
Planning the Future of Wenonah

Wenonah Borough, Gloucester County, New Jersey

**MASTER
PLAN**

**COMBINED
PLANNING
BOARD**

OCTOBER 28, 1992

MASTER PLAN
OF THE
BOROUGH OF WENONAH
COUNTY OF GLOUCESTER, NEW JERSEY

Adopted by the Combined Planning Board

October 28 , 1992

≠

Resolution of Memorialization Adopted by the
Combined Planning Board

November 17, 1992

Adopted Pursuant to Article 3 (N.J.S.A. 40:55D-28)
of the
New Jersey Municipal Land Use Law
and the
New Jersey Fair Housing Act of 1985 (N.J.S.A. 52:27D-310)

Combined Planning Board Members

Wayne Mozzo, Chairman
Hon. Dale T. Taylor, Mayor
Jo Dominy (1991-1992)
Charles Meserve (1991-1992)
Edward Ramsay
David Sporer
Barry Lozuke, Esq., Alt. 1 (1992)

Edward Ryan, Vice-Chairman
Hon. Edwin R. Burger, Jr., Councilman
Marlyn L. Hellyer (1992)
Richard Montemore
Deborah Rouse (1991-1992)
W. Lee Shoemaker

William Antinore, Esq., Solicitor
April Potts, Secretary
Charles Riebel, Jr., PE, CME, PP

Mayor's Commission for Planning the Future of Wenonah (Advisory to the Planning Board)

Hon. Dale T. Taylor, Mayor
Hon. Jack Hart, Councilman
Michele B. Burgess
Charles P. Newcomb
Edward Ramsay
Jack C. Sheppard, Sr.

Hon. Edwin R. Burger, Jr., Councilman
Shirley K. Myers, Secretary
Charles S. Forsman
Richard Montemore
Deborah Rouse
Milton H. Webb, Jr.

Technical Preparation By:
Brian M. Slaugh, PP, AICP
New Jersey Professional Planner
License No. 3743

The Waetzman Planning Group
22 Euclid Street
Woodbury, New Jersey 08096



A signed and sealed original is on file in the Office of the Borough Clerk

TABLE OF CONTENTS

INTRODUCTION AND PLANNING BACKGROUND	P. 1
Regional Location	1
Historical Setting	1
Planning Assumptions	4
Prior Master Plan Activity	6
1977 Master Plan	6
1982 Reexamination Report	7
1988 Reexamination Report	7
Changes in Development Conditions Since 1977	8
Route 55	8
Environmental Regulation	8
State Development and Redevelopment Plan	9
 STATEMENT OF GOALS AND OBJECTIVES	 P. 13
Community Character	14
Community Balance in Land Use	14
Open space	15
Conservation of Natural Features	15
Visual Character of Wenonah	16
Historic Preservation	17
Community Facilities	17
Citizen Participation	18
Municipal Services	18
Recycling	19
 CONSERVATION ELEMENT	 P. 20
Physical Conditions	20
Lakes and Ponds	22
Open Space Origins	23
Soils	24
Alluvial Soils	24
Upland Soils	25
Wetlands	27
Floodplains	28
Policy Recommendations	29
Conservation	29
Planning and Review	30
Lakes and Ponds	30

LAND USE PLAN	P. 31
Residential Uses	32
Residential	32
Low and Moderate Income Housing	34
Low Density Residential	35
Senior Citizen Overlay	35
Professional Office	36
Institutional	36
Commercial	36
Parks and Recreation	37
Conservation	38
Other Land Use Considerations	39
Borough Hall	39
Mantua Avenue Beautification	42
Vacations of Streets	42
 MASTER PLAN RELATIONSHIP TO OTHER PLANNING DOCUMENTS	 P. 44
Adjacent Municipalities	44
Deptford Township	44
Mantua Township	45
Gloucester County	45
Other County-wide Issues	45
State Development and Redevelopment Plan	46
District Solid Waste Management Plan	46
 HOUSING PLAN ELEMENT	 P. 47
Historical Background on Affordable Housing	47
The Fair Housing Act	49
Housing Characteristics	50
General Trends	50
Ages of Housing Units	50
Occupancy Characteristics	51
Housing Type	52
Housing Deficiencies	53
Housing Value and Rental Cost	54
Population Characteristics	56
Age Cohorts	56
Income	57
Projections	59
Employment	60
Wenonah's Affordable Housing Obligation	62
Fair Share Housing Plan	63
Rehabilitation	64
New Construction	65

Site Selection for New Construction	65
Summary and Policy Recommendations	70
RECYCLING ELEMENT	P. 71
Wenonah's Recycling Program	72
Consistency with District Solid Waste Management Plan	73
Future State Goals	74
Recommendations	75

LIST OF MAPS

MAP	TITLE	PAGE
1	Regional Context	2
2	Conservation Plan	21
3	Land Use Plan	33
4	Affordable Housing Site	67
5	Affordable Housing Sketch	69

LIST OF TABLES

TABLE	TITLE	PAGE
1	Existing Land Use in Acres and as % of Total Land Area	32
2	Low Income Limits for Wenonah Residents	48
3	Moderate Income Limits for Wenonah Residents	49
4	Year Housing Units Built in Wenonah	51
5	Comparison of Wenonah and Gloucester County Housing Value	54
6	Comparison of Wenonah and Gloucester County Rental Costs	56
7	Family Income Distribution in Wenonah, 1980	58
8	Extrapolated Family Income Distribution in Wenonah, 1990	58
9	1970-2010 Historic and Forecast Population	59

10	1980-2010 Covered Employment Estimates and Projections	61
11	Summary of Wenonah's Housing Obligation	63

LIST OF FIGURES

FIGURE	TITLE	PAGE
1	Occupancy Characteristics of Wenonah Housing Units, 1990	51
2	Number of Units for Each Housing Type	52
3	Number of Overcrowded Units by Tenure of Occupancy	53
4	Distribution of Housing Value in Wenonah, 1990	54
5	Distribution of Rental Cost in Wenonah, 1990	55
6	Wenonah Population Distribution by Gender, 1990	56
7	Comparisons of Age Cohorts, Wenonah and Gloucester County, 1990	57

