4: NJDEP Active Sites with Contamination Confirmed, June 2011

Municipality	*Number of KCS*	*Municipality*	*Number of KCS*
Barnegat Light	3	Manchester	17
Barnegat Twp	13	Mantoloking	1
Bay Head	1	Ocean Gate	1
Beach Haven	2	Ocean Township	8
Beachwood	7	Pine Beach	4
Berkeley	24	Plumsted	12
Brick	42	Point Pleasant Beach	13
Eagleswood	2	Point Pleasant Borough	14
Harvey Cedars	1	Seaside Heights	1
Island Heights	3	Seaside Park	8
Jackson	22	Ship Bottom	7
Lacey	18	South Toms River	8
Lakehurst	8	Stafford	23
Lakewood	48	Toms River	79
Little Egg Harbor	7	Tuckerton	5
Long Beach	5	Total	407

Source: NJDEP Site Remediation Program

The SiteMart is a NJDEP-maintained website that can be utilized by County and municipal officials as well as members of the public to gain information about contaminated sites available for redevelopment in the County. Information available includes property location, ownership, size, and potential contaminant. The County may have a vested interest in participating in the process for certain redevelopment projects on Brownfield sites, and should work with State and local officials to coordinate efforts. Green Energy projects and large economic development proposals, such as ancillary development connected with Joint Base McGuire-Dix-Lakehurst, may be well suited for certain Brownfield sites such as the Ciba-Geigy property.

The NJ State Development and Redevelopment Plan (SDRP or State Plan)

The State Development and Redevelopment Plan (or State Plan) has its foundations in the NJ State Planning Act which was adopted by the State Legislature in 1985 in response to the Fair Housing Act of 1985/Mount Laurel II Decision. In general, the plan is intended to guide growth to existing developed areas and away from environmentally sensitive areas. The State Plan Map depicts Planning Areas which correspond to different development patterns and intensities. It is meant to provide more predictability as to what areas of New Jersey will be developed or redeveloped, and what areas will be preserved or developed at a much lower density. The State Plan does not apply to the Pinelands Comprehensive Management Area which has an established land use plan.

Under the NJ State Planning Act, a 17 member Commission is charged with adopting the State Planning Rules which lay the foundation for the preparation, maintaining and updating of the State Plan as well as a long-term infrastructure needs assessment (INA). This statewide program is unique to New Jersey.

In 2011, a new State Strategic Plan was introduced to streamline the State Planning process. The new plan places more of an emphasis on sustainable economic growth and relies less on a State Plan Map. The original map resulted in state land use decisions at the parcel level, which was too specific for a state level plan. The protection of the State's valuable resources is still a priority, as is the need for sustainable development. Perhaps most importantly, the newest version of the State Plan requires much more coordination of state agencies and policies. This coordination was notably missing in previous state plan rounds.

The following Goals are included in the new State Strategic Plan:

- Targeted Economic Growth
- Effective Planning for Vibrant Regions
- Preservation and Enhancement of Critical State Resources
- Tactical Alignment of Government

There will be a focus on existing "economic clusters" in the attraction and retention of economic resources. This approach recognizes the diversity in business, industry and employment opportunities throughout New Jersey, and allows different regions of the State to pursue the specific economic programs that are most suited to those locales. This provides new opportunities for Ocean County as developing industries, such as health care, could receive additional support from the State of New Jersey. There are also growing opportunities for research & development hubs near Joint Base McGuire-Dix-Lakehurst. The State Strategic Plan appears well positioned to assist in the Implementation of the 2009 Joint Land Use Study that was completed by Ocean County, Burlington County and the Joint Base.

The following is a summary of Ocean County's participation in the previous State Planning process. Although the new State Strategic Plan has been introduced, the "old" Plan was still in place as of November 2011. In addition, elements of the current plan will be incorporated into the Strategic Plan, particularly those related to municipalities with recognized centers or endorsed plans.

The last State Plan to be adopted by the State Planning Commission was dated June of 1992. The State Planning Rules stipulated that the Plan must be amended and adopted on a three year cycle through the Cross-Acceptance process.

Ocean County Cross Acceptance

Consistent with the State Planning Act, the Ocean County Board of Chosen Freeholders passed a resolution authorizing the Ocean County Planning Board to carry out the Cross-Acceptance process on April 7, 2004. Cross Acceptance is a process of comparing statewide planning policies with the goal of attaining consistency among municipal, county, regional, and State plans, specifically the State Development and Redevelopment Plan (SDRP). The preliminary State Plan was released on April 28, 2004 and was forwarded to Ocean County and all 33 municipalities. The process then consisted of three phases: the Comparison Phase, during which the County compared the provisions and policies of the Preliminary Plan with local land use plans to identify disagreements and inconsistencies; the Negotiation Phase, during which any identified disagreements and inconsistencies were negotiated, and; the Final Review, during

which the final version of the Plan is prepared for adoption by the State Planning Commission. Through this process, local issues and concerns were raised by designated municipal liaisons and planning area changes were requested. The negotiation worksheets outlining the municipal/County requests and State agency responses for each municipality are published in the Ocean County Cross Acceptance Report, which was published in January of 2005 and is available on the Planning Board website for review.

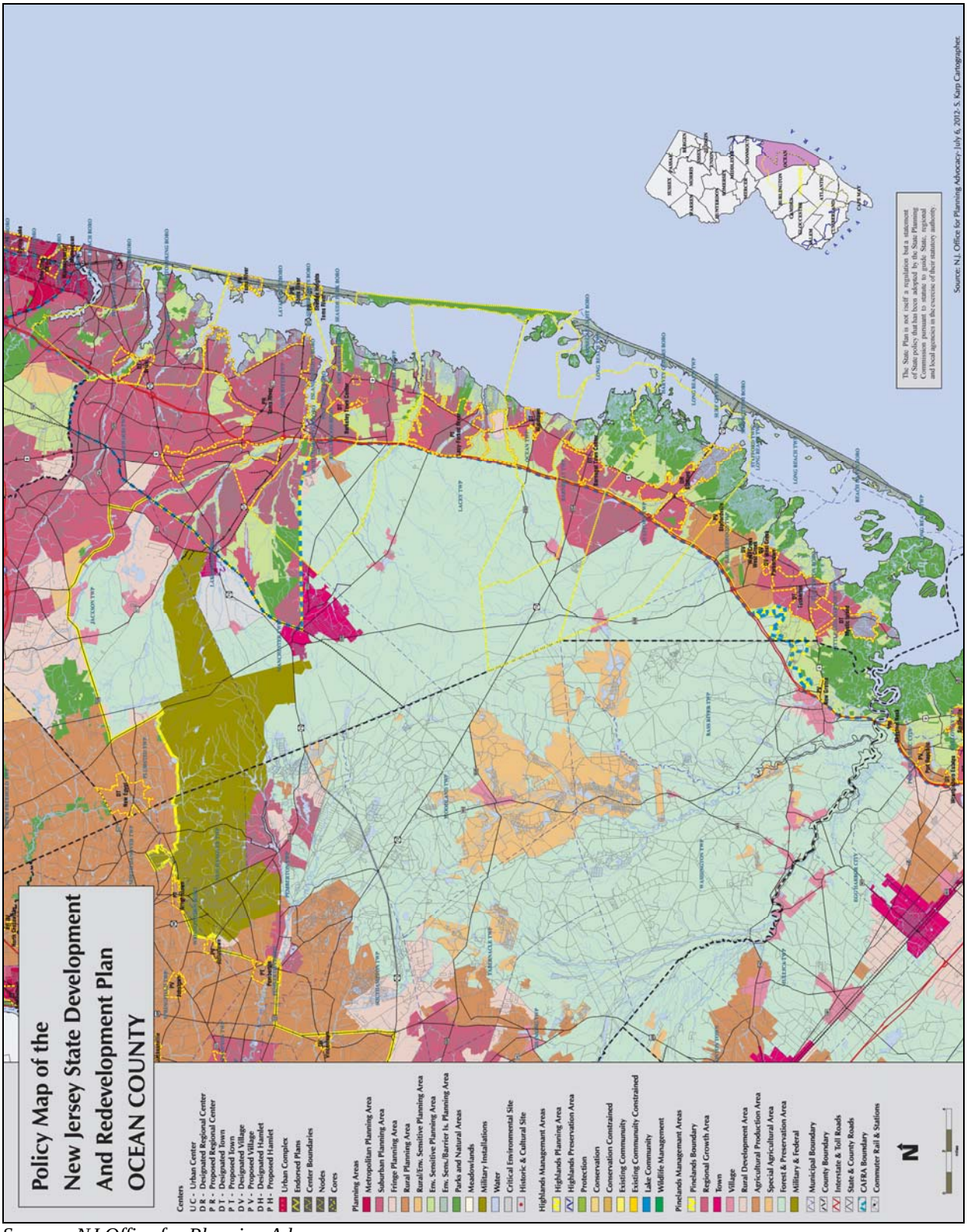
Planning Areas

Planning Areas (PA) in Ocean County range from PA2 (Suburban Planning Area) to PA5 (Environmentally Sensitive Planning Area). The PA serves as a guide to exhibit the permitted impervious coverage (surfaces on which infiltration of water into the underlying soil is prevented) allowances in each area. Permitted impervious coverage limits range from 30% in PA2 to .3% in PA5 areas. No area of Ocean County is currently designated as a PA1, or a Metropolitan Planning Area, although the demographics and land use conditions of a few municipalities in the northeast portion of the County accurately reflect PA1 standards.

- Planning Area 1 (PA1): Metropolitan Planning Area
- Planning Area 2 (PA2) : Suburban Planning Area
- Planning Area 3 (PA3): Fringe Planning Area
- Planning Area 4 (PA4): Rural Planning Area
- Planning Area 4B (PA4B): Rural /Environmentally Sensitive Planning Area
- Planning Area 5 (PA5): Environmentally Sensitive Planning Area
- Planning Area 5B (PA5B): Environmentally Sensitive/Barrier Islands

The initial State Plan Map incorrectly identified the barrier islands as PA5. The coastal communities are essentially fully developed. The State Planning Commission changed the PA from 5 to 5B, recognizing both the environmental and the vital economic aspects of the barrier islands and peninsulas.

Figure 7-5: Policy Map of the New Jersey State Development and Redevelopment Plan - Ocean County



Source: NJ Office for Planning Advocacy.

Plan Endorsement

Plan Endorsement is a State process in which municipal, county and/or regional Master Plans and other land use and planning documents are certified to be in conformance with the goals and policies of State agencies. The process cultivates with a Plan Endorsement Contract between all applicable parties. Plan Endorsement should remain a voluntary process with clear and appealing benefits offered to both municipalities and counties.

In recent years, Plan Endorsement was crucial for the designation of Centers. The State Planning Commission designates Centers to encourage a mix of land uses to promote economic sustainability, improve efficiency and protect the area environs.

Figure 7-6: Ocean County Designated State Plan Centers

Center Name	*Municipal Location*	*Corresponding Center Type*	*Designation Date*	*Designation End Extension*
Barnegat	Barnegat	Town	12/07/11	12/07/21
Brick	Brick	Town	06/20/07	06/20/17
Mystic Island	Little Egg Harbor	Town	06/28/00	06/30/13
New Egypt	Plumsted	Town	07/24/96	06/30/13
Parkertown	Little Egg Harbor	Village	06/28/00	06/30/13
Seaside Heights	Seaside Heights	Town	07/16/03	06/30/13
Stafford	Stafford	Regional Center	05/16/07	05/16/17
Tuckerton	Tuckerton	Town	06/28/00	06/30/13
Waretown	Ocean	Town	12/07/05	12/07/15
West Creek	Eagleswood	Village	04/23/03	06/30/13

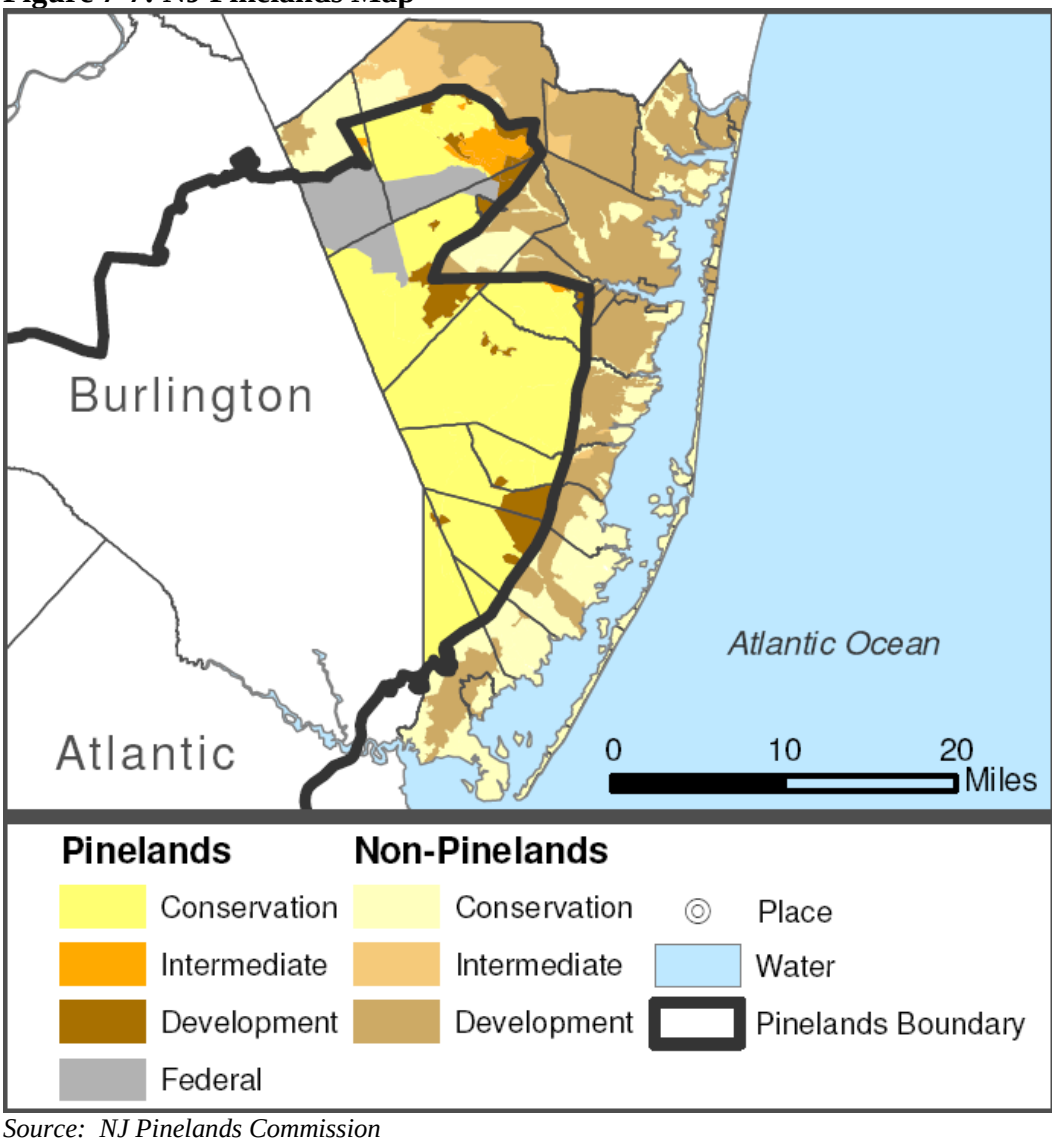
Note: The Permit Extension Act of 2008 extended Coastal Centers in Barnegat, Toms River and Lakewood Townships.
Source: Office of Smart Growth/State Planning Advocacy.

The Center Type defines the desirable development intensity and impervious coverage limits within the Center; Stafford's Regional Center allows for higher impervious coverage percentages than the Town Centers, which allow for higher impervious coverage percentages than the Village Center designation.

The Pinelands National Reserve

The Pinelands Comprehensive Management Plan (CMP) coordinates the land uses in the 1.1 million-acre Pinelands National Reserve in Southern New Jersey. The CMP Land Capability Map also establishes nine land use management areas with goals, objectives, development intensities and permitted uses for each. The nine land use management areas are implemented through local zoning which must conform to Pinelands land use standards. The map below illustrates development intensities in both the Pinelands and non-Pinelands areas in Ocean County:

Figure 7-7: NJ Pinelands Map



Source: NJ Pinelands Commission

According to the Pinelands Commission, the Pinelands Area in Ocean County totals 187,342 acres, or 39% of the County. Housing units located within the Pinelands Area in Ocean County total 19,285, or 8% of the total housing units in the County. Population wise, there are 41,451 people living within the Pinelands Area in the County, or 8% of the total Ocean County population.

The 2010 Pinelands Commission Long-Term Economic Monitoring Program Report includes the percentage of assessed land values in each land use category of the Pinelands Area. As shown below, residential properties have by far the highest assessed value of any land use within the Ocean County Pinelands Area.

Figure 7-8: Pinelands Land Use Categories and Assessed Value Percentages, 2010

Land Use	*Vacant*	*Residential*	*Agriculture*	*Commercial*	*Industrial*	*Apartment*
Percentage of assessed value in the Pinelands - Ocean County	3%	86%	< 1%	9%	1%	2%

Source: NJ Pinelands Commission

The Pineland Commission has established various Management Areas through its Land Capability Map. The details below are from a December 2005 Map update and cover the entire Management Area and not just Ocean County.

Preservation Area District

- 288,300 acres
- most critical ecological region
- Nonresidential development, except for one-1 acre lots in designated infill areas (total 2,072 acres) and special "cultural housing" exceptions, on minimum 3.2 acre lots for property owned by families prior to 1979
- Limited commercial uses in designated infill areas

Special Agricultural Production Areas

- 40,300 acres
- Only residential farm-related housing on 40 acres, and expansion of existing non-residential uses permitted

Stafford Forge, Ocean County
Photo credit: John Burnett

Forest Areas

- 245,500 acres
- Permitted residential densities average one home for every 28 acres

Agricultural Production Areas

- 68,500 acres
- Farm-related housing on 10 acres and non-farm housing on 40 acres are allowed
- Permitted non-residential uses are agricultural commercial and roadside retail within 300 feet of preexisting commercial uses

Rural Development Areas

- 112,500 acres
- Limited, low-density residential development and roadside retail is permitted
- Residential densities average one home for every five acres

Military and Federal Installation Areas

- 46,000 acres
- Federal enclaves within the Pinelands
- Permitted uses are those associated with function of the installation or other public purpose uses

Pinelands Villages

- 24,200 acres
- Forty-seven small, existing, spatially discrete settlements which are appropriate for infill residential, commercial and industrial development compatible with their existing character
- Residential development is permitted on minimum 1-acre lots if not sewered

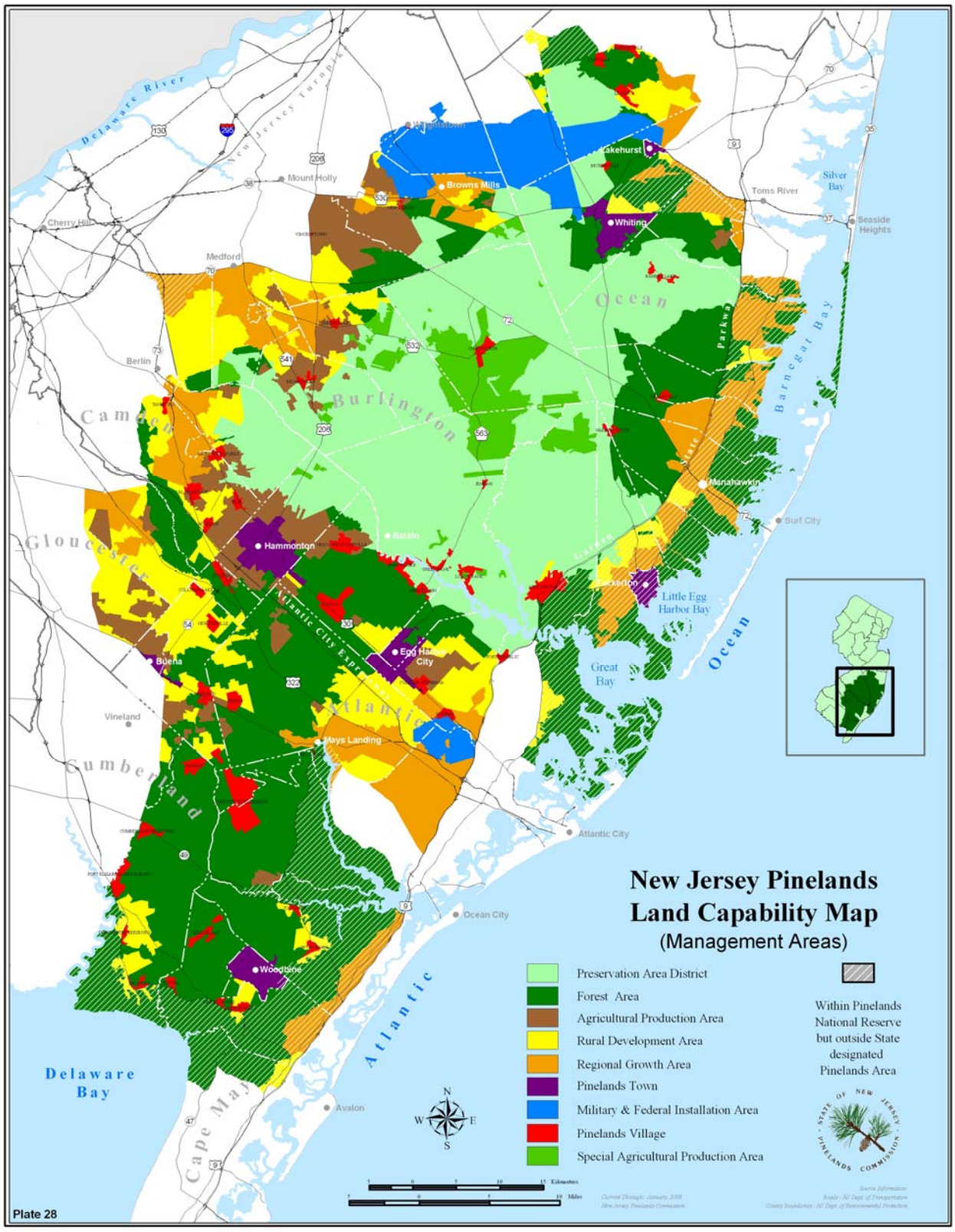
Pinelands Towns

- 21,500 acres
- Six large, existing spatially discrete settlements
- Residential development is permitted on minimum 1-acre lots if not sewered and 2 to 4 homes per acre with sewers
- Commercial and industrial uses are also permitted

Regional Growth Areas

- 77,200 acres
- These are areas of existing growth and adjacent lands capable of accommodating regional growth influences while protecting the essential character and environment of the Pinelands
- Residential development of approximately 3 homes per acre with sewers
- Commercial and industrial uses are permitted

Figure 7-9: NJ Pinelands Land Capability Map



Source: NJ Pinelands Commission, January 2008.

Based on a Memorandum of Agreement by and between the NJ State Planning Commission and the NJ Pinelands Commission, the following places receive the same benefits as designated centers, since they are certified as in conformance with the NJ Comprehensive Management Plan for the Pinelands:

Figure 7-10: Ocean County State Plan / Pinelands Centers

Municipal Location	*Pinelands Management Area*	*Corresponding Center*
Lakehurst Borough	Pinelands Town	Town
Manchester Township (Whiting)	Pinelands Town	Town
Stafford*	Pinelands Regional Growth Area	Regional Center

**The Stafford Township Regional Growth Area is associated with a Regional Center designated by the State Planning Commission in that portion of Stafford Township located within the Pinelands National Reserve but outside of the Pinelands Area.*
Source: NJ Office of Smart Growth/State Planning Advocacy

Further definitions, goals and objectives of the Pinelands National Reserve and the Pinelands Commission can be found at www.state.nj.us/pinelands/.

Abundant natural beauty, combined with relatively low housing prices, draws many to the Pinelands Area of Ocean County. However, strict zoning regulations and the lack of infrastructure, including sewer, utilities and transportation networks, precludes opportunities for further development in many areas. Most development is directed to established or fringe areas where development can be accommodated in Regional Growth Areas, Towns and Villages. Ocean County supports this center based development for the protection of the broader Pinelands area and the quality of life enjoyed by area residents.

Ocean County has partnered with the Pinelands Commission on a number of activities, including open space acquisition as noted in Chapter 10. Other activities have included agreements to facilitate routine maintenance on public roads and buildings. For example, Ocean County executed a Memorandum of Agreement (MOA) with the Pinelands Commission in August of 2010 to establish roadside maintenance practices within the Pinelands Area. Addressing items such as pH, seed mixtures and mowing schedules, it is designed to restore roadside areas to

native conditions, eliminate invasive flora and protect threatened and endangered flora where it is known to exist. Other activities covered under the MOA include the maintenance of buildings, tree pruning, traffic signage and cleaning of drainage ditches.

The Coastal Zone

The US Department of Commerce - National Oceanic and Atmospheric Administration (NOAA) describes New Jersey's coastal zone as encompassing tidal and non-tidal waters, waterfronts and inland areas beginning at the Hudson River from the interstate border with New York and its related tidal waters, south to the Raritan Bay. It continues along the Raritan Bay then extends south from Sandy Hook to Cape May Point, encompassing the state territorial waters of the Atlantic Ocean and associated tidal water bodies. From Cape May Point, the coastal zone trends north to Trenton and includes Delaware Bay and River and tidal portions of their tributaries. Upland areas along these tidal waterways are included within the coastal zone. New Jersey's coastal zone boundary encompasses approximately 1,800 miles of tidal coastline, including 126 miles along the Atlantic oceanfront from Sandy Hook to Cape May. It ranges in width from 100 feet to 16.5 miles.

The Coastal Area Facilities Review Act, or CAFRA (N.J.S.A. 13:19), passed in 1973 applies to projects near coastal waters in the southern part of the State. The CAFRA area begins where the Cheesequake Creek enters Raritan Bay in Old Bridge, Middlesex County. It extends south along the coast around Cape May, and then north along the Delaware Bay ending at the Kilcohook National Wildlife Refuge in Salem County. The inland limit of the CAFRA area follows an irregular line drawn along public roads, railroad tracks, and other features. The CAFRA area varies in width from a few thousand feet to 24 miles, measured straight inland from the shoreline; the entire length of Ocean County's coastline is under CAFRA jurisdiction. Here NJDEP is authorized to regulate and approve the location, design and construction of major facilities along the Ocean County coastline. Regulated development includes energy facilities, mining activities, industrial operations, marine terminals, residential developments of 25 units or more, and public projects such as new roads, wastewater treatment systems, parking lots and landfills. In 1993, amendments to CAFRA set new development thresholds and expanded

jurisdiction to include all development on beaches and dunes, as well as first uses adjacent to and landward of beaches, dunes and tidal waters.

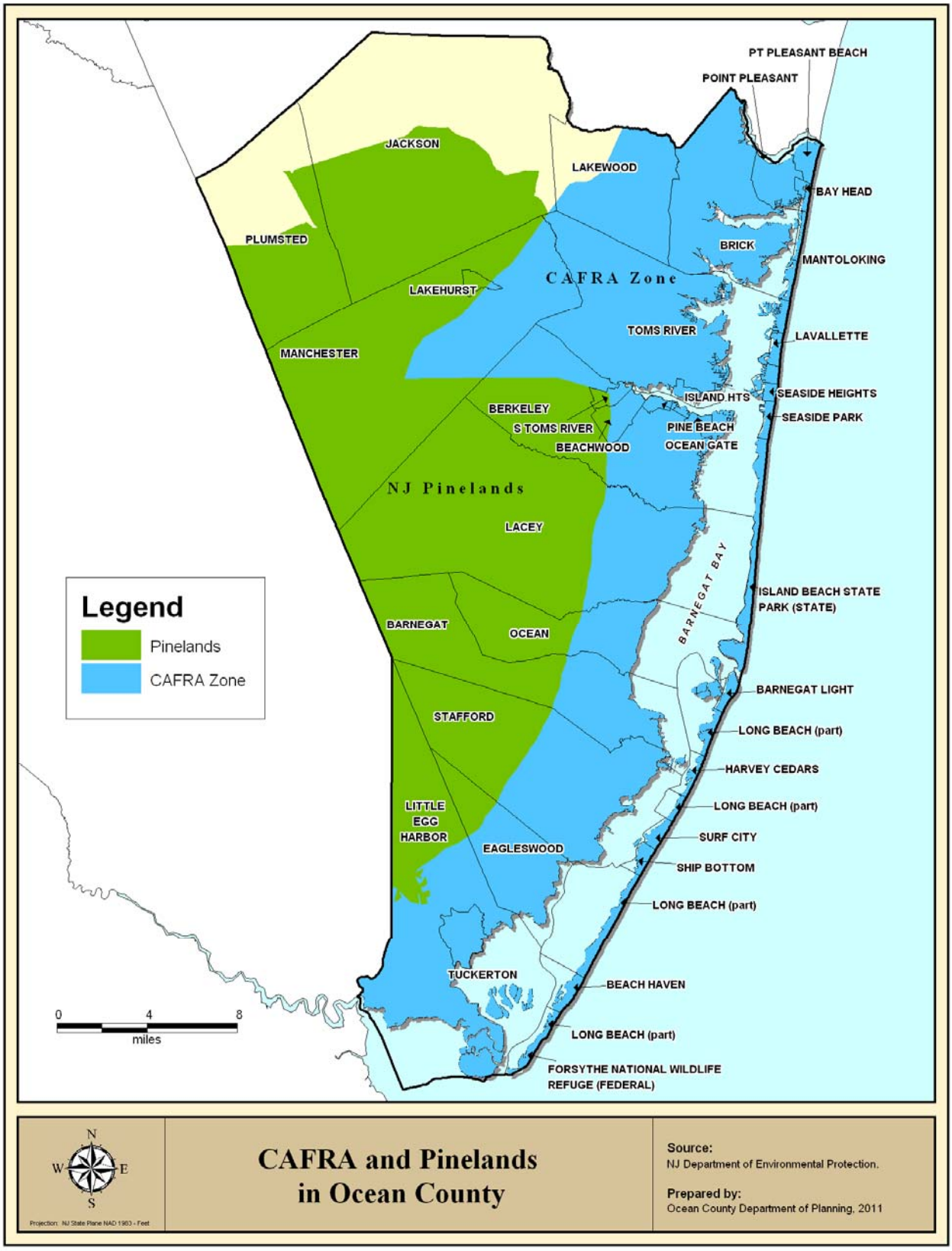
Beach and waterfront access continue to be controversial issues. CAFRA rules were revised and reintroduced to address a recent court decision; however, the issue remains unresolved as of November 2011. With a heavy reliance on tourism, most coastal towns in Ocean County encourage public access to the waterfront. A broader concern is the impact the public access requirements have on beach replenishment projects. The inability to comply with the letter of the regulations have delayed the construction of many much needed replenishment projects and left some areas vulnerable future coastal storms. Ocean County will continue to facilitate discussions between its coastal municipalities, the NJDEP and regional organizations such as the Jersey Shore Partnership.

Like other parts of the State, Centers are also delineated in the CAFRA zone and represent a compact form of development which may have one or more cores and residential neighborhoods. A Center may be an urban center, regional center, town, village, or hamlet, based on factors such as comparative size, population density, total population, transportation access, infrastructure, and employment base.

NJDEP designated Coastal Centers within the CAFRA zone for the purpose of applying the requirements for impervious and vegetative cover. Coastal Centers remain in place until their expiration date or until the Center designation is superseded by a CAFRA Center.

Per the Coastal Zone Management Rules and CAFRA regulations, coastal permits are needed for development in coastal and wetlands areas. Development on waterfronts, near tidal wetlands, use of a floodway or flood hazard areas, and development that would trigger a review per the Federal Clean Water Act are all regulated.

Figure 7-11: Map of Pinelands Jurisdiction and CAFRA Zone



Seasonal Land Uses

Photo by Daniel Beards, FunNJ.com

The traditional tourism attractions of beaches, boardwalks, marinas and the like continue to be vital components of the Ocean County and New Jersey economies. New Jersey features 126 miles of Atlantic coastline, which generates $8 billion annually in coastal tourism revenue and roughly $1 billion in commercial fishing and aquaculture revenue.

Ocean County's Atlantic Ocean shoreline is extensive. Approximately one-third of the Jersey Shore, or 44 miles, is located within Ocean County. With millions of people living within a two hour drive of Ocean County, it remains a favorite tourist destination for residents of New Jersey, New York and Pennsylvania.


Photo by Daniel Beards, FunNJ.com

The tourism industry alone in Ocean County generates $3.35 billion in revenue for the local economy. Ocean County continues to support efforts to protect the shoreline through beach nourishment and dune creation projects, and has facilitated discussions between the coastal municipalities, the NJDEP and the Army Corps of Engineers. It has also provided funding for dune grass and dune fencing for coastal towns.

The Barnegat Bay and the adjacent Manahawkin and Little Egg Harbor bays are part of a large intra-coastal water body that are often classified together as the Barnegat Bay Estuary. The bay system is not only an important environmental resource, it is also an important commercial and recreational area. There are approximately 275 marinas and thousands of boats slips that are used by both residents and visitors alike. Recreational and commercial fishing remains an important activity within the region. Further information on the Barnegat Bay's ecological importance can be found in Chapter 12. Information on parks and recreation can be found in Chapter 10.

Chapter 8

Agriculture

Ocean County has experienced variations in its agricultural industry over the course of its history. The industry was at its peak with the rapid explosion of poultry farming in the 1940's and 1950's, designating the County as the sixth largest egg producer in the United States. This massive expansion of the farming industry resulted in farms cropping up all over the County, including many that were carved out of the Pine Barrens. Toms River Township had the greatest number of poultry farms, followed by Jackson, Brick and Lakewood Townships. While the County was the center of the New Jersey "Egg Belt", the cranberry industry was thriving as well. At the time, there were 41 cranberry farms in Ocean County, together harvesting over 1,071 acres of berries, which contributed to the lush agricultural economy. Products were being sold regionally to the New York and Philadelphia markets, as well as retail sales locally.

As strong as the agricultural industry was during the mid 20th century, it experienced a decline nearly as rapid as its rise. Many contend that the poultry industry dwindled due to competition from southern states, higher production costs (feed, labor, building materials, etc.), suburbanization, and alternate uses for farmland. Another key factor was a drought in the mid sixties that severely affected the industry and contributed to its decline. By 1969, the number of poultry farms had fallen from over 1,000 to just 66, while and only 5 of the original 41 cranberry farms remained operational. Agriculture in Ocean County had to find new means for survival while the expansion of industrial, commercial, and residential markets exploded.

Today, farmers throughout Ocean County also experience success in niche market and local retail operations. In the past, the strong presence of family-run poultry, equine, cattle, and livestock farms demanded certain custom grains and other products for day-to-day operations. These products were largely shipped in bulk from locations in South Jersey, surrounding counties, and often out of state. Farmers were paying higher costs for these products due to markups, transportation, bulk quantities, and spoilage. They soon realized that these custom

products did not have to be imported from suppliers, but could be grown locally or by themselves. This created a local market for custom grains and products that proved to be viable in Ocean County. Operations like this are very profitable for local growers, and are prominent among Plumsted and Jackson farmers.

Simultaneous with the rise in the local grains market was the rise of the small equine farming outfits. According to the Census of Agriculture, since the year 2000, Ocean County has increased its acreage related to equine activity by over 230%, although in more recent years, horse farms have declined in size due to a drop in the horse racing industry. In response to this, hobby farms that support horse breeding, boarding, and riding are becoming more prevalent. This creates a symbiotic relationship between the grain farmers who supply products to the various equine operations. This also creates an increase in demand for the equine service industry for products and services such as fencing, manure control and processing, pasture maintenance, riding gear, etc.

Local U-Pick vegetable and berry farms are also largely successful operations in the County. These operations have been on the rise since the 1970's and have become quite successful as stand-alone businesses. From the berry farms of southern Ocean County to the larger U-Pick vegetable operations in Plumsted, many local residents patronize these farms for fresh vegetables at good prices, bypassing the supermarkets. Also, a strong niche market has developed for exotic crops that draw a sustainable consumer population. This growing market also attracts hundreds of people from areas as far as Canada, Rhode Island, Massachusetts, Washington, Pennsylvania, Delaware, and North Carolina to pick these niche market crops.

Photo by Ocean County Department of Planning

Farm markets are also crucial assets for farmer-to-consumer direct marketing. Strategically placed in more urban, highly populated areas, farmers can personally sell their products to the

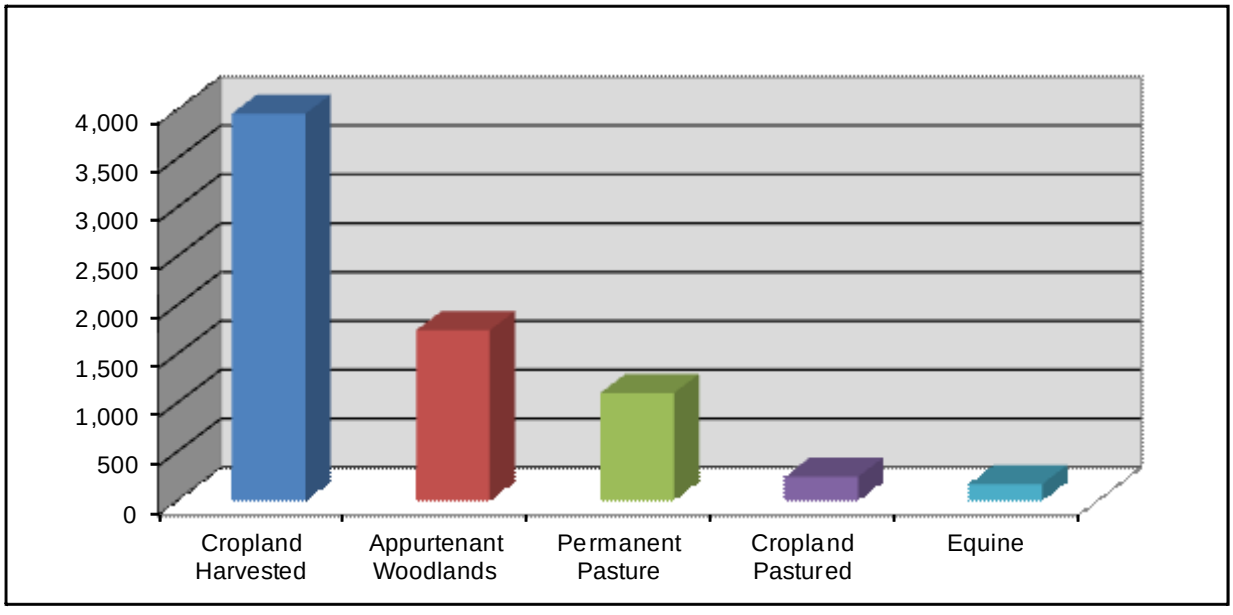
community. As of the summer of 2011, Ocean County had 10 farm markets located throughout the County. As noted earlier, Ocean County will continue to support farmlands and farm related activities.

Figure 8-1: Ocean County Annual Agricultural Sales by Product, 2007

	Grain	*Vegetable*	*Fruits*	*Nursery*	*Christmas Trees*	*Other Crops/Hay*	*Poultry and Eggs*	*Cattle*	*Dairy*	*Hogs*	*Sheep and Goats*	*Equine*	*Aquaculture*	*Other Animals*	*Ocean County Total Sales*
# Of Farms	17	31	29	45	23	33	39	14	2	10	32	32	15	14	255
Product Values (per 1,000)	222	2,059	1,236	5,645	74	81	185	182	N/A	27	40	649	N/A	103	11,515

Source: 2007 Census of Agriculture, USDA National Agricultural Statistics Service.

Figure 8-2: Agricultural Lands by Farm Type (Acres)



Source: 2007 Farmland Assessment Report.

Aquaculture is also becoming a more prominent economic contributor to the Ocean County farming industry. Aquaculture is defined as the "farming of fish, mollusks, crustaceans and aquatic plants (State Dept. of Agriculture, Jersey Seafood)." While still very small, the industry is growing. According to the National Marine Fisheries Service, the ex-vessel value of the New

Jersey seafood harvest was $146 million in 2006. While this is a significant increase over its value of $109.8 million in 2001, this figure is down $13 million since its peak value of $159 million in 2005. In 1998, the United States Census of Agriculture, (USDA) Census of Aquaculture documented a total of only 28 aquatic farms in New Jersey; where today there are over 150 licensed aquatic farmers in the State. Roughly 90 percent of aquaculture industry sales go directly from the farmer to the consumer, which is exemplified by the available farm industry data and trends in Ocean County. The State Agriculture Development Committee has developed an Agricultural Management Practice for Aquaculture, which defines guidelines and regulations for the operators of commercial farms in order to be protected under the Right to Farm program. The Fish & Seafood Development Program implemented by the New Jersey Department of Agriculture supports the industry through technology transfer projects, marketing assistance, and technical assistance with the state permit process. Farmers interested in aquaculture can reference the State Aquaculture Development Plan for detailed information on industry information, guidelines, regulations, and state agencies that can provide assistance. Recently, Rutgers University constructed the NJ Multispecies Aquaculture Demonstration Facility with a grant from the NOAA to stimulate economic growth, provide employment opportunities, act as a business incubator, assist in aquatic restoration efforts, and move the NJ aquaculture industry into the global market.


Photo by Ocean County Department of Planning

Although the majority of Ocean County farmers sell their products through local retail markets, there are still a small number of successful wholesale farms. Greenhouse operations have done very well and sometimes sell 100% of their product to the wholesale market. Products such as chrysanthemums, flowers, and ornamentals are shipped to various supermarkets, garden shops, and the broader New York market.

Farmers need supplies and services to support the essential needs of their farms. Like many other businesses, farming is an industry with connections to other businesses, such as equipment

and seed suppliers, fertilizer and pesticide suppliers, processing facilities, distributors, and transportation. With the current challenges to the Ocean County farming industry, these support services are largely located outside of the County as local demand is relatively low.

The agricultural industry throughout New Jersey must continually evolve to remain competitive. Farming in Ocean County is now quite diverse and includes equine, dairy, u-pick vegetable and berry farms, a first class winery, honey, Chinese vegetables, orchids, Christmas trees and nursery stock. Many farmers now rely on agri-tourism to supplement their incomes. Activities such as festivals, hay rides and corn mazes are now common practices on some farms.

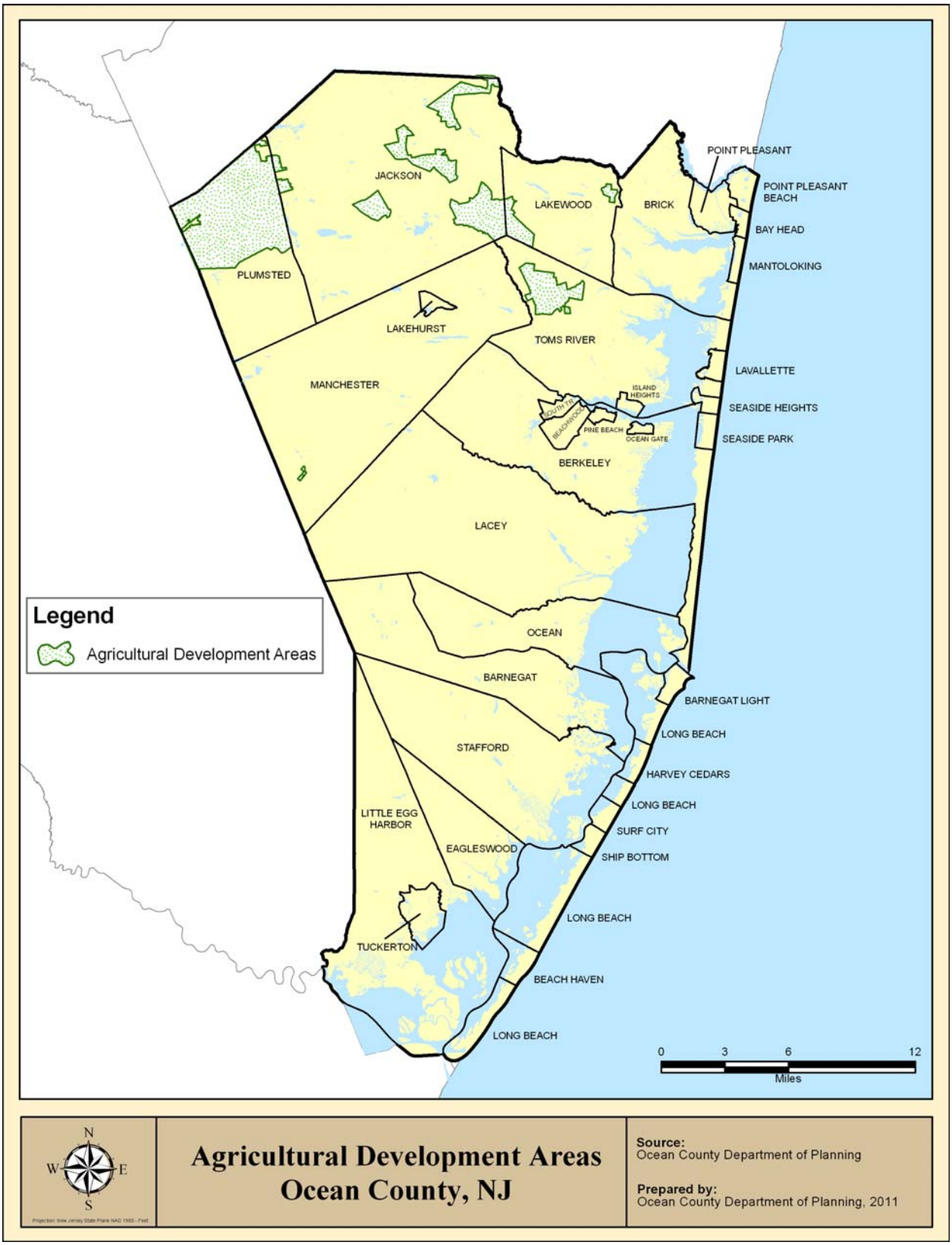
Many laws have been passed to protect farmers and assist the agricultural industry, including the Farmland Assessment Act of 1964, the Agricultural Retention and Development Act of 1983, and the Farm Preservation Act of 1983. Despite these laws, farming is still a challenging business and must continue to diversify in order to survive.

DeWolf Farm, Plumsted Township
Photo by Ocean County Department of Planning

Agricultural Land Use Planning Context

Ocean County proactively works with various State and local agencies to ensure a comprehensive approach towards land use planning. The Ocean County Agriculture Development Board (OCADB) is appointed by the Board of Chosen Freeholders and provides recommendations for the Farmland Preservation Program. As of November 2011, Ocean County had preserved 50 farms and preserved 3,300 acres. Agriculture is an important land use in northwestern Ocean County. As there is an ongoing need to ensure consistency with other land uses, the Ocean County Agriculture Development Board will assist in this effort. During the last round of the State Development and Redevelopment Plan (State Plan), Ocean County ensured that its agricultural interests were included in the Cross Acceptance report.

Figure 8-3: Agricultural Development Areas (ADAs) Map



The boundaries of the Ocean County Agriculture Development Areas (ADAs) were revised in 2005 in conjunction with the State Planning process at that time. The Ocean County Agriculture Development Board identified remaining concentrations of agricultural land and worked with the municipalities and the State Agriculture Development Committee to designate the new ADA boundaries. The ADA boundaries will be re-assessed periodically based upon changing conditions or program guidelines.

Special Resource Areas

The Pinelands Comprehensive Management Plan recognizes special agricultural production areas that have been historically tied to the Pinelands region. The production of cranberries and blueberries are important to the region and the State of New Jersey. Special incentives are available to farmers in these agriculture production areas.

Roughly 2,365 acres or 33% of farmland-assessed properties are located in the Pinelands Preservation area in Ocean County. Most of these properties are listed as woodland management, and are located in PA5 (environmentally sensitive) zones according to the State Development and Redevelopment Plan. However, there is a small amount of land in Plumsted and Jackson Townships in rural agriculture zones. Some of the Pinelands development restrictions have placed added burdens on farmers. Through the Ocean County Agriculture Development Board, the County should continue to engage the Pinelands Commission on ways to accommodate existing and emerging agricultural operations.

Municipal Master Plans and Zoning

The preservation of farmland within the County should be consistent with all local governments. Therefore the County of Ocean strongly encourages participating municipalities to adopt a farmland preservation element in their master plan. Consistent with Municipal Land Use Law, (NJSA 40:55D-28b), the element shall include: an inventory of farm properties and a map illustrating important agricultural land, a statement showing that municipal ordinances support and promote agriculture as a business, and a plan for preserving as much farmland as possible in

the short term by leveraging monies made available through a variety of mechanisms including, but not limited to, utilizing option agreements, installment purchases, and encouraging donations of permanent development easements.

Most of the 33 municipalities in Ocean County have little or no active agricultural farmland within their boundaries. Since the majority of the farming industry is found in Jackson and Plumsted Townships, they are the only two municipalities with agricultural elements in their master plans.

Future of the Farmland Preservation Program

The State Farmland Preservation Program was established to not only preserve threatened farms, but to preserve the farming industry itself. This is most easily accomplished when many contiguous farms are preserved within an Agricultural Development Area (ADA).

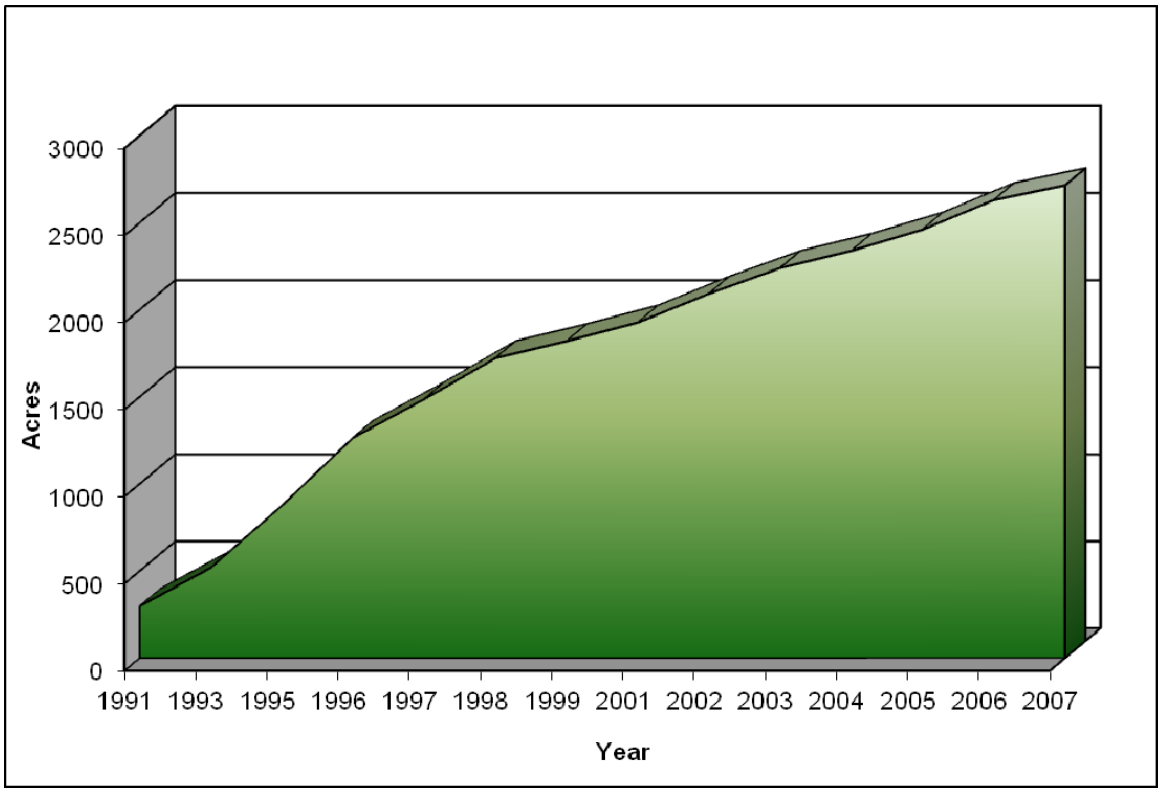
While active agriculture comprises a relatively small amount of land use in Ocean County, most of the farms are concentrated in distinct areas. Ocean County recognized this fact in the 1980's when it committed to fund the Farmland Preservation Program. The benefits of the County's actions are not just local. The large acreage preserved in Plumsted Township is itself part of a much larger stretch of farmland within the inner coastal plain of New Jersey.

A significant challenge to the future of farmland preservation is the lack of long term State funding. It is therefore necessary to maximize the investment of dollars that are available. Preservation activities will focus on the ADAs approved by the Ocean County Agricultural Development Board in 2005. The highest-ranking farms will be targeted, many of which are located adjacent to previously preserved farms.

The availability of non-preserved farmland in Ocean County continues to shrink as more and more land goes into preservation or development. Ocean County intends to continue to pursue preservation of remaining land, and will consider applications based on their agricultural viability and importance to the program. The short-term goal for Farmland Preservation in 2011

is currently 387 acres. When this is accomplished, Ocean County will have preserved approximately 43% of its active farmland. Going forward into the future, the OCADB will continue to seek out farms that provide significant contributions to the agricultural community.

Figure 8-4: Total Acres of Preserved Ocean County Farmland



Source: Ocean County Department of Planning, 2011.

It should be noted that over 67% of Ocean County's active farmland-assessed land is located in Plumsted Township, and of that, over 51% is already preserved or under final approval. The Ocean County Farmland Preservation Program must recognize that remaining funding may be limited for available farms that meet eligibility requirements in the future.

In addition to the preservation of available farms, the farms must be monitored and maintained for future generations as well. This long-term commitment requires dedicated staff, established maintenance programs, and the broader understanding of local officials. Agricultural sustainability involves the administration of the Right to Farm Program, Farmland Assessment, and the incorporation of new ideas to address needs as they arise. Ocean County staff currently

participates in the close monitoring of their preserved properties and is involved in progressive ideas to address any obstacles or changes the future may present.

As approaching development encroaches on agricultural land, conflicts between farming activities and residential neighbors may arise. Realizing the value farms bring to our communities and the need to protect the rights of farming activities, the State of New Jersey established the Right to Farm Act in 1983.

The Right to Farm Act grants farmers protection against restrictive municipal ordinances and public and private nuisance actions that may unnecessarily constrain agricultural operations. Agricultural activities including, but not limited to, production, processing and packaging of agricultural products, farm market sales, agriculture-related educational and farm-based recreational activities are protected.

Farmers are also entitled to benefits provided by the Farmland Assessment Act of 1964. Farmland Assessment status gives farmers the ability to pay largely reduced property taxes on their land provided that the active farm satisfies certain requirements. As it stands, farms must be at least 5 acres in size, and generate a minimum annual sum of $500 dollars in income derived directly from the farm. The tax advantages, issued by the township tax assessor, allow for the farmer to save significant dollars for participating, and add incentive for landowners to maintain an active operation. Ocean County has over 500 benefiting farms, covering 7,229 acres. The County should continue to work alongside the local governments to promote and maintain this important program, as it is necessary for many farmers to maintain a decent living.

Ocean County will continue to preserve and protect its agricultural resources, and assist in providing local produce to it residents through farm markets and produce-to-schools programs. Further information on agriculture and the farmland preservation program can be found in the Ocean County Comprehensive Farmland Management Plan.

Chapter 9

Military Land Use Compatibility

As a result of Base Realignment and Closure (BRAC) 2005, McGuire Air Force Base (AFB) will absorb a number of aviation units from Naval Air Station (NAS) Joint Reserve Base (JRB) Willow Grove, PA (slated for closure 2011). Fort Dix will realign to support a full spectrum of military contingency operations that permit maximum flexibility to joint war-fighting. Fort Dix will command and support joint pre-deployment military mobilization. Additionally, Naval Air Engineering Station (NAES) Lakehurst will increase its mission requirements. Although non-related to BRAC, the Air Force and the New Jersey National Guard will operate an assault landing strip for the Air Force C-17, a National Guard Consolidated Logistics and Training Facility, and a National Guard Helicopter Aviation Facility. As a military installation, the JB MDL is an area suitable for maneuver by ground, naval, and air forces; as well as an employer of a civilian force of thousands.

Joint Base McGuire-Dix-Lakehurst is a vital part of our national defense and the local economy. In order to ensure consistency between the Base and the surrounding communities and minimize encroachments, a Joint Land Use Study was prepared and completed in 2009. The Department of Defense (DoD) funds the Joint Land Use Study (JLUS) program to create a participatory, community-based framework for land use planning around military installations. The JLUS program inculcates the residents, local decision-makers, and military installation representatives with two (2) objectives:

- Cooperative land use planning between the military installation and the surrounding communities, and
- Alleviate the military operational impacts on adjacent land.

A JLUS program intentionally guides local government in their preparation and implementation of land use plans. Each JLUS presents to local government information and land use recommendations that balance both military and civilian issues and concerns. A JLUS does not substitute for a land use plan.

In New Jersey, a local government function is the development of land use plans. The Municipal Land Use Law (MLUL) allocates planning and regulatory authority to municipalities and counties. The MLUL establishes parameters to future plans on land use, including the requirement to prepare and to periodically update a Master Plan.

The military and its installations have a rich heritage of support from Ocean and Burlington Counties. Prior to the commencement of the Joint Base and the adoption of *The Joint Base McGuire-Dix-Lakehurst Joint Land Use Study for Counties of Ocean and Burlington - April 2009* [identified as JLUS proceeding forward], the County of Ocean and the military cooperatively took action to support compatible land use that supported the military mission. The Department of Defense has participated financially in Ocean County's protection of thousands of acres north of the Joint Base. After the completion of the JLUS in 2009, a charter was executed by ten municipalities, Ocean County, Burlington County, the Pinelands Commission and the Joint Base, who agreed to work together to implement the recommendations of the Joint Land Use Study.

The JUS report establishes an orderly connection for each recommended JLUS strategy according to its issues of concerns and includes the following chapters:

A. JLUS Review and Ongoing Support
B. Communication/Coordination
C. Land Use Approval Process
D. Noise and Safety
E. Community Development
F. Economic Development
G. Infrastructure
H. Natural Environment
I. Regional and State Planning Influences

The County of Ocean is the lead agency of this JLUS program in close cooperation with neighboring Burlington County. Figure 9-1 on the next page is Ocean County's JLUS strategy. The Noise Zone (AICUZ/ICUZ) and Accident Potential Zone (APZ) zone maps can be found in the JLUS Report. The report and its accompanying maps are used to guide policy decisions for future master plans and zoning ordinances. A link to this information can be found at www.planning.co.ocean.nj.us.

In 2010, Ocean County received a second grant from the Department of Defense to begin implementing the recommendations of the JLUS. The items completed in 2011 were a Communication Manual, a Transportation Mobility Report and Phase I of Wastewater and Growth Management Report. Implementation of the JLUS and other related programs will continue as Joint Base McGuire-Dix-Lakehurst is a very high priority to Ocean County.

Figure 9-1: JLUS Strategies and Recommendations – Status as of 2011

Issue	*Section*	*Strategy*	*Agency*	*Progress*
JLUS Review & Ongoing Support	A-1	Execution of a charter that addresses the needs of all participants and defines future participation and goals	Lead	Complete
	A-2	Create a Joint Base JLUS Implementation Committee	Lead	Complete
	A-3	Develop Orientation and Procedures Manual for incoming military and civilian officials to coordinate long term efforts and coordination	Lead	
	A-4	Determine when an updated JLUS is warranted	Lead	
Communication & Coordination	B-2	Create a Joint Base JLUS Implementation Committee	Lead	Complete
	B-3	Increase dialogue and collaboration between Joint Base, business, and educational communities	Lead	
	B-4	Develop and maintain a JLUS website link on municipal, county and military website	Lead	Complete
	B-5	Update JLUS website	Partner	Active
Land Use Approval Process	C-1	Revision of municipal master plans to include Joint Base missions and APZ and noise zones. At a minimum, the Joint Base should be incorporated into the Land Use Plan and Housing Elements	Partner	
Noise and Safety	D-2	Make available either by website or by pamphlet voluntary noise attenuation options for home builders and existing homeowners	Lead	
	D-3	Update and maintain Regional HUD Noise Map	Lead	
	D-4	Establish Joint Base Priority Locations for possible land purchase acquisition	Lead	
	D-5	Prepare forms of Fee Simple and Life Estate Acquisition in consultation with stakeholders	Lead	
Community Development	E-1	Develop JLUS Housing and Community Development Subcommittee to address incoming military issues	Partner	
	E-2	Incorporate JLUS Municipal Transfer of Development Rights (TDR) Program	Partner	
	E-3	Municipalities seeking to preserve land in buffer area through TDR require sewer service in receiving areas	Lead	
	E-4	Real Estate Transfer of Ownership Disclosure (by ordinance or other mechanism)	Partner	
Economic Development	G-1	Develop JLUS Economic Development Subcommittee	Lead	
Infrastructure	H-1	Further analyze wastewater solutions for JLUS Municipalities	Lead	Active
	H-2	Examine alternative routing measures to offset county road closures and military thru traffic within residential neighborhoods	Lead	Active
	H-3	Develop military traffic routing plan and evaluate weight tolerances due to weight loads of military vehicles on local roads and bridges	Lead	Active
	H-4	Explore transit opportunities for military and civilians	Lead	Active
Natural Environment	I-1	Continue to establish Joint Base Priority locations for farmland and open space preservation	Lead	
	I-2	Implement county and municipal farmland and open space preservation plans; continue development rights acquisition mechanisms (including TDR), mitigate property owner equity concerns	Lead	
	I-3	County health departments should work with Joint Base and NJDEP project managers to perform locally known contaminant testing of local wells as a precautionary step	Lead	
	I-4	Continue environmental impact studies in communication with Joint Base as additional information on base missions becomes available and work with Steering Committee to address future issues for natural resources	Lead	
	I-5	Implement wildfire management practices, including dust and bird control, to offset possible effects to Joint Base and JLUS municipalities	Lead	
	I-6	Distribute Bird/Wildlife Aircraft Strike Hazard (BASH) educational materials to local farmers to promote awareness on reducing the potential for bird and wildlife attractions that may impede safe air operations	Partner	
Regional & State Planning Influences	J-1	Rezone Clayton Sand Site from RD-9 (residential) to Light Industrial or similar non-residential zone	Partner	Active
	J-3	Re-evaluate obligations and zoning requirements for Pinelands Management Areas that may require housing obligations in areas determined to be incompatible	Partner	
	J-4	Apply for State Plan Endorsement to establish TDR program	Partner	

Prepared by: Ocean County Department of Planning, 2011.