+09/01/61
Wenonah Clerk

**MASTER PLAN
OF THE
BOROUGH OF WENONAH
GLOUCESTER COUNTY, NEW JERSEY**

REGIONAL LOCATION

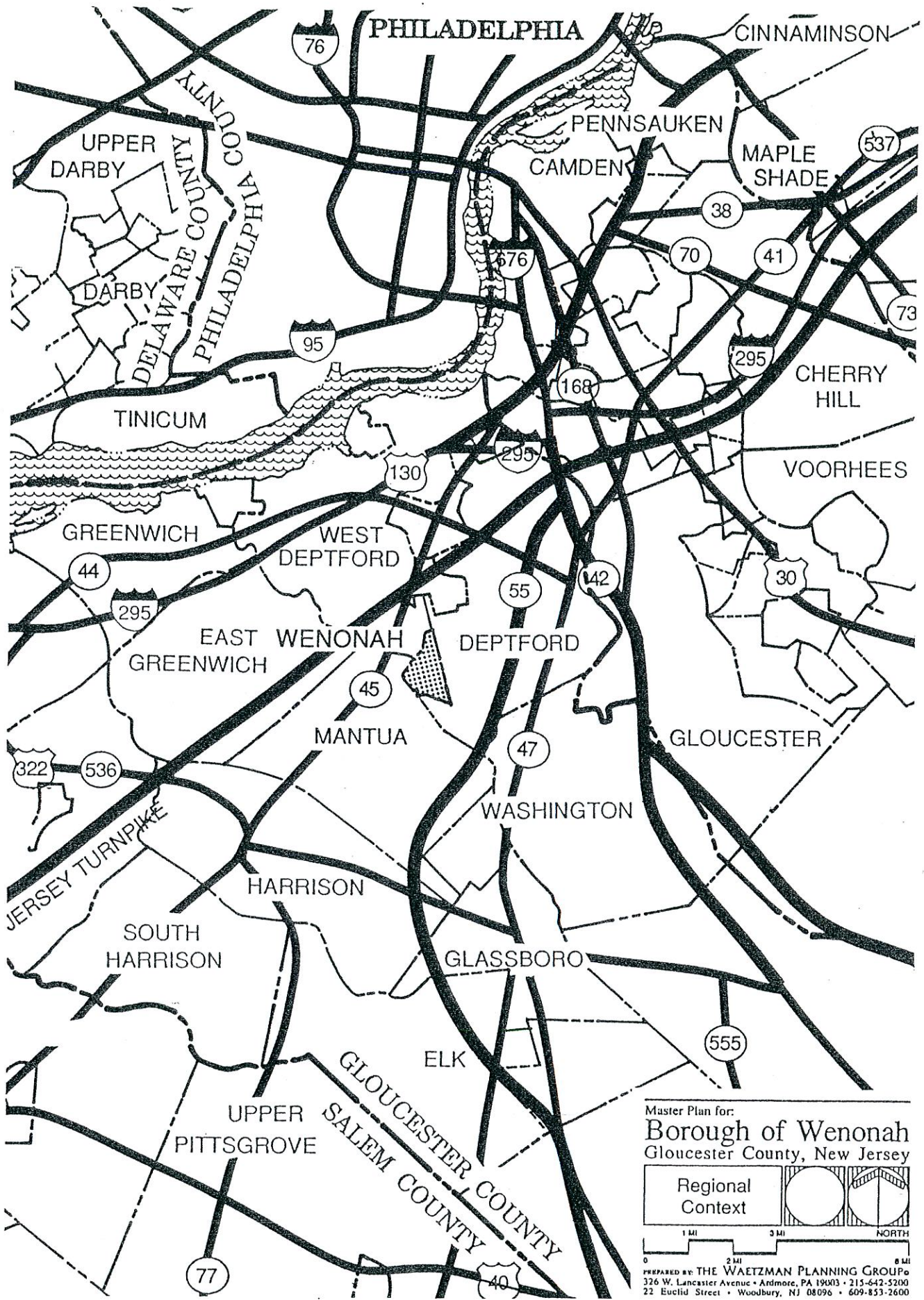
Wenonah Borough, New Jersey is located in the north central portion of Gloucester County approximately 3 miles from Woodbury, the county seat of government. The Borough is within the Philadelphia metropolitan region and is directly south of the City, some six miles distant from its borders. Wenonah is surrounded by two municipalities, Mantua and Deptford Townships, both considerably larger in area and population than the Borough. (See Map 1 - Regional Setting).

Wenonah is connected to the regional road network by two county roads. Woodbury-Glassboro Road, County Route 553, forms the eastern boundary of the Borough with Deptford Township. County Route 632, known as Mantua Avenue in Wenonah and Wenonah Avenue in Mantua, is an east/west route that bisects the municipality and forms one of its principal streets. Woodbury-Glassboro Road, as its name implies, connects the municipalities of those names. About 2 miles to the south of Wenonah this road connects to Rt. 55, a limited access state highway, that ties into the regional highway network, including Rt. 42 and Interstate 295. County Route 632 provides local access to Mantua and Rt. 45, a major north-south arterial road in the County.

Wenonah is also bisected, on a north/south axis, by a Consolidated Rail Corporation (Conrail) freight line that provides access through the heart of Gloucester County to Vineland in Cumberland County and beyond to the Atlantic Coast. The railroad line figured prominently in the development of Wenonah through its prior use as a passenger line to Woodbury and Camden City in Camden County.

HISTORICAL SETTING

Wenonah can trace its genesis in the transportation revolution brought about by the development of the railroad, originally imported from England and quickly adapted to the United States. By 1831, two railroads were already established in northern New Jersey. In southern New Jersey, the Camden and Atlantic Railroad was established in 1852 and the West Jersey Railroad a year later in 1853. By 1857 the



Master Plan for:
Borough of Wenonah
Gloucester County, New Jersey

Regional Context

1 MI 2 MI 3 MI 6 MI

PREPARED BY THE WAETZMAN PLANNING GROUP
326 W. Lancaster Avenue • Ardmore, PA 19003 • 215-642-5200
22 Euclid Street • Woodbury, NJ 08096 • 609-853-2600

West Jersey Railroad Company had connected Camden and Woodbury. In the first year of Lincoln's administration, 1861, these lines were extended to Glassboro.

The original alignment of the line to Glassboro, however, presented problems for the railroad. This alignment had a sharp curve and a difficult grade, limiting freight traffic between the two towns. The original alignment followed N. Jefferson Avenue and its extension at Maple Street. The embankment for its bridge over Mantua Creek can still be seen at the end of S. Jackson Avenue. Five years later, in 1866, the right-of-way was realigned to its present location, the grade was smoothed, and the sharp curve eliminated.

At this time, the president of the railroad was William Sewell, a former Civil War general. He and the railroad's chief engineer, William F. Allen, conceived the idea of developing land along the new track about three miles from Woodbury's station, sufficiently far away that the train would have to be used to travel to Woodbury. A railroad station was developed here, known then as the New Mantua Depot. The two men laid out a town centered around the railroad station and attempted to interest investors in the land development speculation. The two men were successful in interesting a number of people who took a special train to the depot from the West Jersey Railroad offices to inspect the land on December 19, 1870. After the inspection, the men retired to the passenger saloon where they resolved to form the Mantua Land and Improvement Company. The company was capitalized and land was then purchased, consisting of 572 acres, for a sum of \$26,162.50.

Two months after the land and improvement company was formed, the New Jersey Legislature acted to approve its incorporation as a political body on February 21, 1871. The town formally was named seven weeks later on April 3, 1871. A number of spellings were tried until Wenonah was settled upon. Aside from the railroad depot, the first buildings constructed were built in 1872 when the hotel and twelve cottages were built.

Wenonah was originally used as a summer vacation retreat but even from its earliest days, it did have year-round residents. By 1883, about 50 dwellings had been constructed with approximately 300 people living in the town. Up until this time the town had been governed through the land and improvement company. The New Jersey Legislature, responding to unprecedented population growth, developed several forms of local government, including the Borough Commission Act of April, 1883 (subsequently overhauled in 1897). Wenonah incorporated as a Borough in 1883 under the Act and established a formal government.

Wenonah is an early example of a railroad suburb that was established around a transportation node both to derive profit from the sale of land and to provide ridership for the railroad itself. A number of municipalities in southern New Jersey were established the same way, particularly in Camden County along the White Horse Pike, which paralleled the Pennsylvania Reading Seashore Line.

PLANNING ASSUMPTIONS

The Master Plan of the Borough of Wenonah has been adopted by the Planning Board on the basis of advice by the Mayor's Commission for Planning the Future of Wenonah. The Master Plan is based upon a number of assumptions that have a direct influence on the development of the policies and objectives of the Plan. These assumptions are:

1. WENONAH IS A FULLY DEVELOPED COMMUNITY AND WILL NOT FACE SIGNIFICANT REDEVELOPMENT PRESSURE IN THE FUTURE.

Wenonah has developed gradually in the last century with a wide variety of housing types and styles. Very little vacant developable land remains. The land that is available for additional development consists primarily of scattered housing sites. Larger tracts of undeveloped land primarily belong to the Borough for open space and conservation purposes with significant environmental constraints that make this land unsuitable for any development.

Significant vacant developable land exists in both Mantua and Deptford Townships, as well as elsewhere in the County. There, larger tracts are available and more easily developed than the scattered sites remaining in Wenonah. Any redevelopment would require the acquisition and demolition of sites in the Borough which is unlikely given the better financial feasibility of building in other areas.