Chapter 10

Open Space, Parks and Recreation

Ocean County has a rich diversity of natural resources. These natural resources have been traditionally utilized to meet the recreational needs of County residents and visitors who reside or vacation in Ocean County each year. All levels of governments have a responsibility for meeting the public need for recreational facilities, parks and open space. Private enterprises, such as campgrounds, canoe rentals, boardwalks and amusement centers, also play an important role in fulfilling the demand for recreation.

The following is a summary of the major public landholders in Ocean County:

Federal and State Owned Lands

The Edwin B. Forsythe National Wildlife Refuge contains more than 47,000 acres of southern New Jersey coastal habitats, which are actively protected and managed for migratory birds. Forsythe is one of more than 500 refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The National Wildlife Refuge System is a network of lands and waterways managed specifically for the protection of wildlife and wildlife habitat and it represents one of the most comprehensive wildlife resource management programs in the world. Units of the system stretch across the United States from northern Alaska to the Florida Keys and include small islands in the Caribbean and South Pacific. The Barnegat Division of the Edwin B. Forsythe National Wildlife Refuge encompasses large tracts of coastal land, approximately 24,339 acres, in Ocean County. It preserves important fisheries and wildlife habitat and provides for passive recreation.

The military also maintains an extensive amount of public lands in west central Ocean County. Most of this land will remain undeveloped and is an important component of the County's open space. There are approximately 23,118 acres owned by the Department of Defense. Much of these lands are used as buffer areas from incompatible land uses.

The Federal government, including the military, provides matching funds for the acquisition of land. Partnerships between Ocean County and the Federal government have been mutually beneficial and an extensive amount of open space has been preserved in the Edwin B. Forsythe National Wildlife Refuge and adjacent to Joint Base McGuire-Dix-Lakehurst.

The majority of publicly owned lands in Ocean County are under State jurisdiction. These lands have been acquired through several State initiatives, such as NJ Fish & Wildlife, NJ Parks and Forestry and the NJ Natural Lands Trust Fund. These divisions are within the NJ Department of Environmental Protection (NJDEP). The primary acquisition arm of the NJDEP is the Green Acres Program.

The mission of the New Jersey Division of Fish and Wildlife is to protect and manage the State's fish and wildlife resources for their long-term biological, recreational and economic values. Hunting, fishing and nature-oriented recreation are encouraged. In Ocean County, approximately 70,000 acres are under the stewardship of the NJ Division of Fish and Wildlife.

The NJ Division of Parks and Forestry is responsible for the management of the State parks, forests and recreation areas. Within Ocean County, the Division of Parks and Forestry is responsible for approximately 32,600 acres. The most popular facility is Island Beach State Park, a narrow barrier island stretching for 10 miles between the Atlantic Ocean and the Barnegat Bay. Island Beach is one of New Jersey's last significant remnants of a barrier island ecosystem that once existed along much of the coast and is also one of the few remaining undeveloped barrier beaches on the north Atlantic coast.

The NJ Natural Lands Trust was created as an independent agency in, but not of, the Division of Parks and Forestry. The Trust is dedicated to preserving habitat in its natural state and ensuring its protection. In Ocean County, this agency has protected approximately 4,500 acres. The most significant of these preserves is the Crossley Preserve in Berkeley Township. At 2,763 acres, this preserve is the Trust’s largest preserve in New Jersey. This tract includes many aspects of the Trust’s goals, including the protection of threatened and endangered species, historic and cultural sites, environmental education and outdoor recreation.

Designation of the Pinelands National Reserve in Section 502 of the National Parks and Recreation Act of 1978 has resulted in funding for public acquisition of significant acreage in the Pinelands Area of Ocean County, especially in the Cedar Creek basin. More recently, the Pinelands Commission created a Pinelands Conservation Fund in order to boost the preservation of additional areas within the Pinelands Reserve. As a result, Ocean County has been able to further its goals of protection and partner with the Pinelands Commission on several important acquisitions.

The NJDEP Green Acres Program coordinates the acquisition and development of open space resources in New Jersey. The Green Acres funding program provides matching grants to local governments and non-profit agencies for facility development and land acquisition. Funds for this program have been received from 13 State Green Acres bond issues totaling approximately $3.1 billion. Voters approved the most recent bond issue in 2009 for a total of $218 million for the Green Acres program. Many municipalities in Ocean County have taken advantage of grants and loans from the Green Acres Program to promote open space preservation and parks development. Ocean County frequently partners with the program. Many important preserves have been acquired with the 50 percent matching grant provided by the Green Acres Program.

Figure 10-1: Map of Major Federal and State Land Holdings

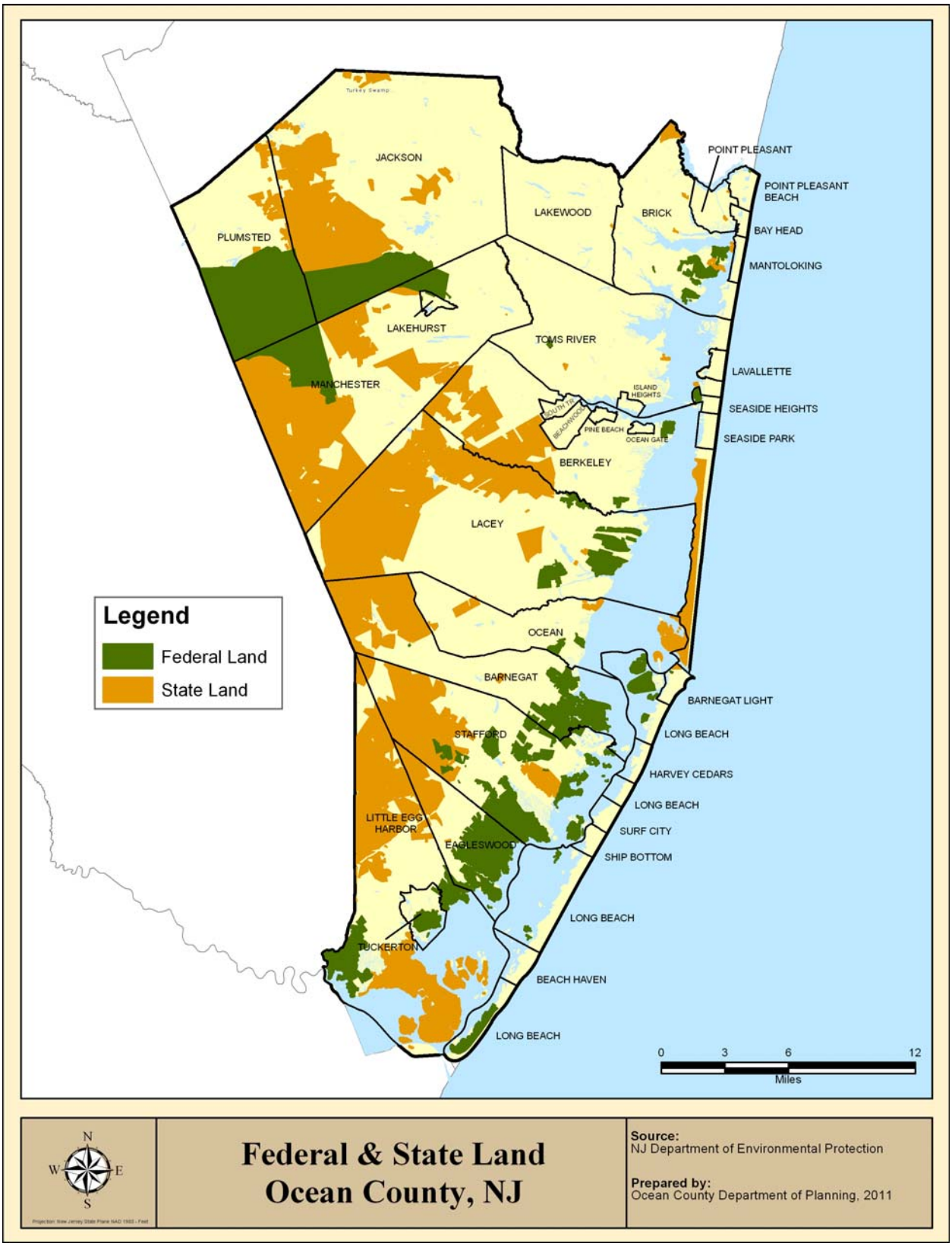


Figure 10-2: Listing of Major Federal and State Land Holdings

Managing Agency	*Facility*	*Municipality*	*Acres*
US Dept. of the Interior	Barnegat Division, Edwin B. Forsythe National Wildlife Refuge	Brngt, Brick, Eglswd, Lacey Long Bch, Ocean, Stafford	24,266.88
US Dept. of Defense	Lakehurst NWC/Fort Dix	Jackson, Manchester, Plumsted	23,117.96
NJ Fish, Game & Wildlife (Total Acres - 75,424.71)	Butterfly Bogs	Jackson	103.19
	Colliers Mills	Jackson, Plumsted	12,667.19
	Forked River Mt.	Ocean	3,907.37
	Great Bay Boulevard	Little Egg Harbor	5,503.57
	Greenwood Forest	Barnegat, Lacey	29,962.48
	Manahawkin	Stafford	1,699.20
	Manasquan River	Brick	744.33
	Manchester	Manchester	3,085.51
	Oyster Creek	Lacey	14.11
	Point Pleasant Access Canal	Point Pleasant	6.60
	Prospertown Lake	Jackson	220.19
	Sedge Islands	Ocean	192.33
	Stafford Forge	Brngt, Eglswd, LEHT, Stafford	15,777.49
	Upper Barnegat Bay WMA	Toms River	350.26
	Whiting	Manchester	1,190.89
NJ Natural Lands Trust (Total Acres - 4,106.28)	Audubon Preserve	Berkeley	465.00
	Barnegat Preserve	Barnegat	88.00
	Beaver Dam	Brick	20.43
	Cedar Bridge	Brick, Lakewood	12.50
	Clamming Creek	Berkeley	128.53
	Crossley Preserve and Assignment	Berkeley, Manchester	2,647.00
	Double Trouble Nature Preserve	Lacey	1.28
	Hampton	Lakewood	109.23
	Kislow Preserve	Stafford	2.00
	Lacey Project Area	Lacey	0.45
	Lazarus Preserve	Stafford	30.00
	Lin-Lee Preserve	Barnegat	60.00
	Mystic Island	Little Egg Harbor	169.06
	Sands Point Harbor	Ocean	120.00
	Tilton's Creek	Toms River	249.30
	West Plains Nature Preserve	Barnegat	3.60
NJ Parks and Forestry (Total Acres - 31,849.09)	Baptist Cemetery	Stafford	0.12
	Barnegat Lighthouse	Barnegat Light	31.96
	Bass River (part)	Barnegat, LEHT, Stafford, Egleswd	7,405.93
	Colliers Mills Tract	Jackson	114.86
	Double Trouble	Berkeley, Lacey	7,881.32
	Forest Management Nursery	Jackson	637.89
	Forked River Marina	Lacey	13.70
	Island Beach	Berkeley, Ocean	3,003.08
	Brendan T. Byrne State Forest (part)	Manchester, Plumsted	12,167.95
	Swan Point	Brick	166.24
	Veterans Memorial	Manchester	0.23
	Warren Grove	LEHT, Stafford	425.70
	White Lawn Cemetery	Point Pleasant	0.11
		FEDERAL LANDS	**47,385**
		STATE LANDS	**111,380**
OCEAN COUNTY TOTAL			**158,765**

Sources: U.S. Dept of Interior, Edwin B Forsythe Refuge, US Dept of Defense, NJ Department of Parks and Forestry, NJ Natural Lands Trust, NJ Department of Fish, Game and Wildlife.
Prepared by Ocean County Department of Planning, 2011.

County Parks

The County Park System is a regional recreation resource for County residents and features a variety of active and passive recreational parklands. As of 2011, the County has 21 recreational facility sites totaling more than 3,502 acres, including two golf courses. Additionally, the Ocean County Parks Department maintains four conservation areas: Gull Island, Metedeconk River, E.B. Leone and Florence T. Allen Conservation Areas. These areas total approximately 456 acres.

Jakes Branch County Park, Nature Center. Photo by Ocean County Department of Parks and Recreation.

The County Parks facilities vary greatly in terms of available recreational activities and size and are generally well distributed close to existing residential centers. Several of the smaller facilities provide important public access to the waterfront. In 2009, Ocean County opened its newest park, Jake's Branch, a 400-acre facility in Beachwood. The Department of Parks and Recreation continues to evaluate the recreation needs of the residents and visitors of Ocean County. Figure 10-3 presents a location map of County Parks' facilities and Figure 10-4 is a profile of these facilities and the recreation activities they provide.

Figure 10-3: Ocean County Parks Facilities Map

Figure 10-4: List of Ocean County Parks Facilities

Map Key	Park Name	Acres	Basketball	Conservation Area	Crabbing	Cross-country Skiing	Driving Range	Fishing	Handicap Accessible	Horseshoes	Open Playing Fields	Picnic Area	Playground	Restrooms	Shuffleboard	Small Boat Launch	Soccer	Softball	Swimming	Tennis	Volleyball	Walking/Nature Trail	Nature Center	Bike Trail
1	Gull Island Park / Conservation Area	48		●	●			●	●															
2	Beaver Dam Creek County Park	40	●	●					●		●	●	●	●			●	●		●		●		
3	Ocean County Golf Course at Forge Pond	300		●										●										
4	Metedeconk River Conservation Area	318		●				●																
5	Ocean County Park /Off Leash Dog	323				●	●	●	●									●	●	●	●			●
6	Lake Shenandoah County Park	227	●						●			●	●	●			●	●						●
7	Patriots' County Park	219	●	●					●			●	●	●	●			●	●			●		
8	Mantoloking Bridge Fishing Pier (Future)	<1			●			●	●															
9	E.B. Leone County Conservation Area	45		●	●																			
10	Parks Administrative Offices	35		●					●		●	●		●										
11	Cattus Island County Park	500		●	●	●		●	●			●	●	●								●	●	●
12	Riverfront Landing County Park	1			●			●	●			●												
13	Mill Creek County Park	14		●				●	●			●	●	●								●		
14	Florence T. Allen Conservation Area	45		●																				
15	Jakes Branch County Park	400		●		●			●		●	●	●	●			●	●				●	●	●
16	R. J. Miller & Off Leash Dog Facility	35				●			●		●	●	●	●										
17	Berkeley Island County Park	25			●			●	●	●		●	●	●		●			●		●			
18	Eno's Pond County Park	28		●		●			●		●	●	●	●							●	●		
19	Lochiel Creek County Park (Future)	38		●																				
20	Wells Mills County Park	910		●		●		●	●		●	●	●	●		●					●	●	●	●
21	Cedar Bridge Tavern (Future)	5																						
22	Cloverdale Farms	80		●																				
23	A. Paul King County Park	48	●					●	●	●		●	●	●					●		●			
24	Freedom Fields County Park	120							●			●	●	●			●	●						
25	Stanley H. "Tip" Seaman County Park	22	●					●	●	●		●	●	●	●		●	●		●	●			
26	Ocean County Golf Course at Atlantis	160					●							●										
27	Barnegat Branch Trail	52							●					●								●		●

Source: Ocean County Department of Parks and Recreation

Ocean County Natural Lands Trust Fund Program

In response to the rapid development of Ocean County and the growing need for preservation of natural areas, the residents of Ocean County approved a ballot question on November 4, 1997, which authorized the creation of a trust fund in accordance with P.L. 1997, c.24. Following approval, the Ocean County Board of Chosen Freeholders established the Ocean County Natural Lands Trust Fund (OCNLTF). Protecting natural areas that buffer development and providing opportunities for passive recreation help maintain a high quality of life for the County's residents. The benefits provided by vacant parcels in their natural state have increasingly become threatened as development replaces natural areas and encroaches on sensitive habitats. The initial motivation behind the OCNLTF proposal was the publication of "The Century Plan" in 1995, by the Trust for Public Land. The report documented significant remaining natural parcels in the Barnegat Bay Watershed of Ocean County, describing important flora and fauna species present in each of them. Direction and visioning for the program has come from targeting those sites originally identified within "The Century Plan" and working with other agencies to preserve environmentally sensitive areas.

Jumping Brook, Plumsted Township
Photo by Ocean County Department of Planning

Since 1950, the County's population has increased by over 900 percent. The ninety (90) retirement communities located in Ocean County have greatly contributed to the population growth. Growth in Ocean County occurred due to the availability of inexpensive land, the construction of the Garden State Parkway and the close proximity of the County to the cities of New York, Philadelphia and Atlantic City. Equally important has been the numerous natural and recreational attributes of Ocean County, including the beaches, bays and forests which continue to attract thousands of seasonal visitors and new year-round residents.

The continued popularity of Ocean County as a place to live, work, visit and retire has stressed the natural amenities that attracted many people in the past. The natural lands acquisition program seeks to address that issue and ensure that natural areas are preserved and water resources protected. There is increasing awareness of the compatibility between environmental protection and economic development. A degradation of the national resources and quality of life has a direct negative effect on the economy.

Environmental Protection Efforts

In partnership with Federal, State, local and non-profit agencies, the OCNLTF has a very aggressive open space preservation program. As of November 2011, the County had acquired 12,642 acres for permanent preservation and has deed-restricted approximately 3,300 acres of farmland. This preserved land, in conjunction with other federal, state, local and Pinelands protected areas, accounts for almost sixty (60) percent of the land area in Ocean County. This acreage will increase as the various acquisition programs continue.

The OCNLTF was established with acquisition goals and program objectives. The main acquisition goal of the OCNLTF is to protect the quality of life in the County. It is important to maintain the County's rural character and status as an attractive place to live and work. With the continued development of open spaces, it is important to preserve the critical environmental resources of the County. Additionally, as discussed in the Agriculture section of this report, farmland is constantly under pressure from development and it is important to maintain and enhance active agriculture for the local economy and for environmental sustainability. The buffering of natural areas and sensitive areas from development is crucial to their protection. Through the preservation of natural resources, the quality of life for residents and visitors of Ocean County can be sustained.

The program objectives of the OCNLTF are targeted at protecting and enhancing the specific resources of Ocean County in order to promote the general well being of the public. The following areas are targeted for protection through acquisition:

1. Stream corridors and other flood prone areas should be protected from development. Public ownership will help protect sensitive natural areas, enhance water quality and minimize the effects of non-point source pollution from runoff, protect bays, estuaries, waterways, and groundwater resources, and could provide linkages between federal, state, county and municipal recreational areas.

2. Aquifer recharge areas function to recharge groundwater supplies that continue to be the primary source of potable water in the county. Especially important are the outcrops of confined aquifer systems such as the Kirkwood and recharge areas of aquifers designated by the NJDEP as Critical Area Aquifers.

3. Preservation of sufficient buffer areas surrounding potable well fields to protect groundwater sources from contamination should be undertaken in support of efforts by municipal and private water purveyors.

4. Lands containing environmentally sensitive areas should be preserved in their natural state. These include wetlands, lowland forest types, stream corridors, flood prone areas and the headwaters of rivers and streams. Lands bordering the county's bay and estuarine systems are of special concern. Lands with significant local populations of threatened and endangered flora and fauna should also be targeted.

Route 571 Property, Toms River Township
Photo by Ocean County Department of Planning

5. Active farms and lands with prime agricultural soils should be protected.

6. Lands adjacent to environmentally sensitive areas, such as uplands contiguous to Barnegat Bay and the adjacent bays and estuaries, should be protected to minimize impacts from existing or future development.

In order to reach these goals and program objectives, the OCNLTF has implemented several strategies. At times, the program provides assistance to municipalities and other open space programs to protect lands that are locally important.

Consistent with the provisions of P.L. 1997c.24 and the referendum approved by the voters of Ocean County, Trust Fund money may be used for the following purposes: to purchase land in fee simple ownership; to purchase conservation easements or other interests in land consistent with the goals and objectives of the program; as County matching funds for acquisitions by other entities consistent with the goals and objectives of the program; for debt service; as loans for property acquisition; for administrative and transactional costs; or for maintenance of acquired properties.

Pinehurst Preservation Area, Plumsted Township
Photo by Ocean County Department of Planning

As discussed in the Agriculture section of this report, OCLTF money may be used to purchase the development rights on farmland. Generally, Ocean County provides matching funds from the OCNLTF to the State's cost share for the purchase of a conservation easement, which preserves the property as farmland for perpetuity.

The OCNLTF is not generally used for acquisition of property already in public ownership. The County may consider recommendations from the OCNLTF Advisory Committee for the acquisition of publicly owned lands by gift, deed, or dedication into the program. The County may also consider donations for the purposes of matching funds, project leveraging for outside funds, and other beneficial purposes.

In recent years, Ocean County has leveraged millions of dollars in outside funds to acquire high priority properties. A variety of funding sources have been used, including federal, NJ Green Acres, Pinelands Conservation Resource funds, municipal open space funds, non-profit foundation funds and military funds from the Readiness and Environmental Protection (REPI). These partnerships have often been critical to successful acquisitions.

Osborn Property, Little Egg Harbor Township
Photo by Ocean County Department of Planning

For example, a high priority acquisition was the Osborn Island property in Little Egg Harbor Township. This 47 acre property at the southern tip of Ocean County was approved for the construction of 73 homes. Through a groundswell of community support, NJ Green Acres funds and the deed restriction of adjacent township-owned parcels, this sensitive maritime forest was preserved.

One of the largest County open space acquisitions was the 950-acre Horner property in Ocean Township. After years of negotiations, the property was preserved in partnership with the Pinelands Commission and the NJDEP Green Acres Program. The land was added to the adjacent 910-acre Wells Mills County Park to create a large complex of diverse habitat and trails for passive recreation. Shortly afterwards, Ocean County partnered with the New Jersey Conservation Foundation in the purchase of an additional 617-acres adjacent to the Horner tract and other County properties preserved within the Forked River Mountain Area of Lacey and Ocean Townships.

Horner Property, Ocean Township
Photo by Ocean County Department of Planning

Figure 10-5: Map of Natural Lands Properties

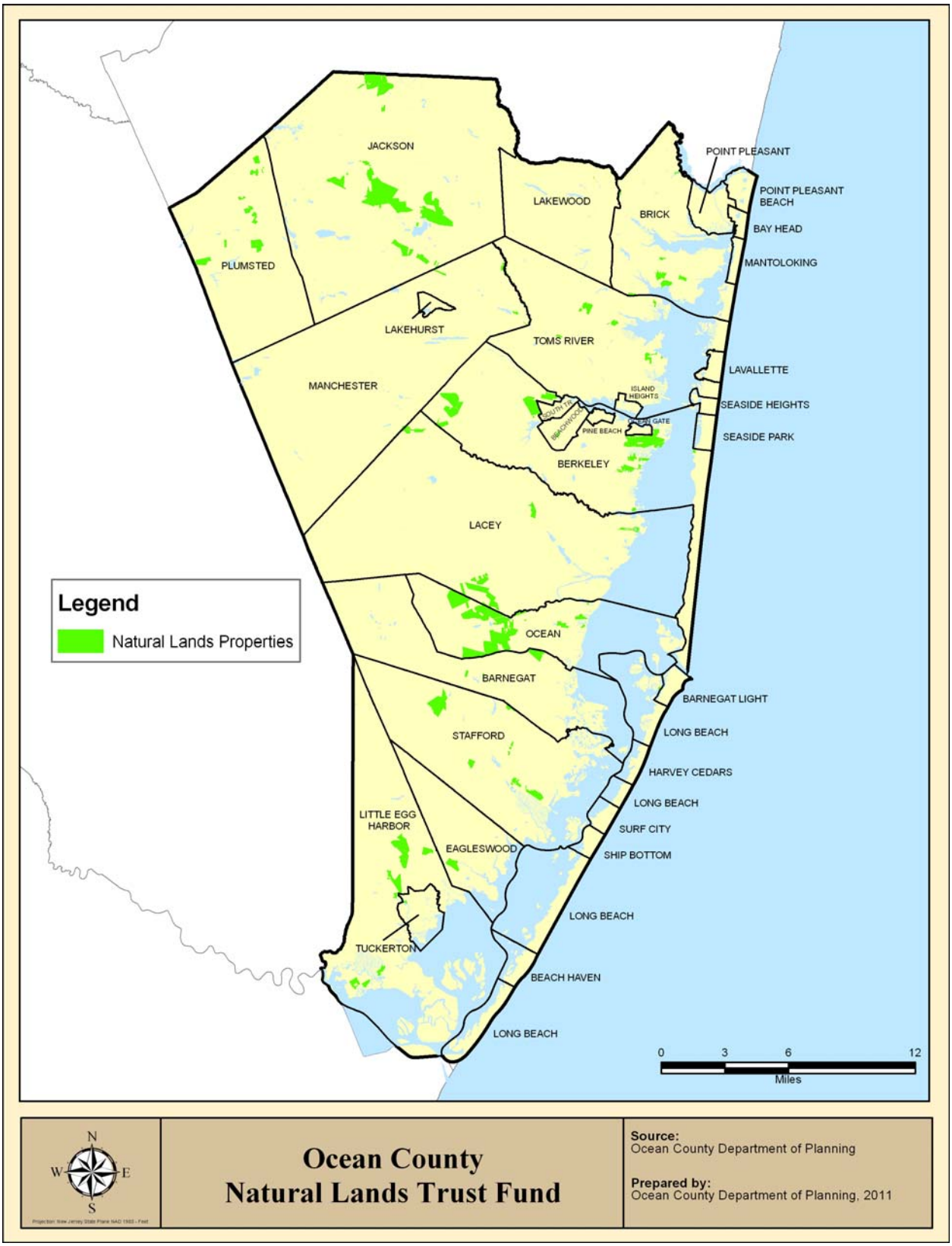


Figure 10-6: List of Natural Lands Properties

Town	Name	Acres	Street Reference	Closing Date
Barnegat	Cloverdale Farm Ext.	2.19	Cloverdale Road	6/6/06
	Cloverdale Road Farm	80.01	Cloverdale Road	11/15/04
	Rose Hill Estates Extension	147.00	Hamilton Road, Rose Hill Road	4/25/02
	Schmidt Property	3.30	Catherine St., Cloverdale Rd	9/11
	Talamas	7.00	Tuckerton RR, Barnegat Blvd	6/08
Barnegat / Berkeley / Ocean	Barnegat Branch Rail Trail	52.00	Rail R-O-W	10/30/02
Beachwood	Pinewald Road	20.00	Pinewald Road, Spruce Street	3/4/09
	Pinewald Road (Tyson)	0.18	Seaman Avenue	7/27/11
Berkeley	Berkeley Island West	18.16	Brennan Concourse	8/23/00
	Good Luck Point	363.00	Veeder Lane, Bayview Ave, Allen Rd, Sloop Creek Rd	12/29/98
	Good Luck Point TPL Extension	209.71	Bayview Avenue	2/25/05
	Haines	400.00	Route 530	7/13/07
	Hopkins	33.62	Route 530	12/28/10
	Lifetime Homes, Inc.	126.07	Veeder Lane	6/01/00
	Lifetime Homes-Myers	0.14	Anglesea Ave, Louis Ave	12/31/09
	Lifetime Homes-Smith	3.00	Sloop Creek Rd, Joseph St	11/19/10
	Lumley	284.34	Route 530	9/08
	Potters Creek	118.00	Eugene Fury Boulevard	11/30/06
	Roberts Avenue Marsh	7.07	Roberts & Bay View Aves	12/17/99
	Sloop Creek Donation	5.70	Sloop Creek Road	12/30/04
	Trust for Public Land Toms River Divide	126.50	Garden State Parkway, Magnolia Lane	3/29/00
Berkeley/ Lacey	KGE	100.00	Pinewald-Keswick Road	12/20/01
Brick	Beaton Pointe	9.64	Beverly Beach Road	7/6/2011
	Brick Airport Tract	166.88	Drum Point Rd, Cherry Quay Rd, Kettle Creek Rd	12/08/98
	Drum Point Road	17.80	Drum Point Road	8/02/00
	Havens Cove	35.00	Havens Cove Road, Atlantic Drive	3/31/09
	Kettle Creek	25.10	Hooper Avenue	2/01
	Metedeconk North Branch	13.00	Green Grove Road, Lanes Mill Road	1/15/10
Eagleswood	Westecunk Creek	126.00	Cox's Lane and Dock Ave	10/1/07
Jackson	Bismark Road	74.55	Bismark Road	8/28/02
	Bowman Road River Corridor	239.00	Between Bowman and Grawtown Roads	5/23/05
	Bowmans Bridge	142.00	Bowman's Bridge Road	12/1/00
	Cassville Toms River Corridor	27.68	West Veterans Highway	9/26/08
	Clayton-Ridgeway	16.10	Ogden Road, Route 571	8/23/10
	Commodore Pointe	35.00	W. Commodore Blvd	12/08
	Jackson Land LLC	163.02	Route 571	6/10/09

Town	Name	Acres	Street Reference	Closing Date
Jackson	Lin-Ridgeway	13.50	Toms River Rd, Ogden Rd	11/2011
	Paglia	5.00	Route 571	7/29/08
	T.R. Ridgeway Branch III	82.60	Route 571	1/5/04
	Toms River Headwaters	132.00	West Veterans Highway	5/25/04
	TPL Long Brook	387.00	Bowman Road	12/29/11
	TR Headwaters Extension	35.00	W. Veterans Hwy	8/27/10
	TR Ridgeway V	5.79	Route 571	6/22/11
	West Turkey Swamp (Phase I)	85.00	Wright-Debow Road, Hurley Road	3/16/01
	West Turkey Swamp (Phase II)	379.00	Wright-Debow Road, Hurley Road	11/29/01
	West Turkey Swamp Addition	6.40	Bismarck Road, Leesville-Siloam Road	10/20/05
Lacey	International Recycling Systems of Lacey	84.71	Lacey Road	6/10/11
	Laurel Harbor	25.94	Cedar Drive	5/3/06
	Martone	74.22	Lacey Road	12/31/09
Lacey / Manchester	Whiting Station South	46.50	Lacey Road	1/19/2007
Lacey/ Ocean	Interboro	616.74	Route 532	11/19/09
Lakewood	Theibault	1.73	Ridge Avenue	9/07
Little Egg Harbor	Freedom Fields Park Connection	2.15	Nugentown Road	4/22/05
	Harbor Group TPL Partnership	783.90	Route 539, Garden State Parkway	12/9/04
	LEHT Park Extension	180.30	Nugentown Road	8/31/00
	Nugentown Site	27.00	Nugentown & Giffordtown Roads	9/13/01
	Oasis Estates	82.83	Thomas Ave, Burton Drive	11/15/10
	Osborne Island	46.68	Radio Rd, Ocean Blvd	3/2/10
	Playhouse Drive	41.86	Radio Road, E. Playhouse Dr.	12/23/99
	The Sanctuary	128.00	Radio Road	1/4/00
Long Beach Twp.	High Bar Harbor	7.00	Auburn Road	6/30/03
Manchester	Ciba Manchester	24.40	Northampton Boulevard	8/6/07
	Holly Acres	26.17	Steiner & Madoc Roads	6/28/02
	Pine Lake	17.80	Route 571	8/31/01
	T.R. Ridgeway Branch	35.18	Routes 571 and 547	7/23/04
	Whiting Station South Ext	5.08	Lacey Road	8/2/2011
Manchester/ Toms River	Knox property	3.82	Route 70	12/21/10
Ocean	Barnegat Hills	268.28	Pancoast Road	3/8/11
	Dock Avenue	5.86	Dock Avenue, Bay Parkway	6/8/06
	Horner Property	950.00	Route 532	9/14/09
	Knots Landing, Inc.	11.93	Bryant Rd, Pennsylvania Ave., Vessel Road	2/16/01
	Lighthouse Drive	58.00	Lighthouse Drive	9/19/02
	M&R Associates	44.22	Pancoast Road	6/11/09
	Spodofora	19.05	Pancoast Road	2/12/08

Town	Name	Acres	Street Reference	Closing Date
Ocean / Lacey	Frazee Forked River Mtns.	218.45	Route 532	5/16/05
	Johnson-Forked River Mt. Area	715.90	Route 532	7/31/03
Plumsted	Coastal Divide I	22.88	Plum Ridge Drive	12/22/99
	Coastal Divide III	30.29	Tower Road, Oak Leaf Road	4/30/02
	Downs	20.39	Brynmore Road	7/18/08
	Goldman	22.46	Route 539	1/2008
	Jantorno	21.12	Route 539	8/31/10
	Jumping Brook	99.00	Long Swamp Road	6/23/10
	Kavas	30.38	Route 539	11/9/09
	Long Swamp	121.00	Long Swamp Road	1/26/10
	Nash	57.46	Long Swamp Road	2/29/08
	Pinehurst Preservation Area	55.45	Routes 539 and 528	4/30/02
Stafford	Campbell Property	369.04	Route 72	4/25/07
	Labin	5.76	Route 72	7/20/07
	Manahawkin Marsh	93.17	Route 72	11/14/05
	Manahawkin Marsh Ext II	3.24	Pennsylvania Ave, Mill Creek Road	9/26/11
	Manahawkin Marsh Ext.	27.67	Bay Avenue	12/13/05
	Manahawkin Marsh Inholding	2.55	Marsha Drive	9/26/07
	Mary Bell Road	18.40	Mary Bell Road	12/31/09
	Mary Bell Road West	25.60	Ranch Boulevard, Mary Bell Road	9/30/09
	Oak Road Partnership	53.58	Oak Road, Katydid Drive, Doc Kramer Blvd	4/1/04
	Route 72 West Associates	58.49	Route 72	11/28/06
	Route 9 Stafford	7.11	Hwy 9 North	1/4/06
	Route 9 Stafford II	11.40	Route 9	9/29/08
	Route 9 Stafford III	8.40	Route 9, Hilliard Road	12/29/05
Toms River	Green Island	13.00	West Green Island Road	4/18/01
	Green Island II	8.19	Kettle Creek Road	10/8/04
	JAMM	65.00	Fischer Blvd, Hooper Ave.	9/15/05
	Route 571	15.37	Indian Head Road (Route 571)	2/16/01
	Silver Bay Watershed	140.19	Fischer Blvd, Hooper Ave.	3/9/06
	Sixth Avenue Nomination	1.14	Sixth Avenue, Fishcer Blvd	2/6/02
	Tilton Point Inholding	1.00	Pickwick Drive	11/9/04
	Trust for Public Land Tilton Point	61.90	Cattus Island Blvd, Pickwick Drive	11/05/99
	Weiner Homes	115.00	Bay Ave , Church Road	8/19/02
Tuckerton	Tuckerton Lake	28.66	Nugentown Road, First Ave	6/14/07
TOTAL PRESERVED ACRES: 10,567.35				

Source: Ocean County Department of Planning, 2011.

The protection of the County's water resources and recharge areas is a main concern among partners. Site-specific target areas have been identified through the use of GIS technology and available databases. Using the TPL's "The Century Plan," Ocean County has targeted critical conservation sites in the Barnegat Bay Watershed in addition to the rest of Ocean County. More recently, with the help of the major stakeholders in the area, including Ocean County, TPL published an update, the "Barnegat Bay 2020 Report". This report targets specific sites and sets goals for preservation within the Barnegat Bay Watershed. The County continues to evaluate open space with its partners and develop acquisition strategies to evolve with the constant pressures from development.

Good Luck Point, Berkeley Township
Photo by Ocean County Department of Planning

In December 2010, the Office of the Governor released a Ten Point Plan of action to protect and restore Barnegat Bay. Item No. 5 of the plan prioritizes the acquisition of land within the Barnegat Bay Watershed. Ocean County is now working with the NJ Green Acres Program to prioritize additional lands for preservation. Many of these acquisitions will involve a financial partnership with the Ocean County Natural Lands Trust Fund Program.

Chapter 11

Environmental Conditions

Given its unique location and landform composition, Ocean County has a wide variety of environmental features. These environmental features and their interrelationships should continue to be considered in the process of planning for the future of the County. The Master Plan describes these environmental resources and recommends ways to protect them through land preservation and conservation, and the use of low impact design and building techniques. Ocean County has invested significant resources to protect these important features, which range from the coastal dunes of the barrier islands, to the vast Pineland areas, to the rich farmland in the northwest.

Vegetation

The vegetation of Ocean County can be categorized into five natural plant communities: Dune Thicket Community, mainly formed on barrier islands; extensive salt marshes; Upland Forest, including pine and oak-dominated forest; Lowland Forest, including white cedar and hardwood swamps, and pitch pine lowland forests; and Non-forest, comprised of active and non-active farmland and marsh areas. The most representative vegetation is that of the New Jersey Pinelands, or Pine Barrens, which is characterized by dry, upland pine forests and dense stands of Atlantic white cedars lining the stream corridors. Pinelands vegetation dominates the central and southern portions of the County and extends northward as far as Lakewood Township, gradually changing into oak-dominated forests in the northwestern townships of Plumsted and Jackson.

The Upland Forest type is located in areas of dry soils where the seasonal high water table is at least 1.5 feet below the surface. Generally, upland forests are either pine-dominated or oak-dominated. The dominant type of tree coverage is largely determined by two factors, soil conditions and the frequency of forest fires. Soils that are loamy with fine sand and organic matter may produce oak-dominated forests. Drier, coarse, sandy soils produce pine-dominated

forests. Forests that have been burned over more than once in twenty years tend to be dominated by pines. With some species, such as pine, new growth is actually stimulated by fire. In areas where fire occurs less frequently than once in twenty years, the forest is generally dominated by oaks. As pine trees mature and die, the oak species replace them as dominants. Without fire or interference by man, the climax vegetation type would be a pure oak forest. This is unlikely to occur due to many disturbances.

The forests of Ocean County are anthropogenic, having endured a long history of human impact. Much of the current forest area was previously harvested for charcoal production. Other areas were subject to historic agricultural operations which have since been abandoned. Much of the current forest area is protected from development as described in the previous section. However, cyclical pests such as Gypsy Moths, Oak Gall Wasps and the Southern Pine Beetle are an ongoing threat to forest health. The Southern Pine Beetle is of particular concern as its only recently expanded northward into the Pine dominated forests of southern New Jersey.

The pine-dominated forest has an open canopy, with trees growing distant from one another and crowns thin enough to allow considerable light to penetrate to the understory layers. The canopy trees reach a maximum of 50 to 60 feet in height. Pitch pine accounts for as much as 60% of the trees in this forest type. Short leaf pine, black oak, white oak, post oak, scarlet oak, chestnut oak and blackjack oak comprise the remaining 40%. The understory vegetation in pine-dominated forests is dense and woody. Dominant shrubs include black huckleberry, lowbush blueberry, sheep laurel, fetterbush and mountain laurel.

A variation of the pine-oak forest is the stunted-pine or dwarf forest. This variation is found in the driest central areas of the outer coastal plain and is comprised of coarse, sandy soils. Principal species include pitch pine, scrub oak, and blackjack oak. These areas are extremely susceptible to fire and the trees are very scrubby and stunted. The trees are densely spaced and thin, creating little shade. This feature, in combination with the infertile soils, results in a sparse ground cover of lichens, mosses and dwarfed shrubs of the heath family. This sub-category of the pine-oak forest type, generally known as the pygmy forest of the East or West Plains, occurs in the southwestern portion of Ocean County. These dwarfed trees range only from three to ten

feet in height and are heavily influenced by a high frequency of fires. This rare forest type is so botanically unique that it is recognized internationally as ecologically important.

Black huckleberry and lowbush blueberry are the most abundant shrubs in the Plains areas. Sheep laurel, mountain laurel, sweet fern, and sand myrtle are widely distributed, although they are only locally abundant. The broom crowberry, another rare plant, may be found in areas of the East and West Plains. Wintergreen, bearberry and trailing arbutus are also fairly widespread. The association of ground-cover plants represented by sand myrtle, broom crowberry, bearberry, Pine Barrens heather, pixie moss, and turkey beard is characteristic of the New Jersey Pinelands.

In the oak-pine forests, scrub and blackjack oak are replaced by the larger species of oak. Dominant species of this forest type include black, scarlet, white, chestnut, and post oaks. Pitch pine and shortleaf pine are scattered among the oak canopy. In forests untouched by recent fires, mature oaks are widely spaced, but form a nearly closed canopy at an average height of 35 to 50 feet. The shrub layer consists primarily of black huckleberry, low bush blueberry and dangleberry. Less common species include staggerbush, sheep laurel and wintergreens.

Dominant species in mature, oak-pine forests are white, black, scarlet, chestnut and southern red oaks. The southern red oak occurs primarily in the Maritime Forest along the coast. Black oak and White oaks are found throughout Ocean County.

There are three basic types of Lowland Forest in Ocean County. The lowland forests include pitch pine lowland, hardwood swamp, and Atlantic white cedar swamp. In many cases, the pitch pine lowland forests indicate a transition zone between upland and lowland forest types. The transition is also indicated by the types of understory and shrub vegetation.

The canopy of pitch pine lowland forest is almost totally dominated by pitch pine, although species of red maple, black gum and gray birch are scattered throughout. The height of the canopy reaches from 20-35 feet. The dense understory consists principally of black huckleberry, dangleberry and sheep laurel. In areas of the poorest drainage, leatherleaf dominates the

undergrowth. Many species of shrubs, herbs, mosses and lichens found in the pitch pine lowland also occur in the upland forest types.

Hardwood swamp forests occupy the wet soils of the floodplain, frequently found between areas of cedar swamp and pitch pine lowland forest. The canopy of the hardwood swamp averages from 25-40 feet in height. Red maple predominates, although sweet bay, black gum, gray birch, American Holly, and sassafras are also present. Pitch pine and white cedar may be found interspersed throughout the hardwoods. Shrubs found in the hardwood swamp forest include sweet pepperbush, highbush blueberry, swamp azalea, leather leaf, staggerbush, fetterbush and black huckleberry.

Atlantic white cedar swamps are among the most noteworthy and characteristic species of the wet lowlands. Atlantic white cedar was historically found along primary flood plains and in areas of high water along streams in the Outer Coastal Plain. Atlantic white cedar forms dense, even-aged stands with an average height of 40 to 50 feet. Pure stands may develop after severe forest fires, clear-cut timber harvesting or in abandoned cranberry bogs. Seedlings are intolerant of shade, but thrive in strong sunlight. Heavy deer browsing on the cedars may result in more red maple and black gum germination.

Atlantic white cedar may be found in stands along stream corridors and may often be mixed with the hardwood swamp species of red maple, black gum and sweet bay. Shrubs include leatherleaf, sheep laurel, swamp azaleas, cranberry, highbush blueberry, black huckleberry, wax myrtle, dangleberry, fetterbush and bayberry. Several rare and unusual plants are associated with white cedar stands. These include the carnivorous pitcher plant, round, spatulate and thread-leaf sundews and horned bladderwort. Also found are the rare curly-grass fern, Carolina clubmoss and several species of orchids, milkworts, sedges and cotton-grass.

Non-forest vegetation communities can be divided into two categories. In upland areas, this includes active agricultural land and abandoned fields. In lowland or wet areas, it includes tidal and inland marshes and cranberry bogs. Certain non-forest land areas are occupied with

vegetation in various stages of succession from field to forest. Over a period of time without any disturbance, these areas will revert to upland or lowland forest.

Active agricultural land represents a valuable resource, and hedgerows between fields and ecotones, where cropland meets forest or fallow fields, provide considerable amounts of food and cover for a variety of wildlife. The decline in agricultural activity has resulted in the abandonment of previously active fields. Most areas of old fields or abandoned farmland occur in Plumsted, Toms River, and Jackson Townships. Soil types associated with these fields are principally well to moderately well drained sands, loams and loamy sands.

Farmland abandoned during the 1950's and 1960's now represents a very productive habitat. Abandoned fields support a diverse mixture of herbaceous, shrub and tree vegetation which provides cover and serves as a prime food source for wildlife. The first plants to occupy abandoned farmland in Ocean County are herbaceous plants such as horseweed, ragweed, goldenrod, Queen Anne's lace, and several species of panic grass. In the second stage of succession woody plants appear, including pines, oaks, eastern red cedar, winged sumac, sassafras, wild black cherry and heath-lie plants such as huckleberry and blueberry. Eventually, the young woodland can mature into an upland forest type. Depending upon fire frequency and the nature of the soil, either an oak-dominated or pine-dominated forest will develop.

Inland or fresh water marshes are limited within Ocean County. Most wet soils in flood plains or high water table areas are covered with white cedar or hardwood forests. When fresh water marshes occur, they are usually small in land area. The largest freshwater marsh in the County is located on Joint Base McGuire-Dix-Lakehurst in Plumsted Township.

Cranberry bogs that are not maintained may revert initially to fresh water marsh. Inactive bogs that have been out of production for many years experience succession to a wet-soil type of forest. Ultimately the area will be dominated by mixed hardwoods and occasionally by white cedar forest association.

Tidal wetlands are a major feature of Ocean County's vegetation. Tidal marsh in Ocean County occupies 26,000 acres, which is approximately 6% of the County's total land area. Tidal wetlands are defined as banks, marshes, swamp meadows, flats or other land subject to tidal action. Tidal wetlands also include land now or formerly connected to tidal waters whose surface is at an elevation of one foot or less above local extreme high waters, upon which typical wetland species of vegetation may grow.

Coastal tidal wetlands are inundated diurnally with tidal waters and consequently support vegetation which is tolerant of high salt concentrations. Salt marshes and associated estuaries constitute an ecosystem more productive than all but the most intensively managed agricultural land. In New Jersey, the typical Spartina vegetation produces organic matter at a rate comparable to intensively managed cropland and substantially higher than most terrestrial ecosystems in the temperate zone. Coastal wetlands play a critical role in the marine ecosystem, providing habitat for many aquatic and terrestrial species.

Vegetation common to the tidal marshes includes salt-marsh cordgrass (Spartina alterniflora), saltwort, sea lavender, widgeon grass and eelgrass. On higher ground not usually flooded by tides, saltmeadow grass (Spartina patens) and spike grass are common, as well as marsh elder, red cedar, groundsel tree and bayberry shrubs. Areas in wetlands disturbed by the deposition of dredge spoil or other fill materials are covered mainly with common reedgrass. The normal high tide mark in the wetlands is indicated by the presence of black gum, red maple and pitch pine scrub growth.

The barrier beaches of Ocean County include significant undisturbed areas containing vegetation originally common to this type of ecosystem. These areas include Island Beach State Park, the Holgate Unit of the Forsythe National Wildlife Refuge, and Barnegat Light State Park. The remainder of Island Beach and almost all of Long Beach Island has been developed, resulting in urban land uses commonly landscaped with introduced vegetation types. Native plant species are, however, becoming increasingly popular for landscaping. In addition, extensive planting of dune grass has occurred in association with dune restoration and maintenance programs.

The undisturbed barrier beach supports a variety of grasses, herbs, shrubs, vines and small trees. Some plants, such as glasswort and bayberry, are common throughout the coastal environment. Other species are found primarily in this unique barrier beach habitat. Dune grass is the most abundant plant in foredune areas, constituting approximately 82 percent of the total plant cover. Associated with dune grass in smaller percentages are sea rocket, seaside goldenrod, dusty miller, beach pea and beardgrass, all of which are highly tolerant of salt spray. In more protected areas, beach heather is dominant. Poison ivy, Virginia creeper, lichens, panic grasses and sedges are also present in these shielded areas. Dense thickets of shrubby vegetation occur in the interior barrier beaches and are composed chiefly of bayberry, beach plum, shadbush and highbush blueberry. Inland areas normally beyond the reach of heavy salt spray contain woodlands dominated by red cedar. Other trees growing in this area are holly, black cherry, sassafras and willow oak. In one area of Island Beach State Park pitch pine and red maple are the dominant tree species.

Flora and Fauna

With its vast expanses of undisturbed land and its many diverse environments, Ocean County contains habitat for many different species of plants and animals. For example, the unique vegetation of the Pinelands is one of that area's most distinctive feature. There are approximately 850 plant species found in the Pinelands region, and a number of them are unusual and rare. Of the total plant species, 109 plants of southern affinity reach the northern limit of their range in the Pinelands, and 14 northern plants reach their extreme southern or southernmost Coastal Plain limit in the Pinelands. The ecosystems of the barrier beaches, salt marshes and similar areas are equally as complicated and diverse.

The County is also the habitat for numerous species of wildlife, some of which are very rare. Important wildlife habitats include upland forests, freshwater streams and lakes, tidal wetlands and estuaries and the marine environment of the Barnegat Bay, Manahawkin Bay and Little Egg Harbor Bay systems. The abundance, distribution and diversity of wildlife occupying these habitats are dependent on the availability of food, water, and cover. Vegetation is the primary factor influencing the availability of food and cover. In general, the more varied and dense the

vegetation the greater the number of wildlife species that can be supported. Also, the habitat must cover sufficient land area to support the home range requirements of various species in order for local populations to survive.

A detailed inventory of the flora and fauna of Ocean County has been prepared as part of the County's natural resource inventory. This inventory is an important indicator of environmental quality within Ocean County. First, the comprehensive inventory provides information against which fluctuations in the population of various species can be measured. Secondly, knowledge of important species can guide management and protection efforts to preserve the critical habitat required for local populations and communities.

The need to preserve, protect and enhance a diversity of plant and animal communities as important components of the County's ecosystem is a major aspect of environmental management. Habitat degradation or destruction results in both a change in the composition of flora and fauna, and in a decline in population and possible extirpation of some species. Particularly sensitive to habitat change are those species considered as endangered or threatened by the State or Federal government. Care must be taken to ensure the integrity of critical habitat for those species. A complete listing of the Threatened and Endangered Species of the New Jersey Pinelands can be viewed at www/state.nj.us/pinelands.

Vegetation and soil types are frequently important indicators of critical natural resources and unique biological features that should be protected from inappropriate land uses or disturbance. As mentioned previously, the pygmy forests and plains are composed of a rare vegetation type consisting primarily of dwarfed pitch pine and some blackjack oak, generally ranging from three to ten feet in height. The total area of Plains vegetation in Southern New Jersey is estimated as being 12,000 to 14,000 acres. Approximately 3,450 acres of Plains are located within Ocean County. There are two principal areas of dwarf forest in Ocean County, the East Plains and West Plains. Portions of the East and West Plains are situated in Lacey, Barnegat, Stafford and Little Egg Harbor Townships.

The unique ecology of the pygmy forest has attracted much scientific attention. There are several theories regarding its origin. The chemical constituents of the soil, insect pests, fire, soil exposure, soil moisture, soil infertility and climate conditions are major factors responsible for the stunted vegetation. One important factor is the extreme permeability of the soils. These soils transmit water rapidly away from the ground surface, leaving soil and vegetation extremely dry and susceptible to fires. Only the stunted, multiple-stemmed trees of the dwarf forest are able to withstand the high frequency of fires in the Plains. Forest fires are estimated to occur about three times more frequently in the Plains than in other parts of the Pinelands region.

The permeable soils of the Plains make this location a prime recharge area for the water table aquifer. A physical factor discouraging disruption of this scientifically valuable area is the dry, infertile soils which hinder the establishment of vegetative cover and landscaping. A more important factor is the high frequency of forest fires, which would threaten lives and property. Since fire is most likely a causative factor in the evolution and maintenance of the Plains, alteration of the natural forest fire patterns could change the character of this unique vegetation.

Geology

During the Cretaceous period, all of what is now southern New Jersey was covered by the sea. As a result, a wedge of marine sediments, sands, clays, and marls was deposited over an older eroded rock surface. In Ocean County, this wedge thickens from about 1,000 feet in New Egypt to about 4,000 feet in Tuckerton Borough. Except for the extreme western portion of the County, only late Tertiary and Quaternary deposits outcrop in the County, and only the upper group of the 24 identified coastal plain formations appear.

The most extensive surficial deposit is the Cohansey sand. The Kirkwood formation underlies the Cohansey and covers the next largest surface area. Locally, a thin veneer of sand or gravel, either Beacon Hill gravel, Pennsauken, Bridgeton or Cape May Formations may cover the Cohansey, although it has generally eroded. The Beacon Hill gravel and Bridgeton formations may be found capping several of the highest hills, and the Cape May formation may be found rimming the coast.

Landform

Ocean County is located within the Outer Coastal Plain, which is the largest of five physiographic provinces in New Jersey. Its location on the coast of east-central New Jersey lies between latitude 39'30' and 40'10' N. and between longitude 74'02' and 74'33' W. The Atlantic Ocean forms the eastern boundary and the county has a total area of 750 square miles, of which 639 square miles are classified as landmass. The Barnegat, Manahawkin, and Little Egg Harbor bays constitute most of the County's water area.

The topography of the County, which is typical of the Coastal Plain, is gently undulating with low relief. Elevations range from sea level along the coast to a maximum of 225 feet in Plumsted Township. Isolated hilltops above 200 feet of altitude, such as those located in the Pinelands regions, are surfaced with gravels. More than three-fourths of the land area of the County lies below an altitude of 150 feet, much of which is occupied by swamps, streams, and salt marsh.

Ocean County has few areas of steep slope. Approximately 94 percent of the County has slopes of 5 percent or less. An additional 5 percent of the land has slopes ranging from 5 percent to 10 percent. Less than 1 percent of the County has slopes of 10 percent or greater. These few areas of steep slope are found adjacent to the Metedeconk River in parts of Jackson, Lakewood, and in northern Plumsted.

Drainage flows eastward to the Atlantic Ocean or westward to the Delaware Bay. A major ridgeline known as the "coastal divide" in the western portion of the County separates drainage between the Atlantic Ocean and the Delaware Bay. The portion of this ridgeline in Ocean County is located in the far western region. Ocean County contains roughly 563 square miles of uplands (excludes salt marsh and beach area). The majority of the surface water drains to the Atlantic Ocean from the Barnegat Bay Watershed, however smaller portions of northwestern Ocean County drain to the Delaware Bay through the Rancocas and Assiscunk watersheds. The northeastern tip of the County drains to the Atlantic Ocean through the Monmouth Watershed,

and the far southwestern region drains to the Atlantic Ocean through the Mullica Watershed. Surface water is principally drained through a series of streams and rivers that cover the landscape. From north to south the most important waterways are the Manasquan River, Metedeconk River, Toms River, Cedar Creek, Forked River, Oyster Creek, and Mill Creek. The northern streams, the Manasquan, Metedeconk, and Toms River have heavier stream flows than the southern streams. Other streams, such as the Crosswicks Creek flow northward to the Delaware River. The divide separating the Delaware River drainage from the Atlantic coastal drainage, flows irregularly north-south through the western part of the County, and generally follows the hills capped with Beacon Hill gravel. The coastal streams drain into the Barnegat Bay, Little Egg Harbor Bay, and Great Bay. Numerous shallow lakes and ponds, usually less than 100 acres in area are scattered throughout the county. The largest lake in Ocean County is the Prospertown Lake at 103 acres, followed by Lake Shenandoah at 101 acres, and Turn Mill Pond at 100 acres. Recently, a sand and gravel pit was converted into an 82-acre, 1 billion gallon water storage reservoir in Brick and Howell Townships. Of the 82 acres, only about 30 acres are located on the Brick Township side in Ocean County.

Soils

Most of the mineral soils of Ocean County were formed in unconsolidated parent material composed of quartzose sand. In isolated areas, the parent material has high clay content, and near New Egypt the parent material contains various amounts of glauconite. The unconsolidated deposits were laid down in a succession of ocean and river deposits and then tilted to the southeast. The elevation of the land rises toward the Delaware River. The Aura and Woodmansie soils are highly weathered soils that formed in a once nearly continuous layer of Beacon Hill formation. However, the melt-water of glaciers and rising waters of the ocean eroded this deposit until only remnants on isolated hills and drainage divides remain. The material in this deposit contained a small percentage of feldspar that has weathered to form clay in the subsoil of the soils.

On slightly lower elevations, the Downer, Hammonton, and Sassafras soils formed in a mixture of a thin layer of the Beacon Hill formation and the underlying Cohansey Sand formation. This

was caused by the action of wind and water. Further erosion of the ocean deposits exposed coarse sands of the Cohansey Sand formation to weathering and to the soil forming factors. These sands are the parent material of the Lakewood, Lakehurst, Evesboro, Atsion, and Berryland soils.

In the extreme northwestern corner of the County, near New Egypt, a small outcrop of highly glauconitic material is the parent material for the small acreage of Collington, Adelphia, and Shrewsbury soils in the County. The Manahawkin soils formed in decaying woody and herbaceous organic deposits that overlie the mineral deposits of most geologic formations in the County. These soils are extremely acidic and are located in swamps in the lowest elevations.

There are over 30 different soil series in Ocean County. These soils can be classified in associations that represent a natural landscape in terms of soils, relief, and drainage. Typically, an association consists of one or more major soils and some minor soils. The soils making up one association can occur in other associations but in a different pattern.

The Lakehurst-Lakewood-Evesboro association makes up approximately 31 percent of the County. The association is generally made up of 40 percent Lakehurst soils, 35 percent Lakewood soils, 10 percent Evesboro soils, and 15 percent minor soils. The soils are characterized as nearly level to sloping, somewhat poorly drained to excessively drained, sandy soils located on uplands.

The Downer-Evesboro association comprises approximately 33 percent of the County. The association is generally made up of 60 percent Downer soils, 10 percent Evesboro soils and 30 percent minor soils. These soils are nearly level and gently sloping, well drained and excessively drained, loamy and sandy soils, located on uplands.

The Shrewsbury-Collington-Tinton association makes up approximately 1 percent of the County. This association is generally made up of 30 percent Shrewsbury soils, 25 percent Collington soils, 25 percent Tinton Soils, and 20 percent minor soils. These soils are nearly level to sloping, poorly drained and well drained, loamy and sandy soils located on uplands.

The Sulfaquents-Sulfihemists association comprises approximately 9 percent of the County. The association is generally 70 percent Sulfaquents and Sulfihemists and 30 percent minor soils. The soils are nearly level, poorly drained, mineral and organic soils on tidal flats subject to daily flooding.

The Urban land-Fripp association makes up about 2 percent of the County. The association is generally 50 percent urban land, 35 percent Fripp soils and 15 percent minor soils. The soils are Fripp soils used for urban land uses, nearly level and gently sloping excessively drained soils located on barrier islands. Undeveloped Fripp soils are found mainly on the dune systems of the barrier beaches.

The Woodmansie-Downer association comprises 8 percent of the county. The association is approximately 60 percent Woodmansie, 20 percent Downer soils and 20 percent minor soils. The soils are nearly level to sloping, well-drained, sandy and loamy soils on uplands.

The Manahawkin-Atsion-Berryland association makes up about 16 percent of the County. The association is about 35 percent Manahawkin soils, 35 percent Atsion soils, 20 percent Berryland soils, and 10 percent minor soils. The soils are nearly level, very poorly drained organic and sandy soils located on lowlands.

Chapter 12

Groundwater, Water Resources and Supply

Groundwater is an essential element of the County's water resources. Wells, both public and private, supply almost all of the County's potable water. Also, since rivers and streams are dendritic, groundwater discharge is critical to the maintenance of base flow. This base flow is important for water quality considerations, aesthetic and recreational values and in the maintenance of the productivity of the bays.