2. ENVIRONMENTAL ISSUES WILL BECOME INCREASINGLY IMPORTANT IN THE FUTURE.

Governmental regulation of environmental concerns has greatly increased over the past twenty years as more becomes known about the effects of modern civilization on the natural world. This trend will continue with more stringent requirements for the emission of pollutants in the air, soil, and water. In particular, pollutants in storm water runoff from development outside of the Borough constitute a threat to the preserved conservation areas of Wenonah. The connection between the preservation of natural areas and recreation will become increasingly important. While the focus has in past years been primarily on the regulation of manufacturing and government, the individual will become increasingly targeted by new mandates as the responsible party. This has already become apparent with the institution of state-wide recycling in 1987 and has continued with added regulations governing new septic fields and wells. Certain individuals have also been affected by regulations, governing wetlands and other environmentally sensitive areas, that have prevented them from developing land previously considered buildable. Amendments adding new regulatory mechanisms to the Clean Air Act at the federal level of government will substantially alter the present pattern of commuting by private vehicle.

3. THE MASTER PLAN SEEKS TO BE CONSISTENT WITH REGIONAL AND STATE WIDE PLANNING POLICIES.

As required, the master plans of Mantua and Deptford Townships and Gloucester County have been reviewed for areas of compatibility or incompatibility with the land development policies of this Plan (See Master Plan Relationship to Other Planning Documents). Further the land development policies of the Delaware Valley Regional Planning Commission have been reviewed.

Of perhaps greater importance, the growth management policies of the State Development and Redevelopment Plan (State Plan), in its latest incarnation, have been carefully consulted for their impact on the land development policies of this Plan. The State Plan seeks to establish areas for growth in centers within the state and to delineate areas for the preservation of agriculture and sensitive environmental areas.

Wenonah is in the position of being a "community of place" known as a "...dynamic diverse, compact, and efficient center that has evolved and been maintained at a human scale, with an easily accessible core of commercial and community services, residential units, and recognizable natural and built landmarks and boundaries that provide a sense of place and orientation.", to quote the Interim State Development and Redevelopment Plan. The land development policies of the Master Plan seek to maintain Wenonah as a community of place.

4. THE PLAN DOES NOT ASSUME ANY MAJOR ECONOMIC UPHEAVALS.

A major economic upheaval means changes beyond the normal business cycle of expansion and recession. The economy has been in a recession for the past year, and experienced a significant slowdown in the year before that after six years of continuous expansion dating from 1984. A number of factors make it unlikely that an expansion of that length will occur again in the coming decade. These include, lower household formation rates, significant levels of debt for government, corporations and individuals, historically high interest rates, and increasing world-wide competition, among others. Econometric projections, on reasonable assumptions, indicate slow but steady growth over the next decade for New Jersey.

Land development is intricately tied to the growth in employment, which brings with the demand for new commercial facilities in the form of office buildings and manufacturing facilities. The growth in employment also affects the need for housing of new workers, and in turn the need for retail commercial buildings and services.

In New Jersey, as well as in most other parts of the country, the historic ties of development to growth in the economy became loosened in the past decade because the development of real estate offered the best returns for the money

invested. Financial deregulation and the federal tax structure encouraged capital to flow to land development. This has resulted in a much greater supply of buildings than needed for the demand, particularly in New Jersey. Some economists and real estate specialists estimate that the oversupply will take at least five, and possibly ten years, to be absorbed into the market. This indicates that in the time horizon of this Master Plan there will be a period of slow development activity that will gradually increase throughout the decade of the nineties as the overstock of buildings is gradually absorbed and the demand for new buildings increases.

PRIOR MASTER PLAN ACTIVITY

The Borough of Wenonah first adopted a master plan in 1977. Since that time, two reexamination reports have also been adopted that reviewed the policies on land development contained within the 1977 Master Plan. The first of the reexamination reports was adopted in 1982 and the second in 1988 in accordance with the requirements of the municipal land use law of New Jersey.

1977 MASTER PLAN

The 1977 Master Plan was a response to the adoption by the State legislature of the Municipal Land Use Law (P.L. 1975, c. 291) which became effective in August, 1976. The law required, for the first time, the adoption of a Master Plan before there could be a legally enforceable Zoning Ordinance. The 1977 Master Plan includes additional elements, or sections, on circulation, utilities, community services, and municipal services that are not being specifically considered within this document, though they are implied in the Land Use Plan Element (See page 30). One additional element, Housing, not covered by the 1977 Plan, has been developed in response to the requirement for each municipality to provide for its fair share of the regional population growth.

The 1977 Master Plan focused on a number of key issues that remain, for the most part, concerns that still exist at this time. These include, infrastructure improvements, principally water supply; improvements to public facilities, such as recreation; the preservation of conservation areas; and the restoration of the historic commercial center of the Borough.

The land development policy in the Plan centered on two tracts of land in the Borough. The first of these was the land around the Wenonah Swimming Club held in several different parcels with poor access. The second was the then undeveloped tract on Bark Bridge Road across from the Eagle's Nest Golf Club. Since the 1977 Master plan was adopted, the lots surrounding the swimming club have been developed with access coming from various easements over other property. The Bark Bridge site is in the process of being developed with custom-built single family housing.

1982 REEXAMINATION OF THE MASTER PLAN

The 1982 Reexamination of the Master Plan concentrated on the extent to which the infrastructure goals contained in the 1977 Master Plan had been achieved. The 1982 Report documented the extent of capital improvements in the Borough including water lines, sewer lines, streets, equipment, and municipal facilities. A number of the capital improvement objectives noted in the 1977 Master Plan were met.

In addition to the review of infrastructure needs, the Reexamination Report noted that since the Master Plan was adopted, Lenape Trail and its attendant streets were created and the land subdivided into 59 lots. The inclusion of part of the Monongahela Brook in the designated conservation areas was consistent with the Master Plan's goal of natural preservation of sensitive lands.

Lastly, two other issues relating to housing were noted. These were the problems with the upkeep of housing and with the illegal conversions of housing into apartments. The Report proposed a housing maintenance code and a certificate of occupancy for rental units. Both proposals, however, were not adopted by the Borough Council.

The goals re-adopted by the Report from the Master Plan were primarily for a continuation of the land development policies of the Borough for capital improvements and governmental services. It also included a goal to preserve existing buildings through the objective of a maintenance code for commercial and residential uses. The Report placed an emphasis on the volunteerism of citizens in ensuring the continuation of Wenonah's unique community.

1988 REEXAMINATION OF THE MASTER PLAN

The 1988 Report reviewed both the 1977 Master Plan and the 1982 Report. The 1988 Report discussed in greater detail the specific goals of the Master Plan and the objectives to implement them. It found that a number of the specific proposals had not been implemented, mainly because of a lack of funding and personnel to carry them out. The Report also found that a number of the proposals in the Master Plan were found to be unworkable, either because the original concept was flawed, or, new events dictated a different course of action.

Water supply problems have been noted in all three documents, primarily with the storage capacity in the system. A capital improvement program is currently being considered by the Borough Council that includes a new water storage tank and associated improvements as a high priority.

The 1988 Report included for the first time a Housing Plan Element in response to the Fair Housing Act of 1985 (P.L. 1985, c.222) that mandated a realistic opportunity for low and moderate income households to live in Wenonah. The conclusions in the element found that insufficient vacant land was remaining in Wenonah for designation of new construction and that an insufficient operating

budget existed for the Borough to contemplate a regional contribution agreement for at least part of its required number.

The 1988 Report supported similar conclusions as the 1982 Report by noting the contributions that volunteers had made to the Borough both economically and culturally. The 1988 Report determined that the quality of life in Wenonah was dependent to a considerable extent on continuing and promoting volunteerism.