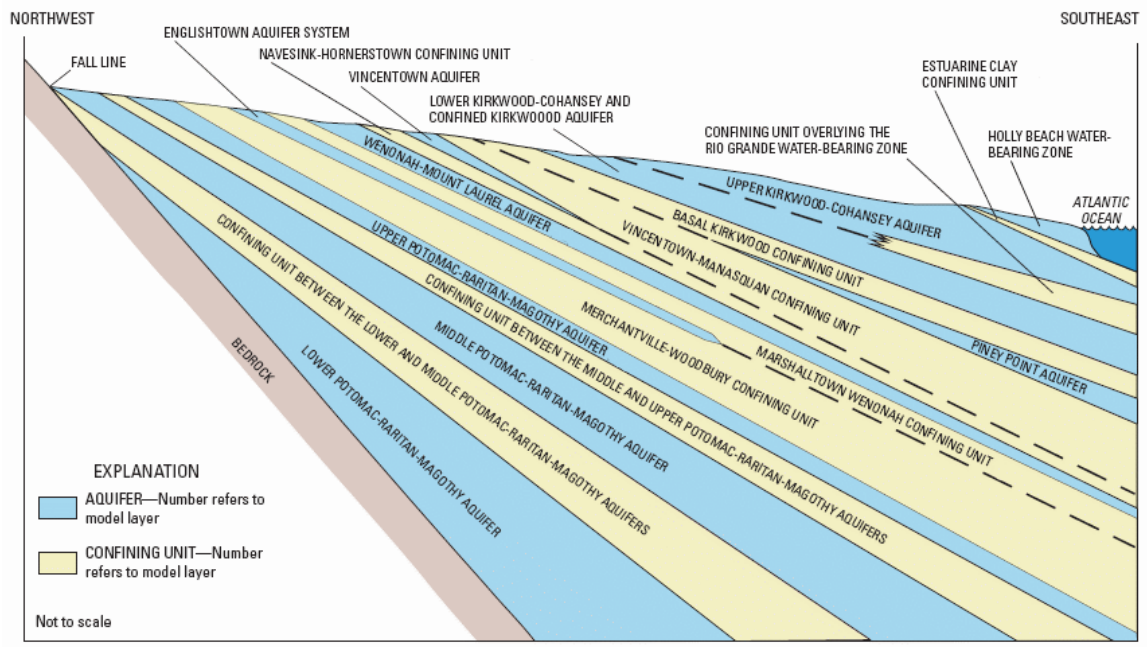
The groundwater system within Ocean County is part of the larger system underlying the entire New Jersey Coastal Plain. The sediments comprising the system are composed of alternating sequences of unconsolidated gravel, sand silt, and clay.

Precipitation is the source of all non-saline groundwater in the County. Approximately 40% of the 47 inches of average annual rainfall is recharged to the groundwater table. Precipitation that enters the ground is retained in porous underground strata called aquifers. Aquifers in Ocean County are comprised of coastal plain sediments, usually sand or gravel, which are bounded by layers of impervious clay. Surface water enters a specific aquifer at recharge areas where the sediments comprising the aquifer outcrop at the surface water leaves the aquifer by way of springs at or near the surface, discharge to surface water bodies or by well withdrawals. It can also leave one aquifer and enter another where the dividing clay barriers are weal or intermittent. Aquifers in Ocean County have an estimated storage capacity of 180 billion gallons of water.

The water table aquifer is the Kirkwood-Cohansey aquifer system, which is composed of hydraulically connected sediments of the Kirkwood Formation, Cohansey Sand, and younger overlying surface deposits. Seven aquifers underlie the Kirkwood-Cohansey system. They are, in order of increasing depth and age: the Rio Grande water-bearing zone, Atlantic City 800 Foot Sand, Piney Point or Manasquan formation, Vincentown aquifer, Wenonah – Mt. Laurel aquifer, Englishtown aquifer, and the Potomac – Raritan – Magothy aquifer systems.

Potable water in Ocean County is drawn from each of the major aquifers underlying the County. The most heavily utilized aquifers for water supply are the Cohansey Sand and the Kirkwood Formation. The Potomac – Raritan – Magothy system is frequently utilized by major purveyors, particularly in the northeastern portion of the County. Other aquifers tapped to a lesser extent include the Englishtown, Wenonah – Mt. Laurel, Vincentown, Piney Point and the Atlantic City 800 Foot Sand. The geologic formations and their characteristics are presented in Figure 1.

Figure 12:1: Hydrogeologic Cross-section of the New Jersey Coastal Plain



Source: US Geological Survey.

The use of groundwater for water supply and other human needs has increased. The potential withdrawal of groundwater is reflected in total maximum permitted diversions issued by the New Jersey Department of Environmental Protection (NJDEP). Permitted diversions for Ocean County have increased from 103.5 million gallons per day (MGD) in 2004 to 109.9 MGD in 2009.

The water level of the Kirkwood – Cohansey aquifer system lies near the surface throughout most of Ocean County. As a result, it is the most vulnerable to contamination from land based activities such as landfills, accidental spills, illegal dumping and faulty septic systems. The Kirkwood – Cohansey has also been the most widely used aquifer in Ocean County. In 2009 the

permitted diversions for the aquifer was 92.6 MGD in Ocean County. The aquifer was extensively tested by the US Geological Survey in the early 1980's. The results of this sampling indicated that it is more chemically variable than any of the other aquifers.

The type of land use throughout Ocean County has been shown to influence the chemical concentration of the water in the Kirkwood - Cohansey system. Water beneath land used for commercial or industrial purposes contained higher levels of dissolved calcium. Beneath residential land, the water was often characterized by increased levels of magnesium, chlorides, nitrates and nitrites. The Kirkwood - Cohansey also exhibited problems with salt water intrusion in the coastal areas of the County. This problem occurs when potable water is pumped from the aquifer and is replaced by seawater. When wells are contaminated by salt water, the only current solution is to abandon the well and either drill a new one in a deeper aquifer or connect to a public supply system which can adequately accommodate the increased demand.

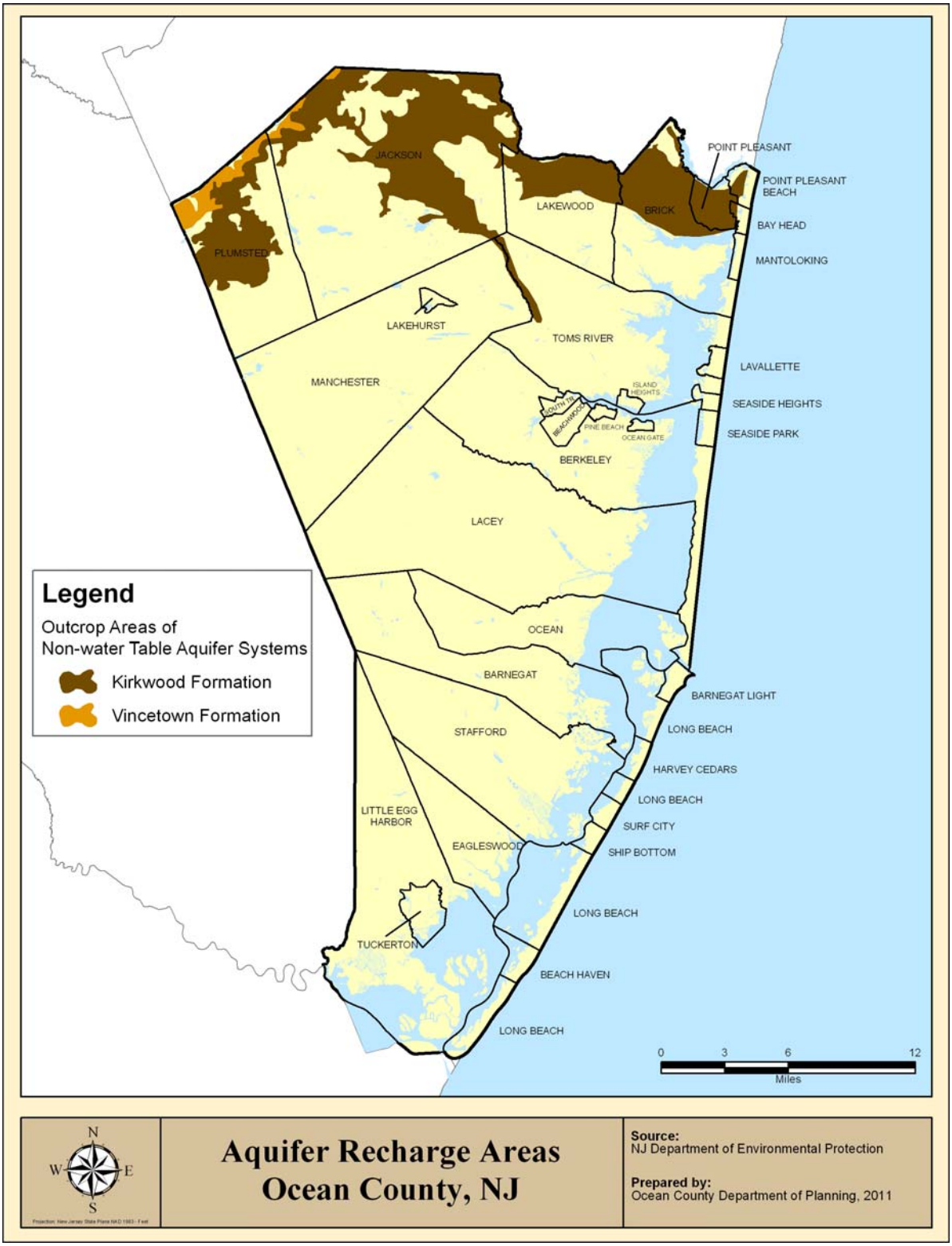
Despite localized problems associated with the Kirkwood – Cohansey, the US Geological Survey considers water from this aquifer to be generally suitable for drinking. The Kirkwood - Cohansey system can be locally recharged practically anywhere in the County. Regional recharge to the deeper areas of this aquifer occurs primarily in western Ocean County and in recharge areas well outside the County's boundaries. Figure 2 shows the aquifer recharge areas within Ocean County for the non-water table aquifers.

The other aquifers underlying Ocean County are confined and artesian. Artesian aquifers are those which slope seaward from higher ground, beneath a confining bed. Water in the deeper areas of these aquifers is under pressure and will rise to the surface when tapped by a well.

The deepest of the aquifers underlying Ocean County is the Potomac - Raritan - Magothy. This aquifer system is the second most used in the County. In 2009, the permitted diversions for the Potomac - Raritan - Magothy aquifer were 0.0047 MGD. It is also used by the majority of the large water suppliers in Ocean County. The water in this aquifer is of good to excellent quality with only a few localized wells containing high iron and manganese concentrations. Since this

aquifer system is susceptible to salt water intrusion along southern coastal areas, most of the major supply wells are located in the northern half of the County.

Figure 12-2: Aquifer Recharge Areas



The Wenonah - Mt. Laurel is only a minor water source in Ocean County. The quality of water in this aquifer is generally satisfactory with excessive iron concentrations in some wells.

The Vincentown Aquifer is also a minor aquifer and serves as a water supply for some areas in northwest Ocean County. The quality of the water in this aquifer is generally good, with few excessive manganese concentrations. The chemical concentration of limited areas of the Vincentown remains very stable, changing very little over the years. Like the aquifers beneath it, the major chemical characteristic of the Vincentown Aquifer is calcium bicarbonate, which gives the water a high pH. Besides the Kirkwood - Cohansey, the Vincentown is the only aquifer system that outcrops, and as a result is recharged in Ocean County.

The Piney Point Aquifer, also known as the Manasquan, had a permitted diversion of 0.0017 MGD in 2009. The quality of this water is generally satisfactory with locally high concentrations of iron and sodium. The major chemical characteristic of this aquifer is sodium bicarbonate. Two significant cones of depression, reflecting declining water levels, have been found near Seaside Park and Barnegat Light.

The southernmost portion of Ocean County draws water from the Atlantic City 800 Foot Sand, an aquifer which is actually a confined area of the Kirkwood Formation. In 2009, the permitted diversions for the aquifer were 0.0038 MGD in Ocean County. The quality of this water is generally satisfactory with locally high concentrations of iron and manganese. The largest decline was noted in Harvey Cedars. Above the Atlantic City 800 Foot Sand is a massive clay bed that partially separates it from the overlying Kirkwood - Cohansey Aquifer. In Ocean County, the boundary of this clay barrier runs in a northeast to southwesterly direction from the southern tip of Island Beach State Park to the northern area of Bass River State Forest in Little Egg Harbor Township. It is not known whether the Atlantic City 800 Foot Sand continues beyond the western edge of the confining barrier to form a part of the water table system to the west. If it does, most of the recharge to this aquifer would be from unconfined areas.

As shown in Figure 12-1, the Rio Grande Aquifer is a small water bearing zone which lies within a large confining unit. Results of limited testing by the US Geological Survey have shown that

the water in this aquifer is chemically characterized by sodium bicarbonate. As with many aquifers underlying Ocean County, the Rio Grande also contains locally high concentrations of iron.

The preceding section summarizes the hydrologic characteristics of the major aquifers utilized for water supplies in Ocean County. Concern over expanded diversions from these systems and degradation of groundwater quality has resulted in increased investigations by County, state, and federal agencies on the best way to manage this resource. These investigations have led to the implementation of ambient monitoring for both quality and quantity of specific aquifer systems, chloride monitoring and increased management of permitted withdrawals. The intent of these programs is to insure the long-term viability of the aquifer systems as a source of water supply.

As the County population continues to grow, there is an increasing concern regarding the quality and quantity of water obtained from groundwater sources. Such concerns include saltwater intrusion, aquifer contamination and reductions in stream flows as a result of excessive pumping from these aquifers. Such impacts can negatively affect water quality by reducing the amount of water available to dilute dissolved solids and sustain biological components within the ecosystem.

There are two issues facing groundwater in Ocean County. The first issue involves the overuse of groundwater from specific aquifers. When water withdrawals from an aquifer exceed the ability of the system to recharge naturally, groundwater mining occurs. This means that more water is taken out of the system than can be replaced from either precipitation or linkages with other aquifer systems. The result is a decline in water levels in the aquifer, a potential consolidation of the water-bearing sediments comprising the aquifer affecting future storage, and in coastal areas such as Ocean County, the potential contamination of the aquifer through saltwater intrusion. The barrier island communities of Ocean County have instituted water conservation practices to reduce consumption from the aquifers.

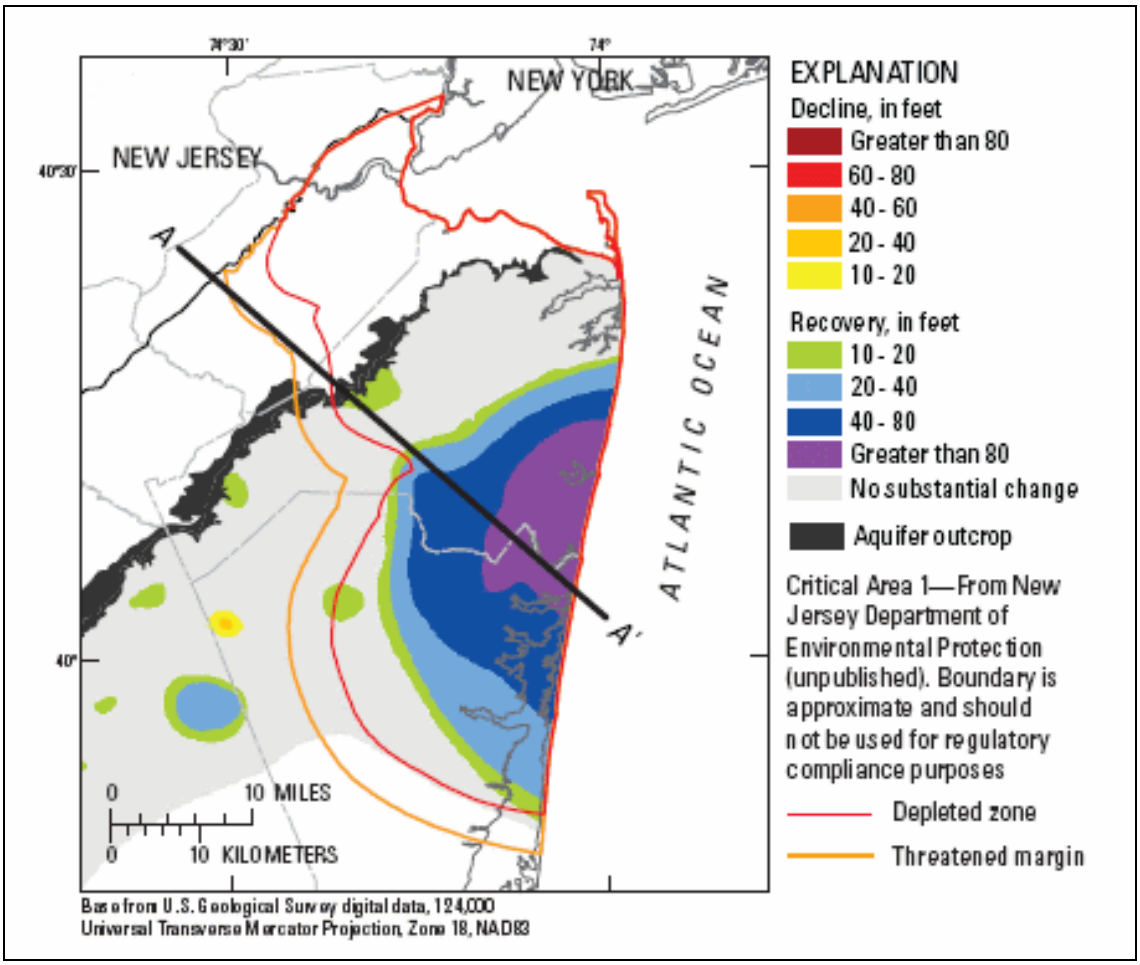
In response to groundwater overuse, the NJ Division of Water Resources promulgated regulations designating Water Supply Critical Area Number 1, which affects water withdrawals

in northern Ocean County. Under this program, the Englishtown, Mount Laurel – Wenonah and the Potomac – Raritan – Magothy systems were designated as Aquifer Critical Areas. The NJDEP set out alternate water-supply plan procedures starting in 1986. Actual reductions in withdrawals were implemented starting in 1989.

Within Critical Area 1, groundwater withdrawals from production wells in the depleted zone were reduced by 50% of 1983 rates in the Wenonah-Mount Laurel aquifer, Englishtown aquifer system, and Middle Potomac-Raritan-Magothy aquifer; and by 40% of 1983 rates in the Upper Potomac-Raritan-Magothy aquifer. Withdrawals in the threatened margin were limited at 1983 rates. Purveyors had the opportunity to interconnect with alternative water sources—shallower non-restricted aquifers, groundwater sources outside the Critical Area, other purveyors, or surface-water supplies. New withdrawal allocations (with the exception of temporary construction dewatering and ground-water remediation activities) were prohibited by the New Jersey Water Supply Management Act (New Jersey Statutes Annotated, 1981). After designation of the Critical Area, withdrawal reductions resulted in water-level recovery in the affected aquifers from 1988 to 2003. (Fred Sickles, New Jersey Department of Environmental Protection, 2007). Figure 12-3 shows areas of water-level recovery.

The second issue facing Ocean County's groundwater is contamination. In December 1991, New Jersey's "Well Head Protection Program (WHPP) Plan" was approved by the Environmental Protection Agency. A goal of the WHPP plan is to prevent contamination of groundwater resources. The delineation of Well Head Protection Areas (WHPA) is one component of the WHPP plan. The WHPA is the area from which a well draws its water within a specified time frame. Once delineated, these areas become a priority for efforts to prevent and clean up groundwater contamination. Other components of the WHPP plan include pollution source inventories, development and implementation of best management practices to protect groundwater, land-use planning, and education to promote public awareness of each person's role in protecting our groundwater resources.

Figure 12-3: Critical Water Supply Areas Map

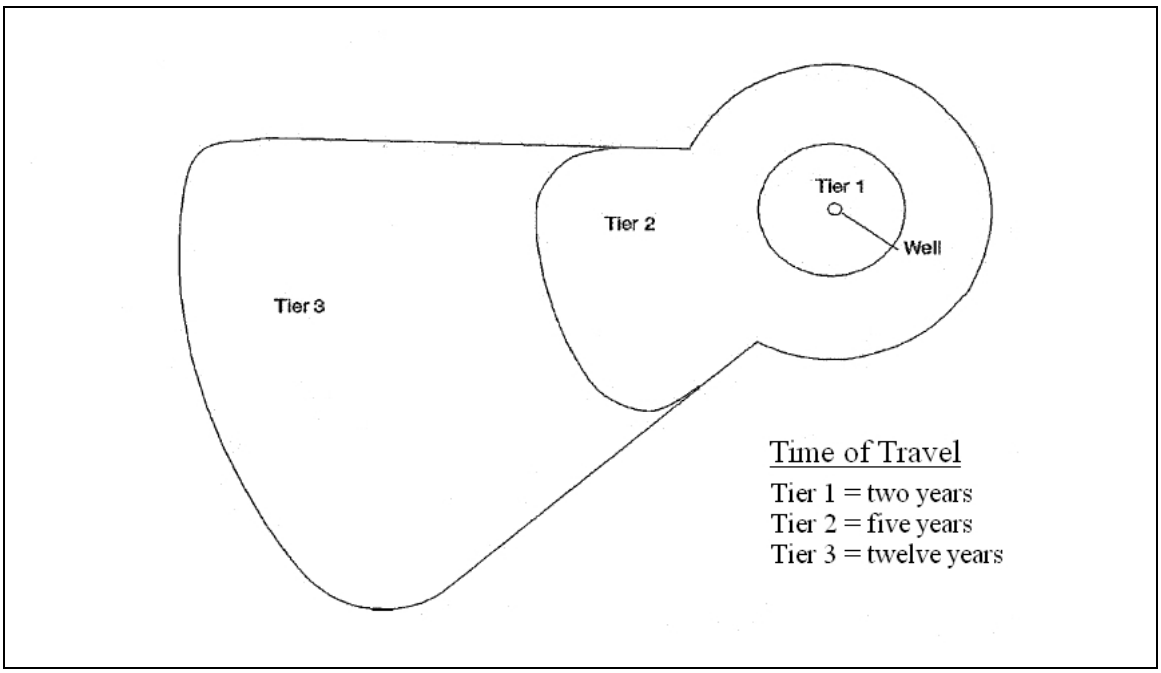


Source: US Geological Survey, NJDEP

It is within the WHPA that land uses which introduce pollutants are most likely to contaminate drinking water sources. Historically, commercial and industrial facilities and activities have been identified as major sources of groundwater contamination. Sources of contamination include: underground storage tanks, septic systems, surface spills, historic landfills, leaking drums, above ground storage tanks and road salt piles. It is vital that potential pollution sources are managed in relation to their location within the WHPA. In addition, protective land uses, such as preserved open space, should be established in these areas. The soil and geologic conditions of Ocean County make the water table aquifer and other shallow systems very susceptible to contamination from land-based sources (Steven Spayd, New Jersey Department of Environmental Protection, 2003).

The WHPA consists of three tiers, each based on a time of travel to the well. Figure 12-4 shows the delineation of each tier and the time of travel from its outer boundary.

Figure 12-4: Well Head Protection Area (WHPA) Travel Time



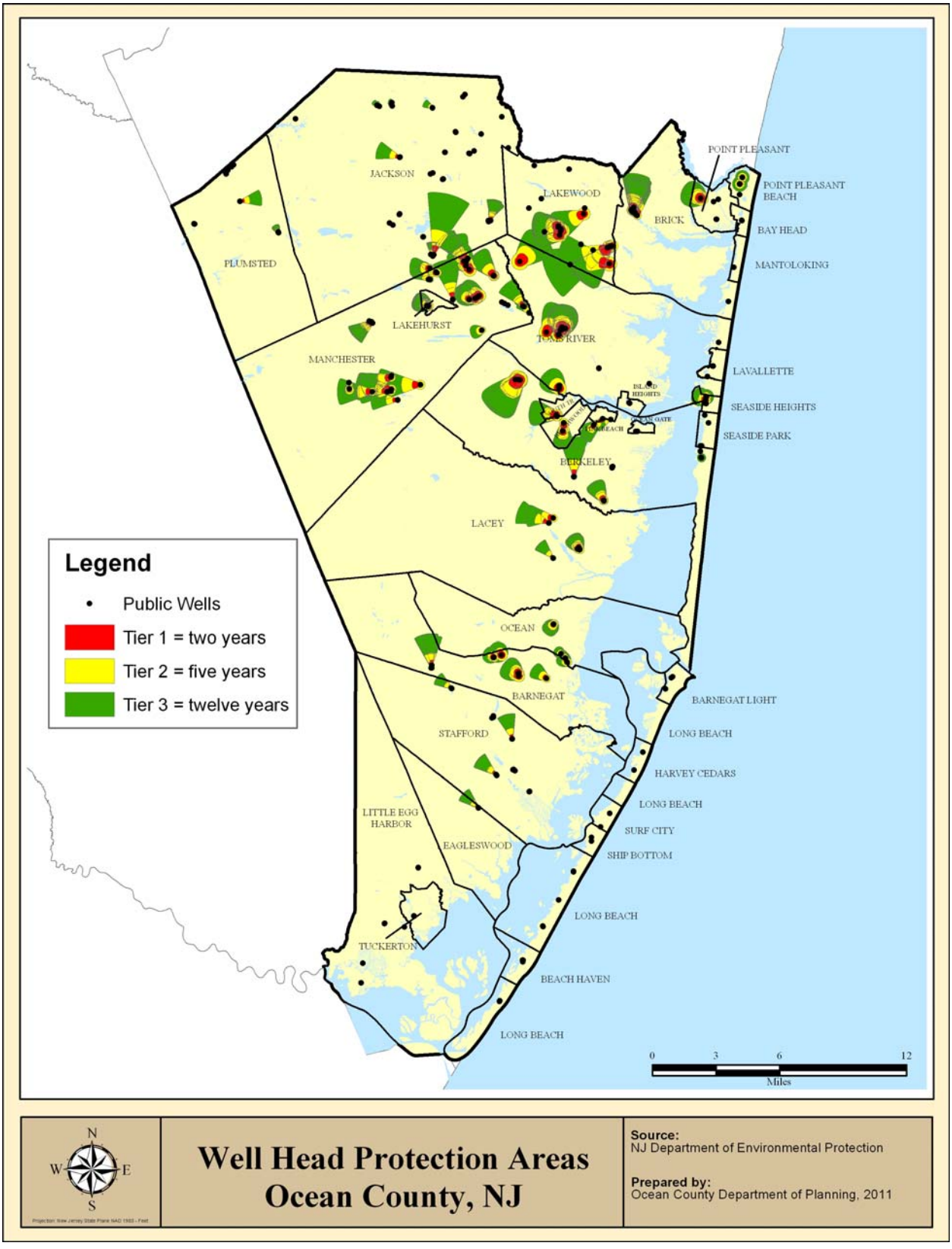
Source: NJDEP

Water Resources and Supply

Water is perhaps the most important of the basic natural resources. The quantity and quality of an area's water resources influences and controls population growth and development. Ocean County has an abundance of high-quality surface and groundwater resources that can safely serve the growing population of Ocean County.

The County's surface water resources are comprised of both fresh and saline water bodies. Ocean County has 25 major and minor drainage basins. The largest basin in Ocean County is the Toms River Basin which encompasses 167 square miles. The second largest basin is the Metedeconk which covers 54 square miles. All of the basins drain to the Atlantic Ocean, with the exception of the Crosswicks - Rancocas Creek Basin in northwestern Plumsted Township and the eastern reaches of Mount Misery Brook in the southern portion of the County, which drain to the Delaware River.

Figure 12-5: Ocean County Wellhead Protection Area (WHPA) Map



There is only one surface water body used as a public water supply. The Brick Township Municipal Utilities Authority maintains a 1 billion gallon reservoir along the banks of the Metedeconk River where water is pumped from the river, stored, treated and conveyed to the public.

Rivers and Streams

Rivers and streams in Ocean County are dendritic with their stream flow derived primarily from base flow discharge from the groundwater table. This discharge is particularly important during periods of little or no precipitation. Rivers and streams in Ocean County are generally narrow and slow due to the flat topography. This causes the potential danger of flooding during heavy rain events. Figure 12-6 depicts Flow Values for Selected Rivers in Ocean County.

Figure 12-6: Flow Values for Selected Rivers

River and Location Of Flow	*Average Discharge (cubic feet / second)*	*Peak (ft3/sec)*	*Year of Peak*	*Records Beginning*
Manasquan River Monmouth County (50' upstream of Rt. 547)	73.5	2,940	1938	1931
N. Branch Metedeconk Lakewood-Brick (Rt. 549)	60.2	1,800	2005	1972
Toms River Toms River Township (Downstream of Rt. 527 Bridge)	211.0	2,000	1938	1928
Cedar Creek Berkeley Township (50' upstream from Rt. 9 Bridge)	107.0	1,050	1943	1932
Westecunk Creek	32.3	256	1978	1969

Source: US Geological Survey. Water Data Report, New Jersey. Water Year 2008, Volume 1

One of the most notable characteristics of rivers and streams in Ocean County is their high natural acidity particularly in white cedar swamps where decomposing vegetation and a thick humus layer contribute substantial organic acids. This factor results in the water being "tea colored" which is characteristic of Pinelands streams.

The maintenance and improvement of the County's surface water are addressed though a multi-agency approach at all levels of government. Streams and other surface waters are classified according to their use as designated by the New Jersey Department of Environmental Protection. Freshwaters are classified as FW1 (not subject to any man-made wastewater discharges) and FW2 waters (all other freshwaters). Waters within the Pinelands Protection and Preservation Areas are classified as pinelands waters (PL). Freshwaters are further classified based on trout status: trout production (FW2-TP), trout maintenance FW2-TM), and non-trout (FW2-NT). There are also three levels of anti-degradation designations: Outstanding National Resource Waters (ONRW), Category 1 waters (C1), and Category 2 (C2) waters. All waters of the State are classified and assigned with one of the three anti-degradation designations. The New Jersey Department of Environmental Protection, in conjunction with the United States Geologic Survey and a number of local entities, conduct regular sampling and analysis of the County's surface waters. In accordance with the Water Quality Standards promulgated by the New Jersey Department of Environmental Protection, stream segments that do not meet the water quality standards set for their designated classification and anti-degradation designation are then designated as "Water Quality Limited Waters" and given a priority ranking. These segments are assigned a TMDL (Total Maximum Daily Load) for the exceeding pollutant and regulatory measures are implemented to return the stream segment to the designated water quality standard.

Surface water degradation is usually caused by non-point source (NPS) pollution. Unlike point source pollution as defined in the Section 502(14) of the Clean Water Act, nonpoint source pollution comes from many diffuse sources. The pollution is caused by rainfall or snowmelt moving over and through the ground and is called stormwater runoff. The runoff flows over lawns and streets into the storm sewer system, creeks, lakes and streams; ultimately making its way to the bay and the ocean. Along the way it picks up contaminants, such as improperly applied fertilizers, sediment, animal droppings, oils and toxic metals. Stormwater runoff is the prime source of surface water degradation in Ocean County. All of the point source wastewater discharges to surface waters in Ocean County were eliminated decades ago.