CHANGES IN DEVELOPMENT CONDITIONS SINCE 1977

The two reexamination reports have detailed the changes in development conditions since the 1977 Master Plan was adopted. A number of other changes have occurred either on a regional or state-wide basis that also have changed the conditions for development. One of these is the new requirements for affordable housing that has already been noted in the 1988 Reexamination Report. The most significant of these are:

ROUTE 55

The opening of Rt. 55 between the North-South Freeway (Rt. 42) and Rt. 40 in Malaga has rearranged the travel patterns of motorists in central and southern Gloucester County. As a whole, the County has lacked highways that permit motorists to travel in an east/west direction. Two of those that do permit such travel are Mantua Avenue (County Route 632) and Maple Street. Both roadways intersect with Woodbury-Glassboro Road (County Route 553) and allow east west travel from portions of Mantua and Deptford to Rt. 55 via County Rt. 553. Maple Avenue in particular provides direct access for the Oak Valley residents of Deptford to reach Rt. 553. The Gloucester County Official Map designates Rt. 553 as a major arterial road and as such expects the ultimate right-of-way to be 70 feet wide with four paved lanes in a 50 foot wide cartway. Portions of the highway are already widened to this width in steep areas. A comprehensive plan to widen the highway would attract even more trips than its present 22,000 vehicle trips per day.

ENVIRONMENTAL REGULATION

Since the creation of the Environmental Protection Agency at the federal level in the early 1970's, environmental regulation and policy have grown in complexity as the scientific understanding of the interrelatedness of humankind's activities and the natural environment has become better known. Many of the functions that were regulated at the local level, such as storm water management or soil erosion control, have been returned to the state or county level of government to ensure consistent policy.

A number of new initiatives at the federal and state level have had or will have far reaching effects on land development. These include: restrictions on developments on floodplains and in wetlands; rules governing solid waste disposal and recycling; the location and construction of septic systems; the

amount of discharge from sewage treatment plants and storm water management facilities; and measures for reducing atmospheric pollution.

Amendments to the federal Clean Air Act are likely to change public perceptions about private vehicular travel. Private vehicle travel now creates in excess of 50% of the low level ozone for which New Jersey has been designated a "severe" non-attainment area. Regulations being prepared by the state Department of Environmental Protection and Energy, charged with implementing New Jersey's plan for cleaner air, contemplate using Californian standards for vehicles and reducing single occupant vehicles (SOV's). Public transportation will be more strongly promoted. Land use is expected to be more closely tied to transportation. Coupled with the policies of the State Development and Redevelopment Plan, it is quite possible that places like Wenonah, with its rail infrastructure already in existence, will become new transportation hubs. It is not likely, however, that such policy would be implemented prior to the next six year reexamination of this Master Plan.

STATE DEVELOPMENT AND REDEVELOPMENT PLAN

The State Planning Commission was created by the State Planning Act in January, 1986 to create a guideline for the future growth of New Jersey called the State Development and Redevelopment Plan. The aims of the legislation were to ensure that New Jersey remained a desirable place to live and work, that a positive business climate was maintained, and that public expenditure for improvements to roads, sewers, water supply, and the like was spent in the most efficient manner possible. The plan is to be designed to protect the natural resources of the state; to identify areas for growth, limited growth, and agriculture or conservation; and to establish state policies on housing, the use of land, and economic development.

To achieve the legislative goals, the State Planning Commission and their staff, the Office of State Planning, have developed several plans with considerable public comment and formal negotiations on points of contention in the State Plan named "cross-acceptance". The latest version of the State Plan (as of this writing) is called the INTERIM STATE DEVELOPMENT AND REDEVELOPMENT PLAN, released in July, 1991. It is a policy document on growth management that seeks to coordinate the provision of public services for development and redevelopment in the most efficient manner and to direct growth to the most appropriate locations. The organizing concept of the Interim Plan is to designate planning areas and centers. There are five planning areas, including; Metropolitan Planning Area (PA 1), Suburban Planning Area (PA 2), Fringe Planning Area (PA 3), Rural Planning Area (PA 4) and its subset Rural Environmentally Sensitive Planning Area (PA 4B), and Environmentally Sensitive Planning Area (PA 5). In addition to the planning areas, the Interim Plan defines five types of centers; Urban, Town, Regional, Village, and Hamlet. Centers are embedded within planning areas and are intended to be the focus of growth in the state.

Wenonah has been initially designated within the Metropolitan Planning Area. Within this area, Woodbury has been designated a Regional Center. The Metropolitan Planning Area is intended for the central cities and older suburbs that are geographically integrated with each other. The development pattern is typically grid as opposed to curvilinear and it is often difficult to tell when the boundary has been crossed between municipalities. Another characteristic is an ageing infrastructure. It is likely that redevelopment will be the vehicle of change, rather than the conversion of open land to other uses. The Interim Plan uses the threshold of 1,000 people per square mile as the distinction between the Metropolitan and the Suburban Planning Areas. All of these characteristics are discernible in Wenonah and make its inclusion in the Metropolitan Planning Area logical.

One of the purposes of the Interim Plan is to identify centers for inclusion in the final State Development and Redevelopment Plan (provisionally expected to be adopted in July, 1992¹). Centers have a range of scales from the largest, Urban Centers, to the smallest, Hamlet Centers. Wenonah most clearly meets the criteria for designation as a Village Center, which are as follows:

- 1) A core area of compact, mixed uses, including commercial, residential, and public uses.
- 2) The village is partially developed with water and wastewater systems serving only core uses in the designated area.
- 3) The village has a population of fewer than 1,500 people.
- 4) The village has an existing net housing density within its developed area of at least 3 dwelling units per acre.
- 5) The village has reasonable proximity to an arterial highway and is served by a secondary street system.

Wenonah has a core area of compact, mixed uses that include governmental, residential, and commercial uses. This core area is surrounded by largely single family residential development at 3 to 6 units per acre. If this area, which constitutes slightly less than one square mile, is designated as the "core" village area, then it would meet the second criteria for designation as a Village Center. Small areas at the fringe of the Borough, and especially just across the borders of the municipality are not served by public sewer and water even though they are in a sewer service area. The Borough borders an arterial county highway, Rt. 553, and Rt. 632 is the main east/west thorofare through town that connects to other arterial roadways. Four of these criteria, then, are met by the municipality. Wenonah does not meet the criterion of containing less than 1,500 persons, since 2,331 people were counted in the 1990 U.S. Census.

Though the Borough does not meet all of the criteria established for Village Centers, the State Plan encourages a flexible approach to the designation of

¹ - Editor's note: *The State Development and Redevelopment Plan* was formally adopted by the New Jersey State Planning Commission on June 12, 1992. The *State Plan* retained the designations of places that are discussed in the *Interim Plan* and this document.

centers. In reviewing the Policy Objectives in the Metropolitan Planning Area, the following points are offered in support of the Village Center classification:

- 1) **Land use.** Infill development continues on the small amount of vacant, developable land that exists in a continuation of the compact development pattern of the municipality.
- 2) **Housing.** In the past fifteen years a substantial amount of housing rehabilitation has occurred in the older sections of the Borough. A wider range of choice in housing type in affordable and age-restricted housing is proposed in this Master Plan.
- 3) **Economic development.** Economic development efforts are expected to be less needed in Wenonah than in the Regional Center of Woodbury; however, infrastructure improvements to the commercial center are being completed on an ongoing process to retain the existing uses. No infill parcels are available in this particular area.
- 4) **Transportation.** NJ Transit and County bus routes travel through Wenonah and alongside it on County Rt. 553. Further, Wenonah is on the main rail line between Woodbury and Glassboro. Though the line only carries freight, it is not beyond the realm of possibility that it could carry passenger traffic in the future.
- 5) **Natural Resource Conservation.** Wenonah has been in the forefront of public acquisition of lands that meet Critical Environmental Sites criteria, which provides considerable open space as well.
- 6) **Recreation.** Existing parks provide active recreation and are in part maintained through private recreational associations in conjunction with the municipal government. Additional lands are targeted for acquisition to complete a conservation land network to become part of the proposed Greenways program.
- 7) **Historic preservation.** The architectural integrity of buildings has been well preserved through mainly private efforts. Restoration of buildings has come about through housing rehabilitation in general. There has been a recent trend to reconvert previously subdivided buildings to single family houses.
- 8) **Public Facilities.** The Borough has had an ongoing water and sewer line replacement program since problems were identified as part of the 1977 Master Plan. It is expected that the water storage capacity, currently under DEPE standards, will be increased in the very short term.