Returning impaired surface waters to their designated water quality standard is addressed largely through the New Jersey DEP Stormwater Management Rules. Under these rules, the NJDEP

requires all municipalities and agencies that maintain stormwater collection systems to prepare stormwater management plans and specify stormwater management standards for major new developments. The County assists its municipalities in this effort with plan review, funding and professional guidance.

There are over 50 lakes and ponds, both natural and man-made, within Ocean County. Many ponds result from natural impoundments while others were formed by dams in the 18th and 19th centuries. The largest lake is Prospertown Lake, which covers 103.2 acres. Lake Shenandoah and Turn Mill Pond are the next largest at 101 and 100 acres respectively. The flat topography of the County results in long detention time periods for water flow through the lakes. This permits the deposition of silt and sediment, resulting in shallow lake depths.

The water quality of lakes and ponds is greatly influenced by surrounding land uses. The shores of many lakes in Ocean County have been developed and their water quality is impacted by the discharge of storm drains, surface runoff and, in some cases, seepage from domestic septic systems. Siltation and sedimentation, runoff and other sources of degradation in combination with characteristic long detention times have caused eutrophication problems in some County lakes and ponds. Conversely, lakes in undeveloped areas of the County such as the Pinelands are generally of high quality.

A relatively new source of degradation that affects the County's surface waters is derived from the large number of Canada geese that have taken up permanent residence in Ocean County. Canada geese are a federally regulated migratory gamebird. In the past few decades, the resident Canada geese population has become a significant problem in many parts of the country. The geese often take up residence in urban and suburban areas where hunting would be inappropriate. Migration in Canada geese is a learned behavior. When migratory geese stop migrating and stay year round in a particular area, their offspring do not learn to migrate. Over generations, these non-migrating, resident geese weigh an average of 6 pounds more than their migratory cousins and produce 1-3 pounds of droppings per day per bird. The huge amount of droppings produced by these birds creates a significant water quality problem wherever they take up permanent residence.

The Ocean County Health Department conducts water testing at all of the authorized bathing beaches in Ocean County during the summer months to ensure that the water is safe for bathing. Beaches with impaired water quality are closed until the water quality improves.

Bays

Barnegat Inlet,
Photo by Ocean County Department of Planning

Ocean County is separated from the Atlantic Ocean by two barrier beach areas, Island Beach and Long Beach Island. These landforms enclose broad, shallow back bays which extend the length of the County. Barnegat Bay is the largest of the bay systems extending approximately 30 miles in length and covering 64.5 square miles. Other principal bays include: Little Egg Harbor, 20.5 square miles; Great Bay, 7.6 square miles; and Manahawkin Bay, 3.6 square miles. The bays are generally shallow. Tidal variation within the bays is relatively low due to their wide, shallow configuration and limited access to the Atlantic Ocean. The tidal range in upper Barnegat Bay is 0.6 to 0.8 feet. Tidal circulation is restricted, so that a period of approximately five days is required for a complete flushing of the bay.

The bays are the benchmark of water quality in Ocean County. Over 400 square miles of land area drain to the bays with a mean flow rate of approximately 360 cubic feet per second. The quality of the bays for recreational activities and as breeding and habitat areas for a variety of flora and fauna is dependent on the supply of clean, fresh water that flows into them. Water exchange with the Atlantic Ocean is minimal and the slow flushing periods make the bays very susceptible to high nutrient levels. The bays are also susceptible to reduced stream flows which could alter the salinity gradients of the estuaries, altering aquatic nursery and spawning areas and disrupting circulation patterns.

In 1996, the entire intercoastal area of Ocean County was designated the Barnegat Bay National Estuary by the US Environmental Protection Agency. This included all three major waterbodies:

Barnegat Bay, Manahawkin Bay and Little Egg Harbor Bay. The designation recognizes the intercoastal area as an estuary of national significance.

The Barnegat Bay National Estuary Program was renamed the Barnegat Bay Partnership in 2010 and remains very active in the protection of this valuable resource. The program is managed by several committees, composed of representatives from federal, state, county and local agencies and interests. Representatives of Ocean County government participate in all phases of the program's development and on the committees formed to oversee and implement the program. The 2002 *Comprehensive Conservation and Management Plan for the Barnegat Bay Estuary* provides the foundation for the program and includes an overview of existing conditions and recommended strategies and action items to improve and maintain the environmental health of the estuary. The recommendations were revisited and updated in Strategic Plans completed in 2008 and 2011.

Barnegat Bay,
Photo by Ocean County Department of Planning

Since the 1990's, Ocean County has actively worked with the Clean Vessel Act and No-Discharge Zone Programs. The County worked directly with the State of New Jersey and numerous partners to petition the US EPA to have the Manasquan River declared a Federal No-Discharge Zone (NDZ) in 1997 and the Barnegat Bay a NDZ in 2003.

Ocean County was one of the original members of the NJ Clean Vessel Act Steering (CVA) Committee, which has overseen the installation of over 80 land based pumpout stations throughout the greater Barnegat Bay area. The stations remove the wastewater from recreational boats. State and federal funds are used to ensure that the pumpout stations are provided free of charge to marinas and other dockages areas through a reimbursement-based program administered by the NJ CVA Committee.

Ocean County acquired the first mobile pumpout boat in New Jersey in partnership with the NJDEP and the Borough of Seaside Park. The Pumpout Boats empty the holding tanks of recreational vessels and prevent the discharge of effluent into the bay. As of 2011, the program had grown to five pumpout boats which operate from the Manasquan River to Little Egg Harbor Inlet. Ocean County and the OCUA jointly subsidize the operational costs so that the service is free to boaters. The NJDEP, through the Clean Vessel Act, reimbursed Ocean County for the purchase of the pumpout boats. At the conclusion of the 2011 boating season, over 41,000 boats had been serviced and over 800,000 gallons of effluent removed. In December 2011, Ocean County was awarded the Governor's Award for Environmental Excellence for the Pumpout Boat Program.

Circle of Life, first pumpout boat in NJ, owned and maintained by Seaside Park.
Photo by Ocean County Department of Public Information

Priorities for Restoring and Protecting the Barnegat Bay National Estuary

1. Cooperation and support at all levels of government;
2. Support research and assessment to understand the causes and effects of impacts to the Bay;
3. Finalize the development of a comprehensive database of stormwater facilities to assist in a coordinated approach to stormwater management;
4. Expand the Ocean County Stormwater Basin Restoration Program and explore other innovative approaches and technology;
5. Identify and coordinate funding sources to address stormwater management needs;
6. Maximize opportunities for Education, Outreach and Training of the public and public works employees;
7. Continue operation of the Ocean County Pump-out Boat Program.

Concerns over the health of Barnegat Bay resulted in a number of significant actions to enhance and protect this statewide resource and estuary of national significance. The estuary is not only important environmentally, it also contributes millions of dollars to New Jersey's economy.

10 Point Comprehensive Plan of Action for Barnegat Bay

After a series of regional public stakeholder meetings, the Governor of New Jersey announced the establishment of a 10 Point Plan of Action to Restore Barnegat Bay. The ten steps are outlined as follows:

1. Close Oyster Creek Nuclear Generating Facility
2. Fund Stormwater Mitigation Projects
3. Reduce Nutrient Pollution from Fertilizer
4. Require Post-Construction Soil Restoration
5. Acquire Land in the Watershed
6. Establish a Special Area Management Plan
7. Adopt more Rigorous Water Quality Standards
8. Educate the Public
9. Produce more Comprehensive Research
10. Reduce Watercraft Impacts

Barnegat Bay near Cattus Island,
Photo by Ocean County Department of Planning

In November of 2011, the NJ Department of Environmental Protection Commissioner announced an award of $1.2 million to fund several studies which would be the most comprehensive scientific analysis of Barnegat Bay historically. The studies include the survey of fish and shellfish populations, tracking nutrient flows and the impact of nutrients on phytoplankton, determining the abundance, distribution and cause of sea nettles, and developing a baseline picture of fish larvae and other zooplankton.

In October 2011, the United States Geological Services began a comprehensive mapping project for the entire bay bottom. The information obtained will be useful in modeling the water movement and circulation, as well as the movements of nutrient pollution from the mainland.

The new studies will help address Item No. 9 of the Governor's 10 Point Plan, and Ocean County supports these continued research efforts.

On January 5, 2011, three bills were signed into laws which address some of the environmental stress that affects the estuary: The Fertilizer Bill (A2290), the Soil Health Bill (A3606) and the NJDOT Stormwater Basin Bill (A3606).

The landmark "Fertilizer Bill" is the first bill in the country to regulate fertilizer content. Typically, lawn fertilizers contain high concentrations of nutrients like nitrogen and phosphorus which pollute the Bay and cause eutrophication. This legislation contains strong and proven measures to reduce the amount of fertilizer used and to require that the fertilizer contain a minimum of 20% slow release nitrogen. It limits application during the winter months to avoid unnecessary runoff, and requires professional lawn care companies to be trained in the responsible use of fertilizers. The law also bans phosphorus and requires a small buffer for the application of the fertilizer from waterways. The Ocean County Board of Chosen Freeholders supported the statewide fertilizer control law to protect our county and state resources.
The "Soil Health" law modifies the existing Soil Erosion and Sediment Control standards to include requirements that developers "restore soil to the moisture-holding capacity of original undisturbed soil native to the site to the maximum extent practicable based on soil usage within the completed project" after construction to prevent compaction and to thereby maintain well functioning and healthy soils. Healthy soils filter pollutants, support plants, and infiltrate precipitation, preventing runoff. The Soil Health Law was based in part on the work conducted by Ocean County, the Ocean County Soil Conservation District and the NJDEP on restoring stormwater basins. This work is described in more detail in the Stormwater section of this report.

The third piece of environmental legislation authorizes the NJ Department of Transportation to identify and review its stormwater basins on state roads within the watershed and fund a cleanup plan for these facilities on an annual basis. The Ocean County Board of Chosen Freeholders strongly endorsed this legislation since State Highways such as Route 9, Route 35, Route 37,

Route 70, Route 72, Route 88 and Route 166 are major contributors of runoff and pollution to the estuary.

With the momentum of this ground-breaking environmental legislation, the State has also made available funding for stormwater basin restorations to local governmental agencies. This coincides with Item No. 2 in the Governor's Ten Point Plan for Barnegat Bay. The NJDEP and the NJ Environmental Infrastructure Trust Fund provided additional funding to Ocean County and the municipalities to construct innovative stormwater facilities to address nutrients. In October 2011, Ocean County received over $9.1 million in grant and low interest loan funding to implement and assess the effectiveness of these new stormwater facilities. This was in addition to the ongoing funding allocated annually by Ocean County for stormwater improvement projects. It is anticipated that the NJEIT funding will again be made available in 2012. More detailed information on stormwater protection efforts is included within the Stormwater Management section of this report.

Ocean County strongly supports the ongoing efforts of the Barnegat Bay Partnership and the monitoring, assessment and research priorities included within the Comprehensive Conservation Management Plan (CCMP) and the subsequent Strategic Plans. Additional information can be obtained at the Barnegat Bay Partnership web site, at http://bbp.ocean.edu.

Flooding

Flooding in Ocean County normally occurs as a result of unusually heavy or prolonged rainfall. These severe weather conditions can be caused by the more common "northeaster" storms or less frequently by hurricanes. During the hurricane season, Ocean County may be affected by storms moving northward along the coastline. This includes the most recent storm of 2011, Hurricane Irene.

Apart from causing rivers and streams to flood due to heavy precipitation, tropical storms also generate unusually high tides. When heavy discharge from local streams coincides with the high tide stage of the bays, flooding is aggravated. For example, high tides in the Atlantic Ocean can

affect flooding of the Toms River from its mouth on Barnegat Bay to a point approximately four miles upstream.

The severity of flood damages can be affected by the intensity and nature of development in flood-prone areas by natural or man-made obstructions occurring within the stream channel. Flood intensity can be further influenced by development within the flood plain. The placing of fill in a flood-prone area can cause the natural floodwater level to rise in order to regain lost storage capacity. Impervious surfaces which reduce infiltration of precipitation can also augment flooding by increasing runoff. Areas within a designated flood plain are regulated under the New Jersey Flood Hazard Area Control Act Rules adopted in 2007. The rules control all disturbances within the flood hazard area and riparian zones of surface waters within the state.

Chapter 13

Wastewater Management Planning

Wastewater Treatment Facilities

The Federal Water Pollution Control Act Amendments of 1972 established areawide agencies to plan for the overall protection and management of an area's water resources. The act also created the Construction Grants Program which provided Federal subsidies for the construction of regional wastewater treatment facilities and municipal collection systems. There are three such wastewater treatment facilities in Ocean County with a total combined available treatment capacity of just over 80 million gallons per day (MGD). The collection system consists of 40 pumping stations, approximately 200 miles of force main and gravity lines and three ocean outfall lines.

Figure 13-1: Ocean County Utilities Authority Facilities Average Daily Flow and Remaining Treatment Capacity (second quarter 2011)

Facility	*Location*	*Current Million Gallon Per Day (MGPD) Daily Flow*	*MGPD Remaining Capacity*	*Municipalities Served*
Northern Water Pollution Control Facility	Brick Township	22.7	7.1	Bay Head, Brick, Farmingdale, Freehold Borough, Freehold Township, Howell, Jackson, Lakewood, Point Pleasant Beach, Point Pleasant Borough, portion of Wall
Central Water Pollution Control Facility	Berkeley Township	20.4	9.9	Barnegat, Beachwood, Berkeley, Brick (Island Portion), Island Heights, Jackson (Toms River Basin Portion), Lacey, Lakehurst, Lavallette, Manchester, Mantoloking, Ocean, Ocean Gate, Pine Beach, Seaside Heights Borough, Seaside Park Borough, South Toms River, Toms River, and the Joint Base McGuire-Dix-Lakehurst
Southern Water Pollution Control Facility	Stafford Township	7.1	12.1	Barnegat Light, Beach Haven, Eagleswood, Harvey Cedars, Little Egg Harbor, Long Beach, Ship Bottom, Surf City, Stafford, Tuckerton,

Source: Ocean County Utilities Authority, 2011.

On average, more than 90% of the pollutants normally found in the wastewater are removed before discharge to the ocean, at points over a mile from shore and at depths of 40 feet or more. This system replaced approximately 40 package sewerage treatment plants that in some cases provided significantly lower levels of treatment and discharged effluent into inland streams, bays and outfalls only short distances from the shore.

Recently, the Northern Plant reached an 80% treatment capacity threshold which triggered a need to plan for the facility's future expansion. The expansion will be necessary to address permitted future flow and wastewater generation to maintain the forward progress of safe and effective wastewater treatment for the municipalities which it serves. The future expansion of the Northern Plant, and any existing permitted treatment facility, must maintain current pollutant loads and achieve no measurable changes in water quality per the increased flow. The expansion and upgrading of the plant is ongoing and will be done by the Ocean County Utilities Authority (OCUA) under the direction of the NJ Department of Environmental Protection (NJDEP).

Water quality standards can be maintained and heightened through the use of newer technologies throughout Ocean County.

Another important area is the reuse of wastewater, by-products and energy generated through the wastewater treatment process. For over two decades, the OCUA has been producing a bio-solid fertilizer marketed as OceanGro. This material is a non-burning, slow release fertilizer that is registered with the Department of Agriculture. It exceeds the USEPA and NJDEP exceptional quality standards and is sold at area nursery and hardware stores.

The Central Treatment Facility currently uses reclaimed water to irrigate portions of its grounds. In general, reclaimed water has been used for many non-potable uses, including irrigation, industrial uses and fire protection. Reclaimed water reduces demand on valuable groundwater that is required for drinking and bathing. Taking environmental and economic limitations into account, further expansion of participation in this program is recommended for both County-operated sites as well as municipal utility and sewerage authorities.

The OCUA is currently exploring other developing technologies to maximize efficiency. Co-generation is being actively pursued for the northern and central treatment facilities to recapture methane gas and direct it towards the operational needs of the plants. The authority is also working to capture more of the heat generated during the treatment process through Combined Heat and Power (CHP) technologies. The ultimate goal is to become energy neutral in the operations of the treatment facilities.

As of 2011, Ocean County ratepayers and taxpayers invested over $1 billion in our wastewater infrastructure system. Ocean County strongly supports the continued investment in innovative technologies.

The Ocean County Wastewater Management Plan

The NJ Department of Environmental Protection's Water Quality Management Planning Rule was readopted with amendments on July 7, 2008. The Ocean County Board of Chosen Freeholders, along with the Department of Planning, is the designated wastewater management planning agency for the County and the portion of Monmouth County located within the Metedeconk River Drainage Basin. The planning staff works in collaboration with municipalities, the Ocean County Utilities Authority, the Ocean County Department of Health, the NJ Pinelands Commission and the NJDEP to delineate sewer service area boundaries as well as create *best practices* in septic management throughout the County. The latest update to the Ocean County Wastewater Management Plan began in November of 2008 and is ongoing per State Administrative Order 2010-03, which granted each wastewater planning agency an extension to complete drafting of the sewer service areas and present them to the public.

In November of 2008, NJDEP released draft mapping to Ocean County which categorized areas as either remaining in or removed from sewer service. Generally, sewer installation or extension in an area is dependent upon the underlying zoning and environmental features present at a site, and therefore, its development potential. Yet, in many areas, the November 2008 draft mapping removed sewer service from areas which were zoned for certain densities of development that would not only permit sewers, but require them. In addition, NJDEP's mapping was outdated

and did not include sites which were already constructed and sewered. The current planning process will work through these issues that were not captured by NJDEP's latest mapping by examining existing development and planned development.

To facilitate public comment, Ocean County sent the draft maps to its municipalities to gather input regarding the delineations created by the NJDEP. The County received responses from most municipalities, and in some cases, revised mapping from township planners and engineers depicting current and future development plans of which sewer service is vital. The draft mapping has also been made available on the County Planning Department's web site and the public was encouraged to submit property-specific comments. The Planning Department had also received public comments regarding the NJDEP delineations. As the plan progresses, sewer service area maps are being finalized with the input of municipalities and the NJDEP. Ocean County hosted meetings between the municipalities and the NJDEP in March and April of 2011 and will also hold a final public meeting once the full draft of the plan is complete.

Berkeley Township is currently in the process of creating a Transfer of Development Rights (TDR) Program, which will need review to ensure that receiving areas (areas which allow for higher densities while preserving other areas called the sending areas) are included in sewer service areas. Through the State Planning Process, Stafford Township has adopted its own separate Wastewater Management Plan. The NJDEP approved Stafford's Wastewater Management Plan in 2010.

A handful of smaller, shore and barrier island boroughs and municipalities in the County that were previously built-out and sewered prior to the current plan update remained as such and have required less intensive delineation process. These municipalities are primarily located along the coast, but also include established mainland towns that are essentially built out.

Plumsted Township completed a Wastewater Management Plan in June of 2009 which delineated sewer service in the New Egypt area and three smaller areas. While NJDEP is in receipt of this plan, the agency's final review and approval of this plan are pending.

A more innovative solution for New Egypt may involve Joint Base McGuire-Dix-Lakehurst. Options for wastewater treatment for Plumsted Township and neighboring towns in Burlington County were the subject of the *Joint Base Regional Wastewater and Growth Management Plan Study* funded by the Department of Defense - Office of Economic Adjustment.

Phase I of the study was completed in October 2011 under the direction of Ocean County and Burlington County. The purpose was to determine if a regional approach could be taken to solve ongoing problems with failing septics and cesspools in the area. The study found that there was a potential role for Joint Base McGuire-Dix-Lakehurst in what may be a mutually beneficial arrangement. Discussions on specific alternatives were underway at the end of 2011 with Ocean County, the OCUA, Burlington County, the NJ Department of Environmental Protection, the Joint Base and the affected municipalities.

The wastewater planning process has a direct impact on the creation of affordable housing. While the status of the Council of Affordable Housing (COAH) is currently unknown under third round rules, Ocean County's municipalities have a projected affordable housing growth share obligation of 10,258 units from 2004-2018. Much of the municipal obligation has not been met. Sewer service designation will be important for the future development of affordable housing.

With much of the affordable units not yet built, planned sites as well as potential future sites were removed from sewer service, leaving septic as the wastewater treatment option. Yet, most affordable housing projects are densely built and septic systems are not suitable to handle the amount of projected waste.

As with any planning initiative, the delineation of sewer service areas is a negotiation process involving all stakeholders and must take into account development plans vital to the economic base of municipalities as well as affordable housing mandates. With that being said, the wastewater planning process must also focus on important environmental features. Ocean County is home to almost 20 Category-1 streams and vast wetlands which feed into lakes, rivers, and bays. In addition, these bodies of water provide scenic and recreation areas enjoyed by the public and are home to many animal and plant species, some of which are endangered and

unique to this region. The protection of these streams, wetlands and the Barnegat Bay are critical to protect the environment and the public health. In some areas, failing septic systems should be replaced with sewers in order to protect the integrity of the environs. The NJDEP requires a Letter of Interpretation (LOI), specific permits, and other environmental data for properties believed to be sensitive. While completing studies and applying for permits can be time consuming and costly, it is required by the NJDEP and can either prove or disprove the presence of environmental constraints at sites.

While complete agreement between the State, County and municipalities regarding the areas to be serviced by sewers may never occur, Ocean County will continue to facilitate the wastewater planning process as it allows for open and ongoing dialogue of land issues between all stakeholders. As of November 2011, the NJDEP has not established a final submission date for the latest Wastewater Management Plan.

Septic Systems and the Septic Management Program

The septic system is the primary method of onsite wastewater treatment in low density areas of Ocean County or in areas where wastewater treatment facilities are planned but not yet constructed. In a standard septic system, the septic tank functions to remove most of the suspended solids through sedimentation. Anaerobic conditions in the septic tank initiate chemical and biological alteration of sewage constituents. Partially renovated effluent is then discharged to the soil via a drainfield, which distributes the effluent load to the soil. The soil provides limited additional treatment of the wastewater before either evapotranspiration or deep percolation. Certain soils in Ocean County have limitations related to their suitability as septic tank absorption fields. These limitations are dependent upon permeability and percolation rates, soil texture, depth of the water table and slopes. Ocean County discourages the use of septic tank cleaners, due to the potential for groundwater degradation; the Pinelands Commission already prohibits their use in the Pinelands Area.

In July of 2011, licensed septic pump-out companies working with OCUA reported 865,725 gallons of waste removal in the central and southern treatment areas. They also reported 50,600

gallons of grey water removal. Grey water is wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Grey water treatment is an important part of the wastewater process as it can be recycled for uses such as landscape irrigation and constructed wetlands.

The latest Wastewater Management rule calls for counties and municipalities to work together to ensure that property owners with septic systems are performing system tests and maintenance at least once every three years with a notice of such actions sent to the NJDEP. Most recently, Ocean County is working with the Pinelands Commission, as well as NJDEP, to create a *Septic Management Program* in which the County Planning Department, County Health Department, and municipalities would work hand in hand locating existing systems and recording them in an up-to-date database with a detailed mapping component. Ocean County would then notify the public of the new rules and system testing recommendations and is considering the requirement that proof of testing be sent for recording with the County before being passed on to the NJDEP. The Septic Management Program is a work in progress and more guidance is needed by the Pinelands Commission and NJDEP, as well as public comments from property owners and municipal officials, before the plan is fully drafted and the program eventually put into place.

Chapter 14

Stormwater Management

The New Jersey Department of Environmental Protection's (NJDEP) Municipal Stormwater Regulation Program regulates municipalities and other entities through the NJPDES permitting process to address the impacts of stormwater-borne pollution on the State's waterways. This effort is part of a national program mandated by the US Clean Water Act and the US Environmental Protection Agency.

Municipalities were required to prepare and adopt Municipal Stormwater Management Plans under Municipal Stormwater Regulations, N.J.A.C. 7.14A-25. Plans were required to conform to Stormwater Management Regulations as set forth in N.J.A.C. 7.8 (last amended April 2010). These regulations require local governments to produce a written stormwater management plan that describes in detail how stormwater will be managed at a local level. As part of the permitting requirements, municipal governments were required to label all inlet structures, map the location of all outfall structures, sweep streets to avoid inlet blockage, and create a public education strategy.

Under New Jersey's Municipal Land Use Law, Chapter 291 N.J.S.A. 40:55D-95 Storm Water Management Plan Requirements, "A Stormwater Management Plan and Storm Water Management Ordinance or ordinances shall conform to all relevant Federal and State statutes, rules and regulations concerning storm water management or flood control and shall be designed:

a. to reduce flood damage, including damage to life and property;
b. to minimize storm water runoff from any new land development;
c. to reduce soil erosion from any development or construction project;
d. to assure the adequacy of existing and proposed culverts, bridges and other in-stream structures;
e. to maintain groundwater recharge;
f. to prevent, to the greatest extent feasible, an increase in non-point pollution;
g. to maintain the integrity of stream channels for their biological functions, as well as for drainage;
h. to minimize public safety hazards at any storm water detention facilities constructed as part of subdivision or pursuant to a site plan."

The County contracted with a consultant to assist its municipalities in developing pollution prevention plans and stormwater management plans in compliance with NJDEP stormwater regulations. The last Municipal Stormwater Management Plan was approved by the NJDEP in March 2009. Ocean County is 100 percent in compliance.

Overview of Stormwater

Stormwater is a term used to describe water that originates as precipitation, snowmelt, or resulting from the overwatering of plants and lawns. Stormwater that does not infiltrate into the soil becomes runoff, which is traditionally managed through drainage systems and pipe conveyances that eventually discharge into a body of water, such as rivers, bays, and oceans, collecting pollutants as it flows over lawns, roads and pipes. In urban and suburban areas, much of the land surface is covered by buildings, pavement and compacted landscapes with impaired drainage. These surfaces do not allow rain and snowmelt to infiltrate into the ground, which greatly increases the amount of contamination and the volume and velocity of stormwater runoff. In addition to these habitat-destroying impacts, pollutants from urban and suburban runoff may include:

- Sediment
- Oil, grease and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops
- Geese Pollution

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water, and make recreational areas unsafe and unusable.

There has been an evolution in the County's approach to stormwater management. Ocean County has been engaged in flood control since the 1970's and Water Quality Enhancement since 2002, implementing dozens of recharge basins and nearly one hundred Mechanical Treatment Devices (MCD's). The MCD's range from multi-chambered grit and flotable separation structures to

proprietary units certified for suspended solids removal. The adoption of the 2005 NJDEP Stormwater Rules required additional compliance measures, both for County facilities and for ensuring that private development applications comply with new run-off and quality standards. Starting in 2011, the County added a third strategy to its stormwater management program by introducing systems to remove nutrient loads from stormwater before they can enter groundwater or surface water.

Restoring County Stormwater Basin Facilities within the Watershed

Stormwater runoff has been identified as one of the leading threats to the water quality in the Barnegat Bay National Estuary. As population and development continue to increase within the watershed, more contaminants find their way into the Bay, impacting the County's resources and quality of life.

Ideally, rain water should recharge into the soil and groundwater. The purpose of stormwater facilities is to collect and infiltrate stormwater runoff back into the groundwater. However, because of current design and construction practices, many stormwater basins have been recognized as not operating effectively. Soils can become compacted during construction and hold water instead of draining. The water may discharge through the basin outfall directly to the piped stormwater collection system, collecting contaminants that eventually discharge directly into the Bay. Water flowing under these conditions is also subject to warming above natural temperatures, which is not conducive to supporting organisms and creates "thermal pollution". In addition, a number of basins with infiltration problems have been identified by the Mosquito Commission as problem basins.

Another benefit of restoring the infiltration functions in stormwater basins is to enhance the wetlands within the watershed. Wetlands serve many functions, including peak reduction, reducing eutrophication, habitat, protection of downstream areas and groundwater supply. By restoring stormwater facilities, wetlands are being enhanced by re-establishing infiltration that sustains dry period flow in the local streams. It also helps to provide sufficient pollution dilution and flow for aquatic life.

In 2008, Ocean County established a pilot stormwater basin restoration program through an NJDEP grant in partnership with the Ocean County Soils Conservation District. The goal was explore methods of increasing infiltration in its owned and maintained stormwater facilities, reduce flooding, minimize non-point source pollution and restore each basin to a more natural system. Successful methods were identified and recommendations were developed for planning, design and construction practices that would prevent compaction and the need for future restoration. The methods used are comparable to the "Rain Garden" practices which are increasingly used on smaller sites such as schools and residential yards. The observations made during this project were key factors in the drafting and passage of the Soil Health Law by the State of New Jersey.

Restored stormwater basin in Manchester Township at 11th and Bismark Streets. The restoration eliminated flooding and mosquito problems. The basin has been completely revegetated. Photo credit: Ocean County Department of Planning.

Ocean County and the Soil Conservation District worked to restore 20 stormwater basin facilities, in many cases with dramatic success. Many basins that were previously identified as having flooding and mosquito-breeding problems have been restored and completely re-vegetated, producing zero runoff. Costs to restore stormwater basins typically range from $15,000 to $160,000 depending on various site factors.

Stormwater basin at 11th and Bismark Streets, Manchester Township, before restoration. Photo by Ocean County Soil Conservation District.

At the conclusion of the pilot project, guidelines were incorporated into the County Engineering Department's *Supplemental Specifications* and into training and outreach programs. Because of the success of the project, the County is continuing this work. Additional grants and funding have been secured to continue to restore County basins and to provide training workshops to educate public officials, engineers and private developers on these methods.

Other Stormwater Initiatives

The runoff that does not infiltrate back into the ground eventually ends up in the stormwater system. Inlets and outfalls can become clogged with trash and sediment, further polluting the runoff. The County Road Department dedicates two (2) road crews to specifically address stormwater maintenance issues and the requirements of the 2005 NJDEP Stormwater Regulations.

Cleaning out an inlet with the Jet Vac. Photo by Ocean County Engineering Department.

In 2011, Ocean County completed a GPS inventory of all inlets, outfalls and stormwater facilities so that they can be maintained and inspected. Tons of debris are removed from these inlets with the County's Jet Vac maintenance system every year. The County has designed and retrofitted inlets with new castings with maximum 2" openings that trap floatables and other debris. Each new road will be constructed with the new inlet design. In critical locations where pollutant loads are high, the County has installed different types of systems to catch debris. A number of hydrodynamic units were installed below the inlet grates. These massive units use centrifugal force to filter out and remove suspended solids. More units are planned to be installed throughout the County in areas important for intercepting stormwater pollution before it enters streams, rivers and the bay.

To date, the Board of Chosen Freeholders has invested over $3 million in County taxpayers' funds to install five state-of-the-art wash systems at County garages and facilities for cleaning heavy equipment and vehicles. At these facilities, the used wash water is treated, re-circulated and reused, preventing pollutants from entering the stormwater system.

In 2008, the County received the Governor's Environmental Excellence Award for retrofitting 1,557 storm drain inlets, including treatment devices to remove sediment and floatables; and for the installation of additional devices in the county's stormwater collection system along C-1 waterways and tributaries. The award recognized Ocean County for going above and beyond the

requirements for the 2005 NJDEP Stormwater Regulations in its approach to stormwater management.

In 2011, Ocean County was awarded $9.1 million in special Barnegat Bay Funds which were made available through the NJ Environmental Infrastructure Trust Program. The funds were provided in-part to address Item No. 2 on the Governor's 10 Point Plan for Barnegat Bay. Eight specialized stormwater basins will be constructed to remove nitrogen and phosphorus from stormwater runoff. The basins will be constructed in 2012 at various locations in Toms River and Lacey Townships.

The nutrient removal basin design was developed at the Stormwater Center of the University of New Hampshire. The design has proven effective at removing nutrients from stormwater, although it has only been tested on a small scale. The Ocean County installations will capture runoff from several hundred acres and will be the largest application of the design in the country. Once completed, the basins will be monitored and evaluated to determine if additional basins of this design should be constructed in the Barnegat Bay Watershed.

To date, the County has invested over $1 billion in wastewater management facilities, which have greatly improved the condition of the bay. The County will continue to fund the many land and water programs for the protection of the greater Barnegat Bay Estuary.

Finally, a number of studies related to stormwater and the Barnegat Bay have been completed or were underway in 2011. The studies are useful in targeting restoration efforts and assuring that funding is used as efficiently as possible.

One such study was the NJDEP-approved *Strategic Water Quality Improvement Plan for Surface Water Quality Impairments of the Long Swamp Creek Watershed.*[2] The study provided recommendations for improving surface water quality impairments in the Long Swamp Creek Watershed, a subwatershed in the Barnegat Bay Watershed. This study included root causes for

[2] Birdsall Engineering, Inc., *Strategic Water Quality Improvement Plan for Surface Water Quality Impairments of the Long Swamp Creek Watershed, Dover Township, Ocean County, NJ,* prepared for Dover Township Committee & Township Environmental Commission, April 2003. (Dover Township was renamed Toms River Township in 2006.)

the Creek's impairments and has been helpful in identifying specific locations for mitigation practices to reduce the discharge of pollutants into the Toms River. Using NJDEP grant funding, in 2007, the County selected a site with many high risk factors and constructed a hydrodynamic centrifuge Vortech unit to intercept untreated stormwater and contaminants before direct discharge into Long Swamp Creek.

Stormwater Management through Low Impact Development (LID)

The County Planning staff will continue to work with the NJDEP, the Barnegat Bay Partnership and the municipalities to explore Low Impact Design (LID) strategies to minimize land disturbance, promote natural recharge and preserve open space.

The County supports the nonstructural strategies for major developments as set forth in the NJDEP Stormwater BMP Manual (Subchapter 5 of the NJDEP Stormwater Management Rules):

1. "Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.
2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.
3. Maximize the protection of natural drainage features and vegetation.
4. Minimize the decrease in the pre-construction "time of concentration."
5. Minimize land disturbance including clearing and grading.
6. Minimize soil compaction.
7. Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.
8. Provide vegetated open-channel conveyance systems to discharge into and through stable vegetated areas.
9. Provide preventative source controls."

The basic stormwater management strategy of LID is to reduce the volume of runoff and to decentralize stormwater runoff flows. Stormwater systems should be designed as less centralized, smaller systems, with an emphasis on non-structural measures. LID land use planning strategies may actually result in lower and more efficient development costs, while developing in a more environmentally responsible manner. These approaches can result in less site disturbance and less costly infrastructure while preserving more native vegetation, open space and natural lands and wildlife habitat. Decreasing impervious and maintained turf surfaces allows for increased infiltration into soils. Where appropriate for local conditions and with

community based support, municipal planners and officials may wish to consider these and other LID options.

A major concern with the traditional method of residential development is the compaction of soils during construction. Graded lawn areas can be almost as compacted as concrete, resulting in runoff washing off the lawns carrying pollutants, such as fertilizer, pesticides, and animal waste directly into the piped conveyance system to water bodies. By utilizing strategies for reducing lawn runoff and using landscape construction practices that do not rely on heavy equipment, more rainwater will infiltrate into the groundwater, while less stormwater flows off the property.

There are a number of structural stormwater BMP systems that may be used to address groundwater recharge and the quantity and quality of stormwater runoff. These measures include engineered stormwater wetlands, infiltration basins, sand filter practices, bio-retention systems, swales and open channels, vegetative buffers, wet ponds and extended detention basins.

New development design should encompass small-scale decentralized stormwater management techniques on site, such as rain gardens (bio-retention cells), vegetated swales and usage of preserved natural lands as drainage areas. These techniques provide for the natural cleansing and filtration of nutrients and pollutants prior to groundwater recharge. Such stormwater facilities minimize the need to clear existing wooded areas to construct large central stormwater basins. In many ways, the rain gardens are similar to, but smaller versions of, the basins that are created through the County Stormwater Basin Restoration Program.

Existing properties, primarily residential, may be retrofitted for stormwater management by educating homeowners on the best management practices of creating rain gardens on their properties to prevent runoff. They can also install low-cost rain barrel cistern systems to collect rainwater from roofs and gutters to reuse for irrigation. See Education and Outreach for more detailed information on training the public.

Development in more urban areas or in non-residential development presents different challenges. Critical areas of the county include parts of the more developed northern townships and town centers. The barrier islands are of particular concern as overdevelopment has left little pervious green areas where runoff can infiltrate before collecting more pollutants and discharging directly into the Bay or ocean beach areas.

In these areas, reducing impervious surfaces and creating opportunities for improved infiltration is a priority. Parking lots should be designed or retrofitted with bio-retention islands with flush or slotted curbs. Municipal ordinances should continue to require a minimum 30% pervious cover for proposed developments.

There are a number of innovative techniques available and in practice throughout the country, including permeable pavement, vegetated "green" roofs and rainwater collection and reuse systems. The University of New Hampshire Stormwater Center has researched permeable pavement techniques and has developed design specifications for porous asphalt pavement and infiltration beds. UNH has even recently completed the nation's first road constructed with porous pavement. Per UNH, "as stormwater seeps through the porous asphalt, it is filtered of pollutants like sediment, heavy metals and petroleum products. By eliminating runoff, porous asphalt replaces other stormwater management systems like retention ponds and catch basins. In addition, porous asphalt needs less salt for winter de-icing, resulting in significant potential economic savings for winter maintenance and environmental benefits."

In addition to pervious asphalt, permeable pavers have been shown to be effective in reducing Total Suspended Solids (TSS), nutrient, metal and thermal loadings. Per the Low Impact Development Center, studies are being conducted in Florida, Toronto, and Washington State. "Alternative pavers can even eliminate the requirement for underground sewer pipes and conventional stormwater retention / detention systems." Cistern systems may also be designed to be installed directly under permeable pavement areas, allowing maximum water storage capacity and the reuse of the collected grey-water for irrigation.

Green roofs offer another innovative technique to reduce stormwater runoff in critical highly developed areas such as the barrier islands. Per LID Urban Design Tools, "They are constructed of a lightweight soil media, underlain by a drainage layer, and a high quality impermeable membrane that protects the building structure. The soil is planted with a specialized mix of plants that can thrive in the harsh, dry, high temperature conditions of the roof and tolerate short periods of inundation from storm events."

The vegetated roofs capture precipitation, reduce the volume of runoff, and filter pollutants, including atmospheric nitrogen. The green roofs can also significantly delay and reduce the runoff peak flow, reducing the risk of flash flooding. The roofs would need to be designed for minimal maintenance.

Reducing and Preventing Pollutants and Nutrients

As mentioned in previous sections, increasing infiltration and improving soils to maximize recharge is a critical strategy to reduce runoff before it has the opportunity to transport pollutants into a structural stormwater system. However, it is equally important to reduce the amount of pollutants which come in contact with stormwater.

"Nutrients, consisting primarily of various forms of nitrogen and phosphorous, are recognized as a major class of stormwater pollutants from land development" and therefore management measures have been included in the State's Stormwater Management Rules. The County supports minimizing the use of fertilizers and pesticides in lawns and commercial properties. Over-use or misapplication of these chemicals can impact environmental quality if they find their way into groundwater and surface water systems and contribute to the eutrophication and algal blooms that are degrading the Bay. The pH of soil can be tested before applying fertilizers to optimize uptake by plants and prevent leaching into groundwater. Slow release fertilizer is recommended as it gradually supplies nutrients to lawns and plants over a longer period of time. Nitrogen fertilizer must have warmer soil temperatures to activate and therefore should not be applied in cold temperatures, as it would leach out into the groundwater and pollute stormwater

runoff. Non-polluting alternatives to inorganic fertilizers can be used, such as compost and natural organic fertilizers, including OceanGro.

Other sources of nitrogen pollution are atmospheric deposition from industrial emissions and fossil fuel combustion, sometimes many miles away. According to various reports in the Asbury Park Press in 2011, air pollution transport remains the single biggest contributor of nitrogen entering the Barnegat Bay. In November 2011, the USEPA approved New Jersey's Clean Air Act petition and ordered the reduction of pollutants generated by an out of state power plant. While this order only pertained to one plant, it was an important step that will hopefully be repeated at other out-of-state plants in order to curtail a significant source of nitrogen pollution that is entering the Barnegat Bay Watershed.

Education and Outreach

The County and its partners should continue to develop training seminars and public outreach and education on implementing stormwater management best management practices (BMP's) for both professionals and homeowners.

There are a number of actions that homeowners can take to prevent stormwater pollution:

1. Install cistern systems, such as rain barrels, which are connected to the gutter system and collects rainwater. The "grey-water" can be reused for irrigation.
2. Rain gardens, or bio-retention cells, are suited to small scale areas, and are designed to capture the runoff from the roof, driveway and property. They should be constructed in a low area of the yard, bowl-shaped, rather than bermed, and planted with native plant species.
3. Use native landscape plants that are low maintenance and require less fertilizer and water.

An established rain garden in bloom. Garden intercepts runoff before it reaches the impervious surface.Photo Credit: Rutgers Cooperative Extension NJAES, Fact Sheet FS513. Used with permission.

4. Minimize lawn runoff and impervious surfaces.
5. To prevent or minimize pet waste problems, residents need to be continually educated and held accountable for picking up after their pets and properly disposing of the material. Multi-family developments and park facilities should plan for signage and pet station facilities.
6. To reduce water pollutants, cars should be maintained properly so that motor oil, brake linings, exhaust and other fluids do not enter stormwater.
7. Litter, motor oil, animal waste or leaves should never be dumped into storm drains or catch basins. The County has a Hazardous Waste Collection Program and a number of municipalities have programs to collect motor oil, paint and other items.

Ocean County understands the importance of the Barnegat Bay ecosystem to the environmental, cultural and economic vitality of the region and the role stormwater management plays in restoring the Bay. Ocean County remains committed to utilizing all feasible and economically viable steps to protect the ecology and environmental future of our bays, estuaries, stream corridors, and water resources.

Additional References:

NJDEP Division of Watershed Management, New Jersey Department of Environmental Protection, NJ Stormwater Best Management Practices Manual.

US Environmental Protection Agency, National Menu of Stormwater BMP's

Chapter 15

Solid and Hazardous Waste

Solid Waste

The New Jersey Solid Waste Management Act (NJSA 13:1E-1) requires Ocean County to develop a plan for the environmentally sound management and disposal of solid waste generated within Ocean County. The original Ocean County District Solid Waste Management and Recovery Plan was adopted by the Board of Chosen Freeholders in 1979. Since then the Plan has been amended several times, the latest being in 2009, and has been approved by the Commissioner of the NJ Department of Environmental Protection.

The Ocean County District Solid Waste Management Plan contains two major components. The first component entails a comprehensive recycling program designed to promote increased recycling efforts. The second element is a landfill management for non-recyclable waste.

The goal of both of these components is to continuously increase the collection of recyclable materials and reduce the flow of non-recyclable material into the landfill. This is to be achieved by maximizing our county-wide emphasis on source separation. The Ocean County District Solid Waste Management Plan has been amended several times to address the adoption of new technologies. The goal is to recycle a larger variety of materials, impose enforcement, add new recycling facilities, establish recycling requirements to generators of recyclable material and create a vegetative waste management plan.

Ocean County's recycling strategy is multifaceted. The plan includes source separation, collection methods for recyclable materials, residential and commercial compliance, addresses new developments of multifamily residential units, commercial, institutional or industrial properties, prohibition of the collection of solid waste mixed with recyclable materials, enforcement, violations and penalties. These parameters are set in order to achieve maximum recyclable tonnages, which equate to revenue by saving municipal tax dollars for landfill tipping

fees and extends the capacity of the designated landfill. Ocean County shares fifty percent of this revenue with its municipalities. The dispersal of this fund is accomplished by proportionally funding the municipalities according to their recycling efforts and recorded tonnages. As of 2011, Ocean County had returned $12 million to municipalities, a direct savings to local taxpayers.

Figure 15-1: Mandated Recyclable Material

Mandated Material	*Residential*	*Commercial/ Industrial/ Institutional*
Aluminum & Tin Cans	✓	✓
Asphalt		✓
Auto Batteries	✓	✓
Bricks		✓
Brush		✓
Cardboard		✓
Cement Blocks		✓
Concrete		✓
Ferrous Scrap and Non-ferrous Scrap		✓
Glass Containers	✓	✓
High Grade Office Paper		✓
Leaves	✓	✓
Mixed Paper (magazines, catalogs, junk mail and used writing paper)	✓	
Motor Oil	✓	✓
Newspapers	✓	✓
Plastic Beverage Containers (PET & HDPE - where the neck is smaller than the body of the container)	✓	✓
Stumps		✓
Tires	✓	✓
Tree Trunks		✓
White Goods	✓	✓

Source: Ocean County Department of Solid Waste Management.

The core of the Ocean County recycling program revolves around the County providing the facility to process material and municipalities providing for collection. The Northern Recycling Center, in Lakewood, processes 300 tons of recyclable material per day. The Southern Recycling Center, in Stafford, serves as a transfer station for southern municipalities. The County transports the material to the Lakewood facility. As of 2010, Ocean County now provides for single stream recycling. This system allows residents to loosely combine mixed paper with bottles and cans for curbside pick-up. This state of the art single stream recycling program is projected to increase tonnages by 25 percent.

In order for the plan to be successful, the recycling of certain materials in Ocean County is mandatory for residential, commercial, industrial and institutional establishments. Table 15-1 illustrates the recyclable material that is mandated within Ocean County.

Additionally, Ocean County implements many grant programs, specialized recycling programs and educational courses. The County operates semi-annual courses in composting and recycling. Ocean County continually participates in many fairs and programs in order to reach out to its residents and educate them about recycling. There are several grants available to municipalities to increase recycling efforts within the County. Finally, Ocean County semi-annually operates the household hazardous waste program. This program provides residents with a safe way to dispose of all their household toxins. Table 15-2 lists the material that is collected through this program.

Figure 15- 2: Collected Household Hazardous Waste Material

- Aerosol Cans
- Auto Products
- Bleaches
- Boat Paint
- Fluorescent Bulbs
- Herbicides
- Oven Cleaners
- Paint/Thinners
- Pesticides
- Photographic Chemicals
- Polishes
- Pool Chemicals
- Propane Tanks
- Rug & Upholstery Cleaners
- Silver Polish
- Solvents
- Toilet & Drain Cleaners
- Used Gasoline
- Waste Oil

Source: Ocean County Department of Solid Waste Management

In response to the County's increased efforts, the reported recycling tonnages have increased by 80.2 percent within Ocean County. These materials are collected either curbside or at recycling drop off centers that are located at the Northern and Southern Recycling Centers. Drop off centers are accessible 24 hours a day, including weekends and holidays.

Material entering the landfill reached an all time high in 2004 but has since declined by 19 percent. This highlights the success of Ocean County's recycling efforts.

Material that is unable to be recycled is directed to the Ocean County Landfill Corporation (OCLC) facility, located on Route 70 in Manchester Township, which serves the entire County. The OCLC is a privately owned and NJDEP permitted state-of-the-art landfill and not affiliated with Ocean County government. It utilizes double composite lined cells in conjunction with a leachate collection system. It is projected that the OCLC will reach capacity and close in 2016. A transfer station at the OCLC is planned to serve the needs of the County when capacity of the landfill is reached.

Hazardous Waste

The term hazardous waste identifies those wastes that pose a danger to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed. Specific criteria for the designation of hazardous waste have been established by the US Environmental Protection Agency. In 1980, the passage of the Comprehensive Environmental Response, Compensation and Liability Act, commonly known as Superfund, provided for federal resources to clean up environmental hazards posed by abandoned or designated hazardous waste disposal sites.

The National Priorities List prepared by the US Environmental Protection Agency contains an inventory of the most serious hazardous waste sites throughout the nation. The list designates the sites that are initially scheduled for clean-up through federal Superfund assistance. In July 2005, the NJ Department of Environmental Protection Agency released a Superfund status report, which identified 113 hazardous waste sites located throughout New Jersey. Six of these sites are located in Ocean County and are listed in Figure 15-3.

Figure 15- 3: Ocean County Hazardous Waste Sites on the National Priorities List

Site Name	*Municipality*
Brick Township Landfill	Brick Township
Ciba-Geigy Corporation	Toms River Township
Goose Farm	Plumsted Township
Naval Air Engineering Center/Station (Naval Air Warfare Center Aircraft Division)	Manchester Township
Reich Farm	Toms River Township
Wilson Farm	Plumsted Township

Sites Remediated and Deleted from the National Priorities List Since 1988	
Beachwood/Berkeley Wells	Beachwood Borough and Berkeley Township
Denzer & Schafer X-Ray Company	Berkeley Township
Hopkins Farm	Plumsted Township
Jackson Township Landfill	Jackson Township
Pijak Farm	Plumsted Township
Spence Farm	Plumsted Township

Source: NJ Department of Environmental Protection, Division of Waste Management, New Jersey Hazardous Waste Sites on the National Priorities List, July 2005.

Chapter 16

Air Quality

The Clean Air Act requires the Untied States Environmental Protection Agency (USEPA) to identify air pollutants anticipated to endanger public health or welfare, and to set uniform National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants are:

1. Carbon monoxide (CO)
2. Ozone (O_3)
3. Lead (Pb)
4. Nitrogen dioxide (NO_2)
5. Particle pollution (often referred to as particulate matter), and
6. Sulfur dioxide (SO_2)

The New Jersey Department of Environmental Protection (NJDEP) has adopted the NAAQS for these air pollutants and has the responsibility of administering and maintaining those standards.

The NAAQS are primary standards and are designated to provide public health protection, including that of sensitive populations such as schoolchildren, the elderly, and asthmatics, since they are limits based on human health. USEPA can also establish a second set of limits intended to prevent environmental and property damage, which are referred to as secondary standards. Secondary standards are designated to provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Figure 16-1 lists the NAAQS for the six principal "criteria" pollutants. These pollutants are discussed in more detail in this chapter.

The Clean Air Act classifies some areas that do not meet NAAQS as nonattainment areas and are based on the magnitude of an area's problem. Nonattainment classifications may be used to specify what air pollution reduction measures an area must adopt and when the area must reach attainment.

The Clean Air Act sets general deadlines for meeting the national standards under State Implementation Plans (SIP). A SIP sets limits on emissions to assure that air quality within the

state will meet the NAAQS. USEPA must declare and enforce a federal implementation plan for any state that fails to submit a SIP, or fails to revise one that is considered inadequate.

Figure 16-1: USEPA National Ambient Air Quality Standards for Six Criteria Pollutants

Pollutant [final rule cite]		*Primary/ Secondary*	*Averaging Time*	*Level*	*Form*
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution [71 FR 61144, Oct 17, 2006]	$PM_{2.5}$	primary and secondary	Annual	15 µg/m^3	annual mean, averaged over 3 years
			24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA National Ambient Air Quality Standards (40 CFR part 50), October 2011.

Notes:

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air (µg/m3).

(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual NO2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

The act further requires USEPA to issue new source performance standards for new major stationary sources of air pollution and allows the agency to delegate to states the authority to implement and enforce such standards. States must also submit plans that establish standards of performance for existing emissions sources.

An ongoing problem is the air transport of pollutants from other states into New Jersey. However, the USEPA recently approved New Jersey's Clean Air Act petition and ordered the reduction of pollutants generated by an out-of-state power plant. In addition to public health benefits, the reduction of air pollutants will lead to a reduction of airborne sources of nitrogen which are entering the Barnegat Bay Watershed.

Permits are required for the construction and operation of a new or a modified major stationary emissions or pollutant source anywhere in the non-attainment area. One condition of the permit is that the owner or operator of the source must obtain offsetting emission reductions from existing sources in the same area, and with limited exceptions.

Air Quality Surveillance Stations

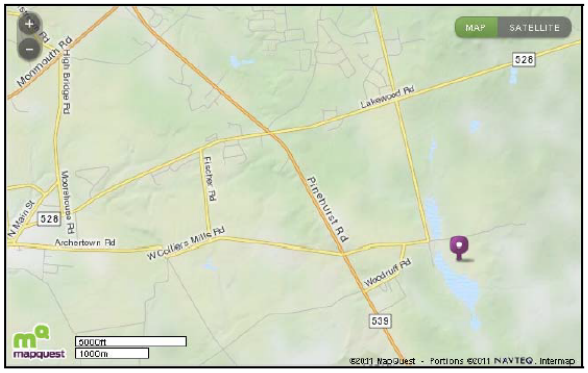
Throughout the State of New Jersey, the NJDEP operates a network of air quality surveillance stations. Two of these monitoring sites are located in Ocean County, one at Colliers Mills and the other in Toms River. Figures 2 and 3 are sample Site Information and Parameter Summaries for each of Ocean County's air quality surveillance stations.

The Colliers Mills surveillance station, located in western Ocean County, is within the Colliers Mills Wildlife Management Area. This monitoring station was established in 1985 and operates on an urban scale, which continuously measures ozone (O_3). In particular, this site monitors the highest concentrations of ozone downwind from the Philadelphia metropolitan area and central New Jersey.

Figure 16-2: Collier Mills Sampling Information and Parameter Summary

SITE INFORMATION

Site Name	Colliers Mills
Address	Colliers Mills Wildlife Management Area
City, State, Zip	Colliers Mills, NJ
AQS Code	34 029 0006
NJ County	Ocean
MSA/CSA	New York-Northeast New Jersey-Connecticut CSA
Latitude	40.064847
Longitude	-74.444058
Date Established	1/1/1985
Suitable for Comparison to PM2.5 NAAQS?	Not Applicable



PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Ozone (O_3)	44201	TECO 49	Ultraviolet	047	Continuous	Urban	Highest Concentration

Site Purpose	To measure highest concentrations for ozone downwind from the Philadelphia metropolitan area and central New Jersey.
Plans for the next 18 months	No changes.
Other Comment	

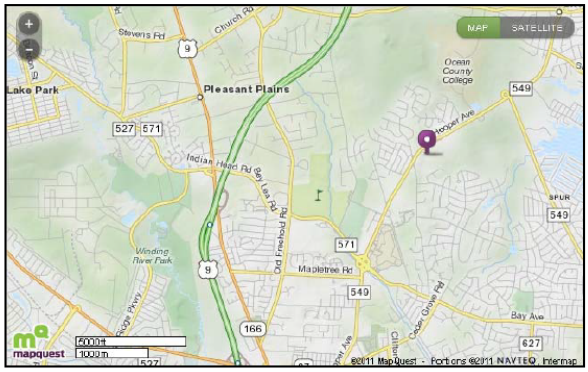
Source: Ambient Air Monitoring Network Plan 2011, NJDEP, June 2011.

The Toms River surveillance station was originally set up in 1971 and at that time was located at the downtown intersection of Main and Washington Streets. However, in 1999 the site was relocated to the Hooper Avenue Elementary School. The Toms River station operates on a neighborhood scale and takes daily samples for airborne fine particulate matter (PM), 2.5 micrometers in aerodynamic diameter or smaller.

Figure 16-3: Toms River Sampling Information and Parameter Summary

SITE INFORMATION

Site Name	Toms River
Address	Hooper Avenue Elementary School, 1517 Hooper Avenue
City, State, Zip	Toms River, NJ 08753
AQS Code	34 029 2002
NJ County	Ocean
MSA/CSA	New York-Northeast New Jersey-Connecticut CSA
Latitude	39.994908
Longitude	-74.170447
Date Established	2/11/1999
Suitable for Comparison to PM2.5 NAAQS?	Yes



PARAMETER SUMMARY

Parameter	AQS Parameter Code	Sampling Instrument	Method of Analysis	AQS Method Code	AQS Sample Frequency	AQS Spatial Scale	AQS Monitoring Objective
Fine Particles (PM2.5)	88101	R&P 2025 Low-volume sequential sampler	Gravimetric	118	Daily	Neighborhood	Population Exposure

Site Purpose	To measure population exposure in the Toms River area.
Plans for the next 18 months	No changes.
Other Comment	Daily sampling began in 2007; prior to 2007, every 3 day sampling.

Source: Ambient Air Monitoring Network Plan 2011, NJDEP, June 2011.

Air Quality Compliance

Figure 16-4: Ocean County Air Quality Trend Statistics, 2000 - 2010

	Population	*CO 8-hr ppm*	*Pb RQmax µg/m3*	*NO_2 AM ppm*	*O_3 8-hr ppm*	*PM_{10} 24-hr µg/m3*	*$PM_{2.5}$ Wtd AM Mg/m3*	*$PM_{2.5}$ 24-hr µg/m3*	*SO_2 AM ppm*	*SO_2 24-hr ppm*
2010	576,567	ND	ND	ND	ND	0.087	ND	8.7	24	ND
2006	561,748	ND	ND	ND	0.108	0.091	ND	10.2	29	ND
2000	510,916	ND	ND	ND	0.140	0.110	ND	IN	IN	ND

CO -Highest second maximum non-overlapping 8-hour concentration
Pb -Highest quarterly maximum concentration
NO_2 -Highest arithmetic mean concentration
O_3 -Highest fourth daily maximum 8-hour concentration
PM_{10} -Highest second maximum 24-hour concentration
PM_{25} -Highest weighted annual mean concentration
-Highest 98th percentile 24-hour concentration
SO_2 -Highest annual mean concentration
-Highest second maximum 24-hour concentration

ND -Indicates data not available.
IN -Indicates insufficient data to calculate summary statistic.
Wtd -Weighted
AM -Annual mean
Qmax -Quarterly maximum
µg/m^3 -Units are micrograms per cubic meter
ppm -Units are parts per million

Notes: Data from exceptional events are not included. The monitoring data represent the quality of air in the vicinity of the monitoring site but may not necessarily represent urban-wide quality.

Source: Air Quality Statistics by County 2000, 2006 and 2010, USEPA, 2011. 2006 population per Census Bureau estimates, 2007.

Carbon Monoxide Compliance

Per the USEPA, "carbon monoxide (CO) is a colorless, odorless gas emitted from combustion processes; the majority of which are emitted from mobile sources, particularly in urban areas. The USEPA established the NAAQS for carbon monoxide (CO) in 1971, and updated the standard in 2011: 35 parts per million (ppm) for a 1-hour average and 9 parts per million (ppm) for an 8-hour non-overlapping average. An area meets the carbon monoxide NAAQS if no more than one 8-hour value per year exceeds the threshold. To be in attainment (compliance), an area may not exceed the NAAQS more than once per year and must carry out air quality monitoring during the entire time.

The Toms River surveillance location has monitored carbon monoxide levels since 1971. In that time, carbon monoxide levels have exceeded ambient air quality standards. However, they have been decreasing from the maximum of 68 violations in 1975, to twice in 1980; then finally meeting compliance in the late 1980's.

Based on prior violations of the 8-hour carbon monoxide standard, New Jersey had eleven non-attainment areas, all of which have since been re-designated to attainment and are currently considered maintenance areas. Maintenance areas are areas that have continued compliance with the CO standards. New Jersey's three 8-hour carbon monoxide maintenance plans cover the following areas:

1) Camden County – All of Camden County
2) Nine Not-Classified Areas - the City of Atlantic City (Atlantic County), the City of Burlington (Burlington County), the Borough of Freehold (Monmouth County), the Town of Morristown (Morris County), the Borough of Penns Grove (Salem County), the City of Perth Amboy (Middlesex County), the Borough of Somerville (Somerset County), the Toms River Area (Ocean County), and the City of Trenton (Mercer County)
3) Northeastern New Jersey - Hudson, Essex, Bergen and Union Counties, and the municipalities of Clifton, Passaic and Paterson in Passaic County (part of the New York City/Northern New Jersey/Long Island carbon monoxide maintenance area).

Ocean County is in attainment; however, it is still covered under one of New Jersey's three 8-hour carbon monoxide maintenance plans.

Ozone Compliance

Ozone (O_3) is a gas composed of three oxygen atoms. It is not usually emitted directly into the air, but at ground-level where it is created by a chemical reaction between oxides of nitrogen and volatile organic compounds in the presence of sunlight. Ozone has the same chemical structure whether it occurs miles above the earth or at ground-level and can be "good" or "bad," depending on its location in the atmosphere. Good ozone occurs in the stratosphere located approximately 10 to 30 miles above the earth's surface. Bad ozone lies in the lower atmosphere.

Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents, and natural sources emit nitrogen oxides and volatile organic compounds that help form ozone. Ground-level ozone is the primary constituent of smog. Smog is created when sunlight and heat cause ground-level ozone to form in harmful concentrations in the air. It is most prevalent in summer.

The Clean Air Act established two types of national air quality standards for ground-level ozone.