- 9) **Intergovernmental coordination.** Coordination between levels of government and with adjoining municipalities already occurs from necessity, given the small size of the Borough.

Through public and private efforts most of the Policy Objectives for the Metropolitan Planning Area are already being undertaken by the Borough and its residents. Wenonah largely meets the criteria for the Village Center designation and proposes it be named as such in the Final State Plan. Though some growth and redevelopment will occur, the Borough does not see itself as a location for significant redevelopment where the density of land use increases much above the existing level.

STATEMENT OF GOALS AND OBJECTIVES

The Master Plan of Wenonah, through its development policies as contained in this plan, and the Borough ordinances which govern the use of the land within the municipality, reflect the collective goals of the community. These adopted goals of Wenonah not only state the desires of Borough residents, but also are the criteria against which all land use and development activity should be measured.

Wenonah is a planned community and has been from its earliest inception. The Borough was laid out on a grid and cross pattern common to many communities in America. Unlike many municipalities, Wenonah was entirely planned from its inception. The plan has served Wenonah well and has encouraged a level of community spirit and cooperation not easily found in other municipalities. Wenonah has also benefited from being developed over a century of time which has given it a diversity of buildings not found in more rapidly growing communities.

This Master Plan has been adopted with the belief that the plan should and will exert a positive influence on the evolution of the Borough. Further, it is the purpose of this Master Plan to set forth the adopted goals of the Borough and its residents and to use these goals to evaluate applications for development, for adopting regulatory ordinances, and for guiding the expenditure of public funds on the needs of the Borough.

The Master Plan is designed to do the following:

- Guide the physical and economic development of the Borough toward its goals.
- Provide harmonious and efficient allocation and arrangements of land uses and protect property values.
- Preserve environmentally sensitive lands from development or other factors that may negatively influence them.
- Preserve and enhance the character of the built environment through the promotion of good design.
- Promote the preservation of historically significant structures and districts that reflect the diversity of architectural styles in the evolution of Wenonah.
- Encourage and promote the social interaction of groups and individuals to maintain the strength of the community.
- Provide for efficiency and economy in governmental administration.

WENONAH'S GOALS AND OBJECTIVES FOR PLANNING AND DEVELOPMENT

COMMUNITY CHARACTER

Provide for the continued scenic and residential nature of Wenonah by guiding development and land uses to protect its character. Maintain the predominantly residential nature of the municipality. The lakes of Wenonah define much of the Borough's character and must be preserved.

OBJECTIVES

- Encourage new development to be compatible to the style and scale of existing building.
- Limit commercial land uses in the Borough and confine them to existing areas. New commercial land uses should be confined to the town center and be designed to a residential scale.
- Improve the entrances into Wenonah through changes in roadway design and landscaping.
- Add to existing sidewalks and bridges to complete connections between residential areas and commercial and institutional areas.
- Maintain existing municipal services for cultural affairs.
- Promote the attractiveness of Wenonah and the maintenance of existing neighborhoods with an active street tree planting program.

COMMUNITY BALANCE IN LAND USE

Foster a well integrated and balanced community with a mix of residential housing types. Provide for limited institutional, commercial, and other land uses where they do not conflict with the goal of maintaining the residential character of the Borough. The land use plan and development regulations should be designed so that conflicts among activities are minimized and so that one land use does not adversely affect other activities in the Borough.

OBJECTIVES

- Adopt a housing plan and associated development regulations that meet the municipality's fair share requirements for affordable housing.
- Assure adequate living space for all persons, provide sufficient land area for each dwelling unit, and by require soundly constructed and attractive dwelling units.

- Promote a variety of dwelling unit types to meet the needs of current and future residents of Wenonah.
- Promote individual ownership of housing in all areas of the Borough.
- Restrict vehicular access through residential areas to non-residential uses.

OPEN SPACE

Open space for conservation and recreational purposes should be retained. Undeveloped lands that are environmentally sensitive and in private ownership should be acquired or permanently protected from development. Adequate active recreation facilities should be maintained in their existing places through citizen participation and governmental action while periodically reviewing new trends in sports and the demand for recreation. Open space preservation will remain the responsibility of the Borough government and its associated agencies.

OBJECTIVES

- Maintain the existing conservation program for publicly owned environmentally sensitive lands.
- Actively pursue the protection of privately owned environmentally sensitive land through fee simple acquisition, land trust dedication, conservation easement or other means.
- Utilize the preserved stream corridors and wetlands/open space areas within Wenonah as a part of Gloucester County's Greenways Program.
- Expand the existing open space in the Borough by linking them together into a connected network through the planning approval process, private donations, public funds, or conservancies.
- Develop sign identification to define the entrance of easements that lead to conservation areas.

CONSERVATION OF NATURAL FEATURES

Critical natural features and resources of Wenonah such as flood plains, woodlands, steep slopes, wetlands, and bodies of water are inherently worthy of protection. Natural features should be used to separate differences in the intensity of land development. Controls on the permitted disturbance of natural features during land development should be instituted. Wenonah Borough has been fortunate to have most of its stream corridors preserved and protected from development through the contributions of the municipality and individuals.

OBJECTIVES

- Protect stream and pond water quality through close coordination with other governmental agencies with jurisdiction in the plan approval process to adequately protect water bodies from erosion and siltation.
- Study the feasibility of improving the water quality of storm water runoff within the Borough.
- Continue to restrict development within the 100 year storm floodplain.
- Restrict development on steep slopes so as to reduce any negative effects from the clearing of the vegetation on stream bank stability and the control of erosion.
- Control the clearing of woodlands. Woodlands add value to the community in its appearance and help to reduce atmospheric pollution. New plantings of native species should be encouraged in appropriate places to replace trees which have died in coordination with the Environmental and Shade Tree Commissions. Standards for tree plantings in new development, including redevelopment, should be implemented to meet natural feature conservation and community character goals.
- Review measures with regional agencies and adjoining municipalities that would lead to the adoption of a storm water management plan. Such a plan should be designed to promote the cooperative institution of watershed drainage programs to minimize the need for total reliance upon site-specific water detention and storage.
- Explore the means, resources, and advisability of dredging the existing lakes of the Borough to maintain their previous depth. Study the advisability of restoring Synott's Pond on Camelback Run.

VISUAL CHARACTER OF WENONAH

Establish policies governing the development or redevelopment of land that will promote the retention of streetscapes in the community. Re-examine the design guidelines for the preservation of views from the street.

OBJECTIVES

- Promote the development of commercial areas that are attractive to public view through the use of design standards reflective of the historic character of Wenonah. The use of landscaping should be encouraged to enhance commercial development.

- Prevent the transformation and disruption of the town center by physically and visually reducing the cartway of Mantua Avenue.
- Add signage and landscaping to indicate the entrances to Wenonah from other municipalities through a cooperative program with landowners.
- Prevent unsightliness by eliminating wherever possible existing utility poles and lines and by continuing to require that all new development provide underground utilities.
- Ensure adequate landscaping in new development or redevelopment.

HISTORIC PRESERVATION

Protect the integrity of the historic center of the Borough and its surrounding residential neighborhoods which contribute to the heritage and positive image of Wenonah.

OBJECTIVES

- Identify individual sites and districts in Wenonah of historical importance. Encourage the voluntary registration of buildings on the State and National Register of Historic Places.
- Promote the development of only limited commercial areas in the existing town center in a manner that promotes its historic character.
- Encourage new development in Wenonah to be compatible to the style and scale of building through design standards.
- Control the clearing of woodlands. Woodlands add value to the community in its appearance and help to reduce atmospheric pollution.

COMMUNITY FACILITIES

Establish and maintain a level of community facilities and public services sufficient to satisfy the needs of present and future residents and allow for the well planned expansion of facilities.

OBJECTIVES

- Provide for streets, utilities, schools, parks, police and fire protection, and other services sufficient to meet the needs of Wenonah residents and business owners.
- Develop a capital improvements program for determining the priority of needs in a rational and timely manner.

- Establish a process to review options for the physical relocation or rehabilitation of the Borough Hall to accommodate all citizens and employees regardless of disability.
- Study the feasibility of an indoor recreational facility and/or community center to supplement the use of the elementary school gym.

CITIZEN PARTICIPATION

Continue to provide the opportunity for residents and business owners to participate in making decisions that will shape the environment and the community in which they live.

OBJECTIVES

- Provide an atmosphere and opportunity within the master planning and development approval processes which provide the citizens of Wenonah the chance to comment upon and participate in making decisions about the future of the Borough.
- Provide, where appropriate, incentive programs for civic organizations to continue and expand their programs.

MUNICIPAL SERVICES

The needs of the municipal government should be anticipated and planned to provide the level of service required by the residents and businesses of the Borough.

OBJECTIVES

- Provide for the maintenance, and where needed, the timely expansion of, municipal services to meet the needs and expectations of Borough residents.
- Adopt a Master Plan that can be legally and financially implemented.
- Regularly review and update, when needed, the land development ordinances of the Borough.
- Periodically examine the need for municipal services beyond present limits.
- Promote decision making at the local level for the provision of governmental services.

RECYCLING

Recycling is a means of reducing solid waste disposal costs for the municipal government, helps to efficiently use natural and man-made resources, and is the adopted policy of the state and county governments.

OBJECTIVES

- Reduce the amount of solid waste that is placed in sanitary landfills.
- Conserve and recover, for reuse, valuable resources.
- Conserve energy in manufacturing processes.
- Increase the supply of reusable raw materials for industry.
- Reduce the amount of poorly combustible materials that are directed to resource recovery facilities.
- Reduce municipal expenditures for the disposal of solid waste.
- Set a local policy on recycling in the review of land development proposals by the Combined Planning Board.
- Adopt any goals of the New Jersey Recycling Act not specifically noted herein.
- Adopt any goals of the Gloucester County Recycling Plan not specifically noted herein.
- Recycle a minimum of 25% of the solid waste collected by the municipality.
- Encourage on-site composting and recycling of organic material.

CONSERVATION ELEMENT

The Conservation Element is designed to depict in words and maps the environmentally sensitive lands of Wenonah. It forms part of the background information gathered in the master plan process leading to the land use plan. By identifying lands which contribute significantly to the health of natural ecosystems, the Conservation Element provides the basis for leaving this land in its undeveloped state.

The pattern of growth in the town has had positive benefits that have become more apparent as the concern with environmental preservation has increased. The oldest buildings are clustered around the center, nearest to the former train stations (there are two) and the intersection of the railroad with Mantua Avenue. The lands with the most environmental sensitivity are for the most part located at the edges of the municipality. The Borough grew from this center in a piecemeal fashion and large scale development has been largely avoided. Environmentally sensitive lands are generally more expensive to develop than other land because they either have to be filled, or drained, or special building techniques have to be used to construct sound dwellings. Land without these constraints is usually developed first. Even if a builder had desired to build on environmentally sensitive land, the small scale of development in Wenonah has meant that the added cost would be spread over too few units to make doing so economically feasible.

Coupled with the benefits that have come from this pattern of development has been the farsighted efforts of citizens and government officials who have consistently pursued the setting aside of environmentally sensitive lands from development. Most recently, new environmental regulations have been promulgated that make it very difficult to develop such lands, even if this land was on the market. All of these factors help to preserve important lands in their natural state.

By identifying environmentally sensitive lands, this element conversely provides a basis for those lands capable of sustaining development and redevelopment at appropriate densities as noted in the Land Use Plan. The Conservation Plan Map is found on page 21.

PHYSICAL CONDITIONS

The Borough of Wenonah covers a small area of land in Gloucester County, about three tenths of one percent of its total. Wenonah's physical characteristics are fairly uniform throughout the municipality, perhaps indicative of its small size. The Borough is bordered on the west by Mantua Creek and its tributaries. The northwest boundary is defined by Breakback Run, which has its origin in Deptford

Township. The confluence of Breakback Run and Mantua Creek form the westernmost part of the Borough. Two other tributaries of Mantua Creek, the Monongahela Branch and Camelback Run, have also contributed to the landforms of Wenonah. The Monongahela Branch physically separates the very southernmost end of the municipality from the rest of Wenonah. Camelback Run is technically a part of the Monongahela Branch, having its origins in the vicinity of N. Synott Avenue and E. Buttonwood Street and emptying into the Branch below Comey's (also known as Langston's) Lake.

Wenonah has a relatively flat to a gently rolling terrain except in the areas adjacent to the streams. The streams over time have carved into the upland so that presently the water courses are up to forty feet lower than the developed lands of the Borough. The steepest slopes, some up to 40%, are found along the edge of the floodplain. The streams themselves have shallow gradients, sufficiently flat that Mantua Creek is subject to tidal forces from the Delaware River and Atlantic Ocean. Tidal effects reach as far as the railroad bridge over Mantua Creek.

The high point in Wenonah is found on Linden Street, a short distance from Woodbury-Glassboro Road, where the land rises to about 100 feet in elevation. The low point is at the confluence of Breakneck Run and Mantua Creek where the elevation is only about 15 feet. The land gradually slopes from the high point towards the southwest part of the Borough.

LAKES AND PONDS

Wenonah has greatly benefited in both water resources and physical beauty from a series of lakes and ponds that were constructed in the stream beds during the past two centuries. The bodies of water and wooded nature of most of Wenonah contribute much to the visual identity of the town. The most important of these is Wenonah Lake, used for swimming and other water recreations. Wenonah Lake was constructed by damming Breakback Run just north of W. Maple Street. Evidence points to the original use of Wenonah Lake as a mill pond, apparently established prior to the Revolutionary War. The lake was purchased as part of the original holdings by the Mantua Land and Improvement Company in early 1871. The lake was later deeded to the Wenonah Water Company in 1885 and became Borough owned when the Water Company was purchased by the municipality in 1912.

Dilks Pond (also known as Davis' Lake), just to the southwest but at a higher elevation than Wenonah Lake, feeds into Breakneck Run just south of W. Maple Street. The pond was created by the West Jersey Railroad when a ravine was filled in for the original alignment of the railroad on N. Jefferson Ave. The two other existing lakes in Wenonah are both located in the southeast. Comey's Lake is on Camelback Run between S. Princeton Avenue and Lenape Trail. Greene's Lake, on the Monongahela, is to the west of S. Marion Avenue along the southern Deptford Township border. Greene's Lake, because of its shallow gradient, has largely silted up.

Synott's Pond does not currently exist as a body of water but previously was found on Camelback Run north of E. Mantua Avenue. Several springs originally fed the pond in the vicinity of Woodbury-Glassboro Road and E. Elm Street. It is a recommendation of the Master Plan that the feasibility of restoring Synott's Pond to at least a portion of its former size be studied.

Water quality in the streams and water bodies continues to be a concern, especially with the continued development of land upstream from the Borough. Storm water runoff from this development is a potential threat to the health of the ecosystem. Storm water management facilities in new developments are required by state regulation to be designed for the one-year water quality rainfall. Properly designed facilities will trap oils, heavy metals, and trash from impervious surface runoff from rainfall up to a one-year storm, meaning the probability of having a storm of such intensity that it is likely to happen once every year. These facilities, however, must be properly maintained by regular cleaning. Borough officials need to be vigilant on two accounts, one, to ensure that the required storm water facilities are built, and two that a proper schedule of maintenance occurs. Since these facilities will be located outside of the municipality, close coordination and cooperation with adjacent municipal officials is a necessity. Further, Borough officials should encourage the funding of capital improvement projects aimed at improving water quality from storm water runoff in both Wenonah and adjacent municipalities, especially in the Woodbury Terrace section of Deptford Township.

The second type of threat to water quality comes from the discharge of effluent into the stream network. Currently, this takes two forms: one, a discharge into the southern tributary of the Monongahela Branch where an unusually high iron content is present; and two, soil saturation from septic field effluent in the East Wenonah section of Deptford Township that affects Camelback Run.