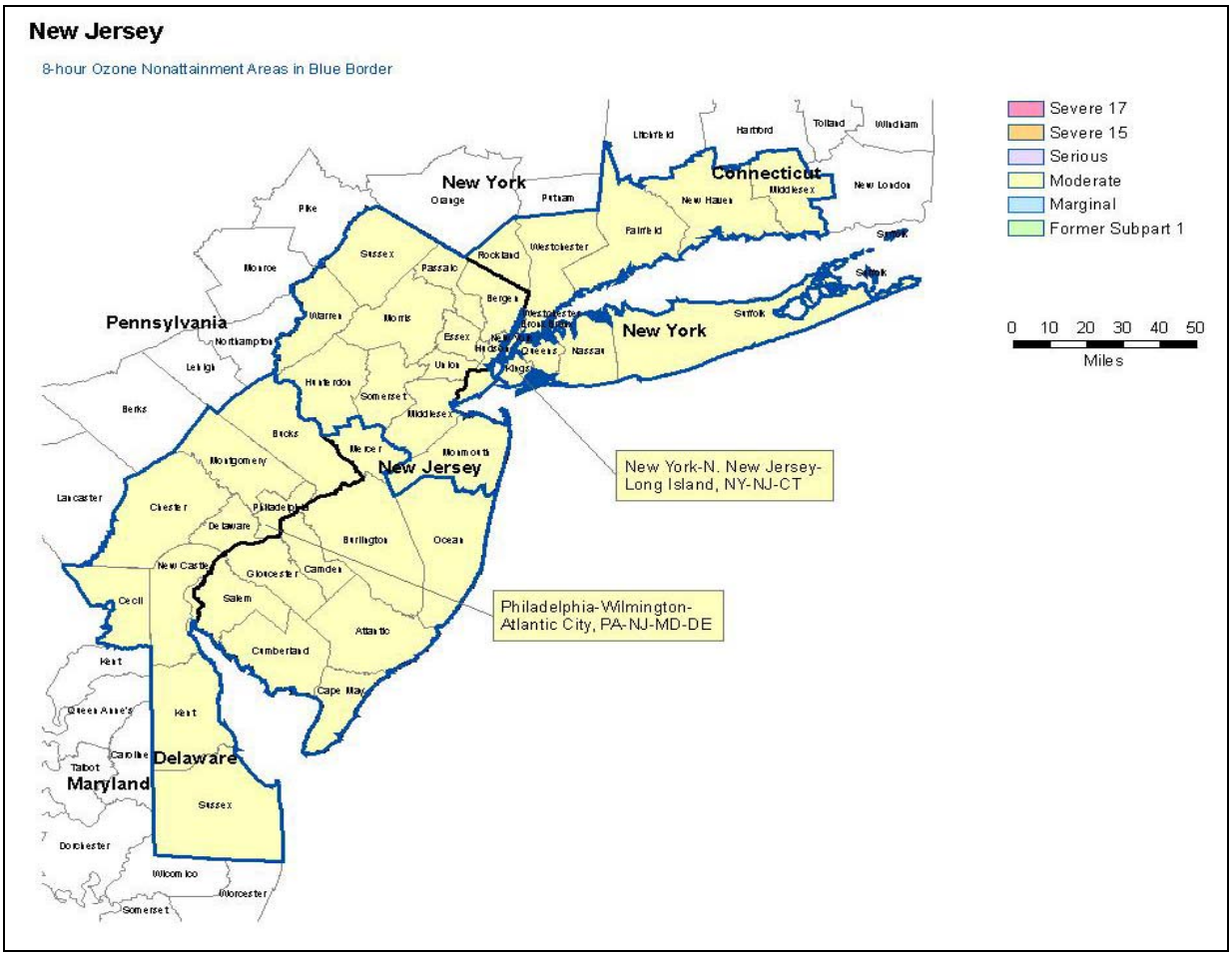
1. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.
2. Secondary standards set limits to protect the broader public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings.

Federal EPA regulations effective March 27, 2008 state the 3-year average of the fourth highest daily maximum 8-hour average ozone concentration measured at each monitor within an area over each year must not exceed 0.075 parts per million (ppm). The USEPA reviews its standards every five years to determine if modifications are necessary based upon the latest scientific data.

New Jersey is located between two major industrial cities; New York City and Philadelphia. New Jersey also has several major industrial cities located within the New York and Philadelphia metropolitan areas, such as Elizabeth, Newark, Edison, Trenton, Camden, etc. In addition, the jet stream carries pollutants from the mid-west to the Northeast. Therefore, it is not surprising

that the entire state of New Jersey is in non-attainment of the ozone standards set by USEPA. USEPA has classified New Jersey as a non-attainment area and further as being "Moderate." A "Moderate" classification is applied when an area has a design value from 0.092 parts per million to 0.106 parts per million. New Jersey's classification with respect to the 8-hour standard is shown in Figure 16-5.

Figure 16-5: 8-Hour Ozone Non-attainment Areas

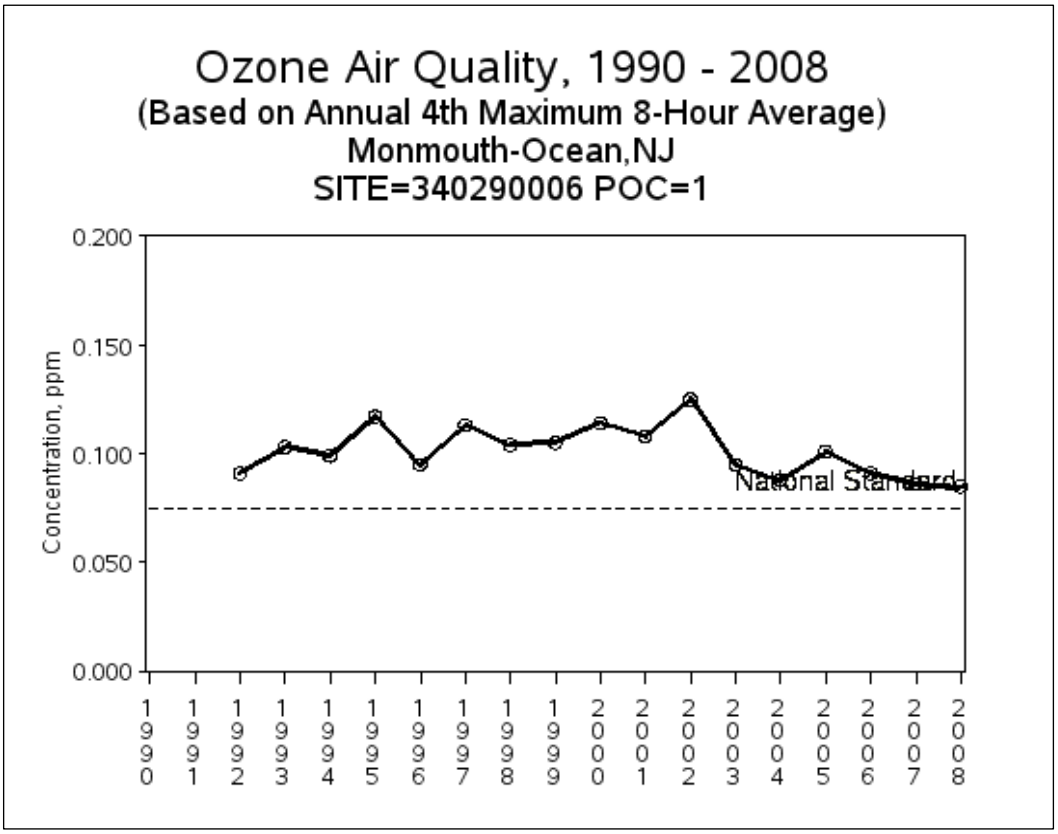


Source: US Environmental Protection Agency Green Book, http://www.epa.gov/oar/oaqps/greenbk/nj8.html

Ocean County's data, collected at its Colliers Mills station in Jackson Township, demonstrates that Ocean County has surpassed New Jersey's "Moderate" standards of 0.092 to 0.106 parts per million for ozone. However, Ocean County, with its 0.85 parts per million ozone measurement, still exceeds the USEPA standard of 0.75 parts per million. Ocean County has seen a steady

decline of its ozone levels from 2002 to the present. A trend chart has been provided for the time period of 1990 to 2008 in Figure 16-6.

Figure 16-6: Ozone Air Quality



** Data was collected at the Colliers Mills location.*
Source: USEPA Ozone Air Quality Monitoring, Local trends, NJ, Colliers Mill, Jackson NJ

Lead Compliance

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. Per the USEPA, historically the major source of atmospheric lead was from motor vehicles; however, with the regulation of leaded gasoline, the amount of emissions of lead from the transportation sector has dramatically declined approximately 95% since 1980. Currently, the major sources of atmospheric lead are ore and metals processing, leaded aviation fuel, waste incinerators and lead-battery manufacturing.

In 1978, the USEPA established lead (Pb) NAAQS as a quarterly average standard set at 1.5 µg/m3. In November 2008, the USEPA revised the lead NAAQS and established it as a rolling 3-month average (maximum) not to exceed 0.15 µg/m^3 over a 3-year period.

The State has not exceeded the 1978 standard since the early 1970s, and currently the entire state is designated as attainment for lead under the 1.5 µg/m3 standard, established in 1978. The USEPA will retain the 1978 lead NAAQS until one year after designations for the new standards, except in current non-attainment areas. In those areas, the USEPA will retain the 1978 standard until the area submits, and the USEPA approves, attainment and/or maintenance demonstrations for the new standards.

Nitrogen Dioxide Compliance

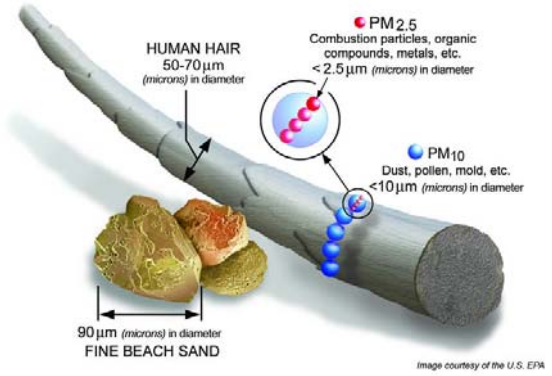
Per the USEPA, "Nitrogen Dioxide (NO_2) forms quickly from emissions from cars, trucks and buses, power plants, and off-road equipment. In addition to contributing to the formation of ground-level ozone, and fine particle pollution, NO_2 is linked with a number of adverse effects on the respiratory system."

In 1971, the USEPA established the NAAQS for nitrogen dioxide (NO_2) as an annual standard set at 0.053 ppb (100 µg/m3), which the State of New Jersey has never exceeded. Ocean County does not have a surveillance station for the monitoring of nitrogen levels. However, considering the ongoing concerns over nutrients and Barnegat Bay, the Board of Chosen Freeholders encourages the USEPA to establish a surveillance station for nitrogen in Ocean County.

On February 9, 2010, adopted revised nitrogen dioxide standards were published. The new standards call for new 1-hour NO_2 standards at a level at 100 parts per billion (ppb), while retaining the current annual average standard of 53 ppb. The State of New Jersey must be in compliance by 2013.

Particulate Matter Compliance

Particle pollution consists of microscopic solids or liquid droplets that are so small that they can be inhaled deep into the lungs and cause serious health problems. Small particles of less than 10 micrometers in diameter pose the greatest threat, because those particles may not only get deep into lungs, but may also be absorbed into the bloodstream. The USEPA groups particle pollution into two categories based on size. Particles between 2.5 and 10 micrometers (PM_{10}) are categorized as "inhalable coarse particles" and come from dust, dirt, soot, pottery, and mold or emitted from industries. "Fine particles, such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air." $PM_{2.5}$ can include trace elements, heavy metals, and carbon compounds. These fine particles are also the major cause of reduced visibility (haze).



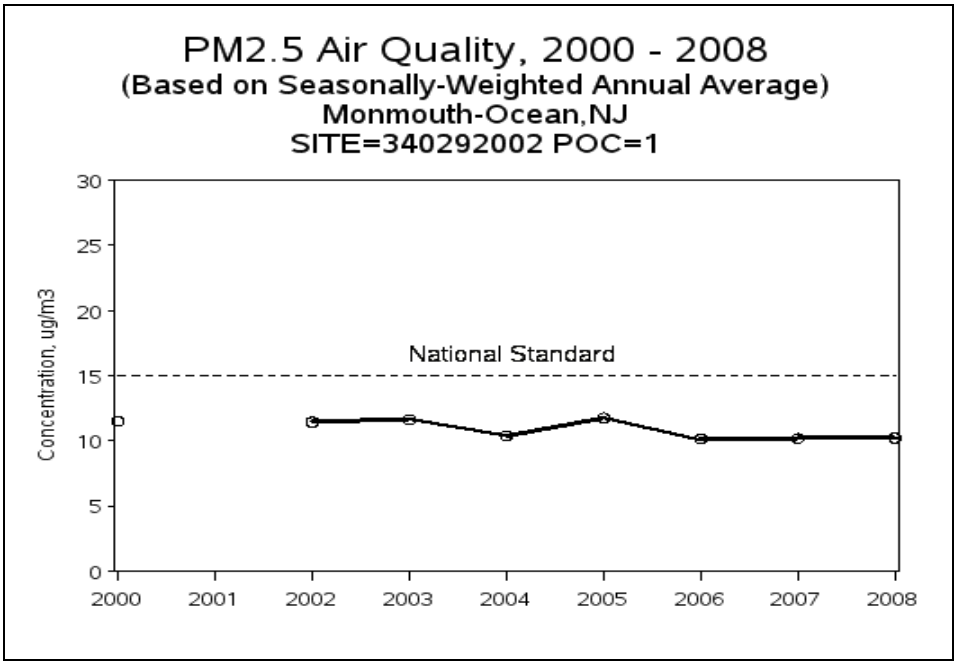
Source: Basic information, Particulate matter, US Environmental Protection Agency, 2011.

The 24-hour fine particle ($PM_{2.5}$) standard is 35 micrograms per cubic meter. In order to attain the 24-hour fine particle standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 micrograms per cubic meter (ug/m^3). The annual fine particle standard is 15 ug/m^3. The annual fine particle standard can only be attained if the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors do not exceed 15.0 ug/m3.

Figure 16-4 demonstrates that Ocean County met the 24-hour NAAQS for fine particulate matter. The data collected at the Toms River location shows a 24-hour reading of 28 ug/m^3, which is less than the standard of 35 ug/m^3. Ocean County also met the annual national air quality standards for fine particulate matter, 15 µg/m^3. USEPA based the designations on the most recent set of air quality monitoring data from 2006 to 2008 as well as other factors,

analytical tools, and technical information. The data in Figure 16-7 was collected at the Toms River Surveillance Station.

Figure 16-7: Particle Matter: Seasonally –Weighted Annual Average Air Quality



** Data was collected at the Toms River location.*
Source: USEPA, Particle Matter, Local Trends in Particle Matter, New Jersey, Toms River.

Sulfur Dioxide Compliance

The majority of sulfur dioxide (SO_2) emissions are from fossil fuel combustion at power plants and other industrial facilities. Sulfur dioxide is linked to a number of adverse effects on the respiratory system. In August 2010, the USEPA established new standards for national ambient air quality for sulfur dioxide in order to provide for the protection of public health with an adequate safety margin and protect at- risk populations. The primary standard is a one hour averaging time not to exceed 75 ppb, based on the three year average of the annual 99th percentile of 1- hour daily maximum concentrations. The secondary standard is a three hour averaging time not to exceed 0.5ppm, which is not to be exceeded more than once per year. When the 2010 standards were established, the EPA revoked the existing 24- hour standard and the annual primary sulfur dioxide standard.

Appendix:

Master Plan Recommendations by Chapter

Chapter 1: Regional Location, Municipalities and Historic Sites and Development

- Encourage the reuse of historically significant buildings and encourage municipalities to explore Historic Commissions and historic preservation ordinances.
- Assist the Ocean County Historic and Cultural Commission in identifying and preserving significant sites.
- Encourage regional initiatives such as the Barnegat Branch Trail historic signage program. The interpretive sign panels provide an overview of the history of the Barnegat Branch of the Central Railroad of NJ (CNJ), identify major historic sites along or adjacent to the trail, provide the history of each host municipality through which the trail passes.

Chapter 3: Economic Planning and Workforce Development

- Continue County economic development efforts to reduce unemployment, connect residents to local year-round employment opportunities, and enhance the tax base by encouraging compatible industrial and commercial operations to locate or expand in Ocean County.
- Continue to support the County's $3.35 billion tourism industry, including the many opportunities for environmental tourism.
- Continue to support traditional maritime and fisheries industries and the growing aquaculture industry.
- Support the needs of the growing health care industry in Ocean County, including efforts to establish a heart catheterization program in Ocean County. The County continues to advocate for a VA Veterans Hospital in Ocean County or in South Jersey for easy access to the County's numerous veterans.
- Strengthen communication and collaboration between the State, County and municipal economic development entities.
- Continue partnerships with regional and local economic entities such as the Ocean County Workforce Development Board, the Monmouth-Ocean Development Council and the NJ Economic Development Authority
- Continue to promote business assistance and training programs.

- Expand on partnerships between Ocean County, Ocean County College, other academic institutions and Joint Base McGuire-Dix-Lakehurst to target growing workforce opportunities in engineering and research and development initiatives.
- Promote green energy initiatives and assist in the continued implementation of the Ocean County Energy Master Plan for county facilities.
- Explore opportunities presented by the pending closure of the Oyster Creek Nuclear Generating Station, especially future uses consistent with the 2011 NJ Energy Master Plan.
- Promote Brownfields incentives to facilitate the redevelopment of underutilitzed properties.
- Evaluate potential growth corridors in Ocean County.
- Promote Downtown and Main Street programs to assist older commercial centers.

Chapter 4: Transportation and Mobility

- Continue to work with the North Jersey Transportation Planning Authority (NJTPA) to gather high crash location data and assess where safety improvements are needed.
- Assess existing truck routes, especially where commercial traffic is concentrated on County roads, impedes pedestrian movement or affects local downtown traffic.
- Encourage the NJ Department of Transportation to modernize and upgrade state highways throughout Ocean County, including Route 9, Route 35, Route 37, Route 70, Route 72, Route 88 and Route 166.
- Continue to annually confer with municipal officials in the development of the six-year capital transportation improvement program.
- Continue to support the County Transportation Services Department and assist in the future expansion of public transportation opportunities.
- Continue to Enhance the RJ Miller – Ocean County Airport consistent with the approved FAA Airport Layout Plan.
- Continue to advocate for Park & Ride locations throughout the County to facilitate carpooling for commuters.
- Continue to encourage and provide technical and personnel assistance to municipalities which wish to participate in programs and studies such as Safe Routes to School, Walkable Community Workshops, Transit Village design, Rail to Trail Conversions, etc.
- Continue to strongly advocate for the expansion of passenger rail service in Ocean County, through initiatives such as the Monmouth-Ocean-Middlesex proposal.

- Continue to encourage carpooling programs for large employers in Ocean County.
- Continue the extension of the Barnegat Branch Trail, and other bicycle mobility projects in the County.
- Continue the modernization of County-owned bridges in Ocean County that connect the barrier islands and encourage the NJ Department of Transportation to upgrade Route 72 to Long Beach Island and Route 37 to Seaside Heights.
- Work with the NJTPA, Joint Base McGuire-Dix-Lakehurst and the adjacent municipalities to implement the recommendations of the 2011 Joint Land Use Transportation and Mobility Study.

Chapter 5: Housing

- Continue to support services targeted to the underserved segments of the housing market, the special needs population and the elderly.
- Continue to encourage programs that assist in the increased supply of safe, decent, sustainable and affordable housing.
- Promote mixed-use developments that incorporate design considerations such as transportation, education, employment, recreation and public safety.
- Continue the Ocean County First Time Homebuyers Program.
- Encourage the retention of established residential neighborhoods and the rehabilitation of the County's older housing stock. Facilitate participation in home rehabilitation and historical preservation grant programs where applicable.

Chapter 6: Design

- Encourage the re-use and redesign of large-scale retail sites to make better use of large surface parking lots and incorporate more pedestrian-friendly design.
- Encourage mixed use developments which contain a variety of building types and uses, connected by walkable and aesthetically pleasing streets and corridors.
- Encourage local agencies to create Streetscape Plans aimed at establishing or retaining streetscape and architectural styles.
- Encourage the consideration of noise, visual aesthetics and natural environmental features in design projects.
- Encourage the consideration of energy factors in siting developments, including solar orientation and prevailing winds.
- Encourage Low Impact Design techniques to minimize the disturbance of natural areas and maximize the recharge of stormwater on-site.

Chapter 7: Land Use

- Track changes in land use and land cover, as well as areas preserved as permanent open space.
- Continue to work with the Department of State and other relative agencies on the State Strategic Plan and other State Planning initiatives.
- Continue to work with the County Planners Association, State agencies and applicable municipalities to encourage realistic planning initiatives that can be adopted and maintained.
- Encourage municipalities to grow in a fashion that is true to smart growth principals and Town Center design standards, allowing for a mix of land uses in a singular area to increase accessibility by all residents.
- Work with the Pinelands Commission and applicable towns to preserve and protect the important environs and species located in the Pinelands, while coordinating long range land use and growth management plans.
- Support the tourism amenities and needs of shore towns and continue to facilitate the protection and replenishment of County's beaches and shoreline areas.
- Ensure public access is protected and enhanced where appropriate.

Chapter 8: Agriculture

- Continue to support the Ocean County Agriculture Development Board (OCADB) in its mission to protect and enhance the County's agricultural resources.
- Participate in addressing Right to Farm matters through the OCADB.
- Periodically re-assess agricultural development areas.
- Provide information and assistance to preserved farm owners regarding new programs and regulations.
- Enforce the Deed of Easement on preserved farms to protect the inherent goals and objectives of the program.
- Maintain a flexible and cooperative approach to agriculture as the industry evolves.
- Continue to support local farming activities and farm markets.

Chapter 10: Open Space, Parks and Recreation

- Continue to support the Ocean County Natural Lands Trust Fund Advisory Committee and its mission to identify and acquire natural areas that are environmentally sensitive, ecologically important, and/or contiguous to existing preserved open space.
- Maintain an ongoing evaluation of the recreational needs of Ocean County residents and assist in identifying new park and open space areas as necessary.
- Continue to work with all Federal, State, local and non-profit partners to acquire open space and maximize financial resources available for preservation.
- Continue to seek and support donations to the various open space programs in Ocean County.

Chapter 12: Groundwater, Water Resources and Supply

- Continue to coordinate with the NJ Department of Environmental Protection, the US Geological Survey, local water purveyors and other agencies in the monitoring and evaluation of ground and surface water resources.
- Target the preservation and protection of well head protection and aquifer recharge areas.
- Assist the Ocean County Health Department in the review and assessment of potable and non-potable wells in Ocean County.
- Promote the reduction of groundwater withdrawals from Ocean County critical areas and avoid saltwater intrusion into aquifers through water conservation, conjunctive use of ground and surface water resources and additional interconnections between local water purveyor systems.
- Explore the ability to incorporate water conservation requirements into the subdivision and site plan review process.
- Support continued clean-up of contaminated sites, including superfund sites.
- Continue to work with the Barnegat Bay Partnership and its Strategic Planning process to protect the many valued resources of the bay and estuary.
- Continue to assist the State of New Jersey in the Implementation of the Governor's 10 Point Plan for Barnegat Bay.

Chapter 13: Wastewater Management

- Periodically assess sewer and septic needs for Ocean County and coordinate with the Ocean County Utilities Authority, NJDEP, Pinelands Commission, NJ Office of Planning Advocacy and all municipalities on future revisions to the Ocean County Wastewater Management Plan.
- Continue the evaluation of wastewater reuse initiatives such as the Reclaimed Water for Beneficial Use Program.
- Work with the Ocean County Health Department on the Septic Management Plan/Program to ensure that development in septic areas adheres to environmental performance standards and complies with scheduled maintenance requirements to protect water quality.
- Coordinate with the OCUA on modernization programs, taking into account updated population and growth projections.
- Continue to support the OCUA as it explores "Green Technology" for the re-use of solids and methane gas, and the recapture of heat energy.
- Continue the JLUS Wastewater and Growth Management Study to provide wastewater treatment for New Egypt and the adjacent Burlington County municipalities in a possible partnership with Joint Base McGuire-Dix-Lakehurst.

Chapter 14: Stormwater Management

- Continue stormwater basin restorations and ongoing partnerships to identify and restore impaired stormwater management facilities to improve infiltration and reduce runoff throughout the watershed.
- Continue to work with the Barnegat Bay Partnership to target research and assessment efforts.
- Coordinate County, State and Federal funding to maximize the effectiveness of stormwater protection and rehabilitation efforts.
- Encourage land use planning strategies such as low impact design to preserve open space and maximize the natural infiltration of stormwater.
- Explore and assess best management practices used by other areas in the country to address stormwater management.
- Continue to take a proactive approach to the NJ Soils Health Legislation by working with the Ocean County Soil Conservation District to promote construction practices to maintain soil health and reduce compaction.
- Encourage and support compliance with the NJ Fertilizer Law.

- Continue to assess structural and nonstructural options for stormwater management to increase infiltration, remove debris and reduce nutrient and pollution loads.
- Work with partners to expand public education programs on stormwater management, targeting property owners, engineers, developers and local officials.
- Encourage compliance with new legislation that requires the NJ Department of Transportation to address stormwater management issues on state highways including Routes 9, 35, 37, 70, 72, 88 and 166.

Chapter 16: Air Quality

- Continue to coordinate with local, state and federal environmental agencies to monitor air contaminant levels and seek reductions in out-of-state emission affecting Ocean County.
- Participate in local and regional forums on the development and implementation of air pollution reduction programs to attain compliance with National Ambient Air Quality Standards.
- Encourage educational programs for vehicle owners on the importance of proper maintenance to minimize emissions levels.
- Encourage carpooling programs for large employment centers and for County residents commuting to out-of-County workplaces.
- Encourage participation in federal and state financial assistance programs designed to improve the County's air quality.

Appendix:

Related Plans / Legislation for Further Reference

Below are lists of plans, legislation and programs utilized by the Ocean County Planning Board:

Ocean County

- Subdivision and Site Plan Resolution
  http://www.planning.co.ocean.nj.us/appsummary.htm

- Ocean County Cross Acceptance Report, 2005
  Adopted in collaboration with the State Planning Commission under the State Planning Act of 1985 as the culmination of the Cross Acceptance process. County Cross Acceptance Reports are to be the basis of the ongoing SDRP update.
  http://www.planning.co.ocean.nj.us/stateplan/02_EXECUTIVE_SUMMARY.pdf

- Ocean County Capital Improvement Program
  Adopted by the Board of Chosen Freeholders to guide the use of resources on roadway and infrastructure improvements.
  http://www.co.ocean.nj.us/EngineeringMainPage.aspx#EngProjects

- Ocean County Water Quality Management Plan
  Adopted by the Board of Chosen Freeholders to ensure proper treatment capacity at County wastewater treatment plants and future septic capacities.
  http://www.planning.co.ocean.nj.us/watershed/wwmgt.htm

- Ocean County Parks and Recreation Master Plan

- Ocean County Farmland Preservation Master Plan
  Guides the Farmland Preservation Program of the Ocean County Agricultural Development Board under the direction of the State Agricultural Development Committee.
  http://www.planning.co.ocean.nj.us/docs/farmland_occmp_final.pdf

- Ocean County Natural Lands Trust Fund Program
  Ocean County's key tool in land preservation under the direction of the Ocean County NLTF Advisory Committee.
  http://www.planning.co.ocean.nj.us/natlands.htm

- Ocean County District Solid Waste Management Plan
  http://www.co.ocean.nj.us/SolidWaste/MainPage.aspx

- Joint Land Use Study Reports
  http://www.planning.co.ocean.nj.us/jlus.htm

- Ocean County Subregional Transportation Program
  http://www.planning.co.ocean.nj.us/transportation.htm

- Robert J. Miller Airpark Master Plan
  This 2006 Plan lays out the facilities use.
  http://www.planning.co.ocean.nj.us/rjmiller/improvements.htm

- Ocean County Consolidated Plan 2010
  http://www.planning.co.ocean.nj.us/cdbg/conplan2010.htm

Neighboring Counties

The Ocean County Department of Planning regularly participates in meetings with the County Planning Association where representatives from each County Planning Department come together to discuss major planning related legislation, programs and projects going on in each County in the State and the State collectively.

- Atlantic County updated their County planning documents in the last decade. They stated that significant employment and population growth resulted in the need for "*strong regional planning due to the stress placed on the County's physical infrastructure as well as the services of County and municipal governments*". Like Ocean County, much of this demand is seen on the County road network. In an effort to provide for this growth, the Atlantic County Department of Regional Planning and Development updated the *Atlantic County Master Plan* and the *Atlantic County Open Space and Recreation Plan* in October of 2000, and on June 4, 2002 the Atlantic County Board of Chosen Freeholders adopted revised *Atlantic County Land Development Standards*. The boundary between the two Counties lies within Great Bay and the Little Egg Harbor Inlet. The land areas to the north and south of the bay are predominantly tidal wetlands and are designated as public open space by both Counties. Most of the land area is federally-owned as part of the Barnegat and Brigantine Divisions of the Edwin B. Forsythe Wildlife Refuge.

- The eastern portion of Burlington County and western Ocean County are highly similar in their rural character. One important planning area in which the two Counties work together is the ongoing Joint Land Use Studies. With assistance from the Department of Defense and the Office of Economic Adjustment, both Burlington and Ocean Counties are working with the Joint Base on issues such as land use compatibilities, transportation issues, economic matters, and regional wastewater plans.

- Monmouth County continues to plan for its many regions with regional documents such as *The Bayshore Region Strategic Plan* in 2006 and the *Coastal Monmouth Plan* in 2010. Both Ocean and Monmouth Counties enjoy population influx in the summer season due to their many shore destinations, and so maintaining infrastructure, such as County roadways, to handle the demand will remain a key planning issue going forward. Also, with portions of

Freehold Township being designated as farmland, this is consistent with agricultural practices in neighboring Plumsted Township in Ocean County. Other planning initiatives, such as a rail-to-trail link from Upper Freehold Township into Plumsted Township are also being considered.

Statewide

- The State Development and Redevelopment Plan (SDRP)
  Last updated in 2001, the SDRP is to serve as the basis for planning policy in the State and is expected to be updated in the near future.
  http://www.nj.gov/state/planning/docs/infrastructureassessment030101.pdf
- NJTPA Regional Transportation Plan
  http://www.njtpa.org/plan/LRP2035/default.aspx
- Coastal Zone Management Plan/CAFRA Legislation
  http://www.nj.gov/dep/landuse/coast.html
- Water Quality Management Planning Statute, last amended 2008
  http://www.nj.gov/dep/wqmp/guidance.html
- NJ Pinelands Comprehensive Management Plan
  http://www.state.nj.us/pinelands/cmp/
- Statewide Water Supply Master Plan
- Fair Housing Act/COAH Substantive Certification Statutes
  http://www.nj.gov/dca/services/lps/hss
- NJ Historic Trust
  http://www.state.nj.us/dep/hpo/4sustain/njhpp2002_low.pdf
- Clean Vessel Act
  http://njboating.org
- Fertilizer Law
  http://www.njleg.state.nj.us/2010/Bills/A2500/2290_R3.HTM
- Soil Compaction Bill, which amends the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et. Seq
  http://www.njleg.state.nj.us/2010/Bills/A3000/2501_R2.HTM
- NJDOT Stormwater Basin Bill (A3606)
  http://www.njleg.state.nj.us/2010/Bills/A4000/3606_I1.HTM
- NJ DEP- Green Acres Program
  http://www.nj.gov/dep/greenacres

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