OPEN SPACE ORIGINS

The concern with the preservation of open space in the Borough began with the origin of the town. The creation of Wenonah Park was a deliberate exercise on the part of the Mantua Land and Improvement Authority when the location of land uses and streets was being decided. The lot to the east of Wenonah Park was designated for the town's hotel and the park's setting provided an aesthetic contrast to the size of the hotel. The blocks closest to the railroad station would have been considered the best locations for commerce and industry. By setting this land aside, it demonstrates the founders' understanding of the need for parkland.

Comey's Lake and its surrounding woodland were once part of a private park called Camel Back Park owned by a citizens' "Park Association". This land was purchased by the Langstons (hence being sometimes known as Langstons' Lake). The lake and woodland was placed in public ownership through funds provided by the Frank Stewart Estate trust that purchased the land from the Langstons Estate.

Greene's Lake had a similar provenance, where Stephen Greene created a pond on the Monongahela Branch near S. Marion Avenue. Greene also created a private park known as the Glen on the south side of W. Cedar Street. Eventually a good portion of this land was added to the Borough's conservation lands. Acquisition of the Trescott property that forms the head of the Glen and which would provide direct access to other conservation lands between Mantua Creek and the railroad bridge is recommended.

SOILS

Wenonah's predominant soils are well suited for development. The Borough can be divided into two broad soil classifications: the Freehold-Colts Neck-Collington Association (FCC) and the Muck-Alluvial-Fallsington-Pocomoke Association (MAFP). The FCC soil association includes about 85% of the Borough's land area, with the remainder in MAFP. The FCC is generally known as the greensand belt that parallels the Delaware River and stretches from Swedesboro to Almonessen in the County. Greensand gets its name from the high proportion of olive-green glauconite contained in it. Glauconite is a potash bearing mineral that prior to the advent of nitrogen fertilizers was dug up and spread on farm fields to increase productivity. The FCC is subject to heavy wind and water erosion, particularly on long slopes, when it contains low levels of glauconite and high levels of sand. On the Conservation Plan Map, FCC soils are indicated as Upland (See page 21).

The MAFP soil association is characterized as inland wet soils, typically found on level areas adjacent to streams. They usually constitute the floodplains adjacent to stream beds. MAFP soils have very high water tables and are unsuitable for development, though farmers have drained about 25% of this land in the County for agricultural purposes. These soils are indicated as Alluvial on the Conservation Plan Map.

ALLUVIAL SOILS

Alluvial soils consist of the following classifications from the Soil Conservation Service:

<u>Map Symbol</u>	<u>Name</u>
Ad	Alluvial Land
Fd	Fallsington sandy loam
Fw	Fresh water marsh
Tm	Tidal marsh

Alluvial land was formed from the erosion of the upland greensands deposited by water action. The land is typically flooded at least once a year. This type of soil contains high amounts of organic matter and is extremely acid. It has severe limitations for any use except moderate recreational ones. Alluvial land constitutes the soil found along Breakback Run.

Fallsington sandy loam is generally found in depressions along stream corridors. Sandy loam is a term that attempts to quantify the percentages of sand, silt, and clay (themselves based on particle size) found in a soil. Sandy loam has between 15 and 20 percent silt, 50 to 70 percent sand, and the rest clay. It tends to fall apart when squeezed dry but if squeezed wet will hold together with careful handling. Fallsington sandy loam is usually wet and so is particularly susceptible to frost heaving. It has severe limitations for any kind of development. This soil is found primarily to the north of Greene's Lake.

Fresh water marsh is almost continually covered by water and is found just above the upper reach of tidal waters. Flooding is very frequent and tends to lay deposits of organic material. Over time this may form peat or muck. Underlying the organic matter are typically found sands and gravels. Fresh water marsh has the same type of development constraints as alluvial land. This soil is found on Mantua Creek 800 feet west of the railroad bridge and extends up the Monongahela through the Borough. The damming action of the railroad causeway has created some of the freshwater wetlands found on its upstream side.

Tidal marsh, as its name implies, is affected by the tidal forces of the Delaware River. Because of the distance of the mouth of the Mantua Creek from the Delaware River, the water is fresh and not brackish. It has similar characteristics as the fresh water marsh classification.

All of the alluvial lands are strong indicators of classified freshwater wetlands with severe limitations for development. Past development policy in the Borough has centered on the public acquisition of such soils to preserve the land in its native state. As such, the Borough has been generally spared the problems of other municipalities where building on the floodplain was permitted.

UPLAND SOILS

Upland soils consist of the following classifications from the Soil Conservation Service:

<u>Map Symbol</u>	<u>Name</u>
CnC	Collington sandy loam, 5-10% slopes
FhB	Freehold loamy sand, 2-5% slopes
FhC	Freehold loamy sand, 5-10% slopes
FoA	Freehold sandy loam, 0-2% slopes
FoB	Freehold sandy loam, 2-5% slopes
FoC	Freehold sandy loam, 5-10% slopes
FoD3	Freehold sandy loam, 10-15% slopes
FsD	Freehold soils, 10-15% slopes
FtE	Freehold, Colts Neck, and Collington soils, 15-25% slopes
FtF	Freehold, Colts Neck, and Collington soils, 25-40% slopes

Collington sandy loam occurs normally in association with Freehold soils, as it does in Wenonah, and is distinguished from them by having more clay and glauconite. The Collington soil is located in only one place, just south of the Monongahela running in a band between Barkbridge and Woodbury-Glassboro Roads. This soil has very few limitations for development, being well drained with a lower water table. This soil is a native location for mixed oak and poplar forests.

Freehold loamy sand constitutes the vast majority of the soil in Wenonah, covering approximately 70% of the total land area. Loamy sand differs from sandy loam in that it has a higher percentage of sand and less silt or clay and consequently holds together less than sandy loam. This soil, because of the greater percentage of sand is also drier than Collington and if it is uncovered may create dust problems. Active recreation fields should probably have clay added to the surface layer to prevent dust problems. Areas with slopes in excess of 5% should not be used for active recreation.

Freehold sandy loam, at its gentlest slope, has the best characteristics of any soil in the Borough. As the slope increases, potential soil erosion from water occurs until it becomes severely eroded, as is the case with the FoD3 classification. The best soil occurs at the extreme southern end of the Borough and in the vicinity of Lenape Trail. Woodland species are again mixed oaks and poplars. Except for the steepest areas, this soil has very few limitations for development.

Freehold soils, including mixed Freehold, Colts Neck, and Collington types are located on the steepest slopes in Wenonah. This soil is located upland of Fallsington and Alluvial land. The Freehold soils provide much of the deposition from erosion in the alluvial soils. Because of the steepness of the slopes, from 10% to 40%, these soils have severe limitations for development. Their sandy nature makes them problematic for cut and fill operations that might be used to create more accessible building lots. For the most part, development has not occurred on these soil types. A substantial amount of land in this soil type has been placed in conservation areas as part of the policy of acquiring environmentally sensitive lands by the Borough. Information on steep slopes is not available without a systematic topographic survey of the Borough. In this document, FtE and FtF soils will serve as a surrogate for more detailed information.

In summary, alluvial soils and Freehold mixed soils should not be developed. Past Borough policies and prudent development practices have primarily left these types of soils in their natural state. These policies should be continued and elaborated upon through proper land development regulations as discussed under the POLICY RECOMMENDATIONS heading.

WETLANDS

Freshwater wetlands have come under increasingly stringent environmental regulations because of the recognition of the vital role that they play in the region's ecology. Freshwater wetlands help to preserve this ecology by purifying surface water and providing an area of great biological diversity that supports fish and wildlife. Wetlands have been recognized as being the most productive land on Earth with up to nine times the biological mass found in the best farmland. Wetland areas also act as a natural protector of uplands from flood and storm damage by holding and controlling stormwater, thereby reducing soil erosion and property damage. Wetland areas provide for the recharging of groundwater in subsurface aquifers that help to maintain the quality of groundwater in sufficient quantities.

The importance of wetlands has been understood for some time by Wenonah's residents. Wetlands form a significant portion of the conservation areas that have been preserved through municipal and Environmental Commission action.

Freshwater wetlands identified by the U.S. Fish and Wildlife Service, Department of the Interior, have been delineated from aerial photographs and graphically depicted on U.S. Geological Survey 7.5 minute quadrangles. They are called National Wetlands Inventory maps. Most of the wetlands depicted on such maps are only generally shown because of the scale of the information, lack of field verification, and obscuring vegetation. The New Jersey Department of Environmental Protection and Energy (DEPE) is in the process of more exactly locating wetlands. Wetlands are defined on the basis of their soil characteristics, vegetation, and hydrology. Jurisdiction over wetlands was assumed by DEPE in July 1988 from the U. S. Army Corps of Engineers but the DEPE continues to use the delineation manual produced by the U.S. Environmental Protection Agency (EPA). The use of the delineation manual is required whenever a state assumes responsibility for wetlands. Recently, beginning in August, 1991, there has been public debate over the definition of wetlands because of proposed rule changes by the three federal agencies involved; Fish and Wildlife, EPA, and the Army Corps. The release of the maps by the DEPE has been delayed for this reason; if the definition of what land is considered "wet" changes, so will the maps.

In Wenonah there is good agreement between the areas depicted as wetlands on the National Wetlands Inventory map and other secondary sources, such as the alluvial soil classifications noted above. Even if the wetlands definition is changed it is likely to affect only a very small fringe area of lowland. All of the wetland areas in Wenonah are in the Palustrine ecological system like much of the inner coastal plain in which the Borough is located. Wetlands associated with the Delaware River and the tidal effects from it have been classified as part of the Riverine ecological system. The closest wetlands of this type are found on the western side of Rt. 45 on Mantua Creek. Though Mantua Creek is subject to tidal forces as far up as the Conrail bridge, the water is sufficiently fresh to support Palustrine rather than Riverine vegetation.

Mapped freshwater wetlands in Wenonah consist of the following types:

Palustrine Emergent (PEM) indicates that the wetlands vegetation is not yet dominant but will likely become so under unchanged circumstances. PEM is found in two general locations in Wenonah, on the Monongahela Branch from almost Woodbury-Glassboro Road to S. Marion Avenue and on Mantua Creek from almost the railroad bridge into Mantua township. In the latter section, the PEM is modified by tidal effects as would be expected from the soil survey.

Palustrine Scrub/Shrub (PSS) is intermediate in size between the PEM and the forested wetlands, described below. All of the PSS wetlands have broad-leaved deciduous vegetation. This type of wetlands is also found in two locations. One is at the confluence of the Monongahela Branch and Mantua Creek. The other is west of Garfield Avenue along Breakback Run where it is intermixed with the forested classification.

Palustrine Forested (PFO), as its names implies, is woodland in wet areas. Commonly in this area, the woods include red maple, yellow poplar, silver maple, black and sweet gums. Comey's Lake is identified as a PFO1, or a broad-leaved forested wetland, however, this classification appears to be incorrect. Open bodies of water have a different signifier, noted below. PFO1 is intermixed with the PEM on the Monongahela in the portion of wetlands closest to Woodbury-Glassboro Road. A small part of this type of wetland is found at the westernmost point of the Borough.

Palustrine Open Water (POW) is the designation for all bodies of water in Wenonah (except Comey's Lake), including Wenonah Lake and Dilks Pond. Typically, the fringe of the water body is wetlands but in areas of a steep drop off to the water, this may not occur.

The officially designated wetlands in Wenonah appear to understate the acreage that is actually present. For instance, the area that contains Greene's Lake is designated as uplands yet it does not significantly differ from other PFO wetlands in field investigation. The area below both Wenonah Lake and Dilks Pond is consistent with the PFO designation further downstream. In terms of policy, it is recommended that the alluvial soil be used as the best determiner of wetlands until the more definitive maps from DEPE are released.

FLOODPLAINS

Flooding occurs whenever rain falls with such intensity that a stream overflows its normal channel. Flooding is such a common occurrence that a larger channel is often carved out of the higher upland. This is called the floodplain and is readily visible in a number of locations in the Borough. An observer standing on Woodbury-Glassboro Road and looking downstream at the Monongahela Branch can easily discern the embankments created over time from the stream.

The federal government, through the Federal Emergency Management Agency (FEMA), has delineated floodplains in many communities as part of its National Flood Insurance Program. Wenonah is one of the communities that has been delineated. The state has used the federal standards in its legislative efforts.

Floodplains are land areas susceptible to being inundated by water from any source and are sometimes called "floodprone" areas. The floodplain is made up of the floodway and the flood fringe. The floodway is what is commonly referred to as the 100 year floodplain, meaning, the stream channel and adjacent banks that are likely to be flooded once in every 100 years. This area has the highest flood velocities and deepest depths during flooding. Land outside of this area that may be flooded is the flood fringe with generally slow moving water and shallow depths.

The 100 year floodplain is depicted on the conservation map as a heavily dotted line. A flood of this magnitude would rise to approximately 20 feet above sea level. In the Borough, very few structures are within the 100 year floodplain being primarily limited to a few houses on S. Marion Avenue, one on Stockton Avenue and a few on the southern portion of Lenape Trail.

Construction in the floodplain is controlled by the DEPE's Stream Encroachment Permit process that strictly limits what may be built there. In Wenonah's case, most of the floodplain is in public ownership where the issue of construction does not arise. In the few instances where construction may take place in the floodplain, the local response should be to require an applicant for construction to apply for a Stream Encroachment Permit. The goal should be the prevention of construction in the floodplain, if at all possible, without depriving private property owners all economic use of their property.

POLICY RECOMMENDATIONS

Based on the natural features inventory undertaken for this Master Plan, it is recommended that the following policy be used in conservation, planning, and review work in the Borough:

CONSERVATION

The conservation of natural resources is a continuing priority for the Borough. In order to achieve that goal, the Borough, through its Environmental Commission, should continue to identify additional land for protection. The type of protection should be sufficient to prevent development within environmentally sensitive lands and can take any one of a number of forms.

Support for the proposed Gloucester County Greenways program should continue in order to provide a continuously linked open space network along Mantua Creek. The public ownership of much of the land in Wenonah that would be

included in the program will make its establishment easier and will provide a significant resource for future generations.

PLANNING AND REVIEW

The planning and development review process should utilize the conservation map as a resource to determine when proposed development and redevelopment is likely to take place in or adversely affect environmentally sensitive areas. In this manner, particular care can be taken in the design of a project that will minimize any adverse effect that may occur. It will also serve as a method of alerting higher levels of government to the sensitive nature of a proposed project.

The environmentally sensitive land areas depicted on the conservation plan are directly linked to the land development policies described in the Land Use Plan as areas to be protected as conservation land. These lands include alluvial soils, freshwater wetlands, floodplains, and steep slopes. Those land development regulations that have been retained at the local level, for instance, pertaining to steep slopes, should be reviewed specifically for their ability to grant protection of these environmentally sensitive lands.

LAKES AND PONDS

The lakes and ponds in Wenonah are a valuable resource in many ways, providing recreational and aesthetic enjoyment, providing habitats for wildlife, acting to control stormwater, and recharging groundwater. Siltation has reduced the depth of water significantly in Wenonah and Comey's Lakes. For Synott's Pond and Greene's Lake, it has turned them into marsh, and eventually they will become meadow. Over time, Wenonah and Comey's Lakes will follow this pattern if they are not dredged and maintained. It is a recommendation of the Master Plan that efforts be made by the appropriate municipal agency or ad-hoc citizen's group to review the need for dredging and siltation control of the lakes and ponds in the Borough and examine the resources available to undertake these projects. Further, it is recommended that the feasibility of restoring Synott's Pond, at least on the land owned by the Borough, be studied.