

THE COMPREHENSIVE PLAN OF
HAVERFORD TOWNSHIP

DELAWARE COUNTY, PENNSYLVANIA

1988

VOLUME I



THE COMPREHENSIVE PLAN OF HAVERFORD TOWNSHIP

DELAWARE COUNTY

PENNSYLVANIA



1988

VOLUME 1

The Board of Commissioners of Haverford Township

Stephen W. Campetti, President

Wilton A. Bunce, Vice President

Enrico L. DeAntoniis

John R. Genthert

Ben Kapustin

Joseph F. Kelly

Kenneth Clouse

John D. McDonald

Frederick C. Moran

Thomas J. Bannar, Township Manager

Haverford Township Planning Commission

Jerry Sacchetti, Chairperson

James Melvin, Vice Chairman

Edwin F. Deegan

Paul Feeser

James W. O'Neill

Robert D. Owens

Charles T. Held, Director
Department of Codes Enforcement
Zoning / Planning

RESOLUTION NO. 792-87

WHEREAS, the Board of Commissioners of the Township of Haverford desires to adopt a Comprehensive Plan consisting of maps, charts and textual material for the development of the municipality; and

WHEREAS, on February 12, 1973, the Township adopted Resolution No. 38 approving the Statement of Objectives and Land Use Plan of the Comprehensive Plan; and

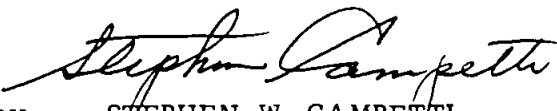
WHEREAS, the Board of Commissioners pursuant to Section 302 of the Municipalities Planning Code, Act 247, held a public hearing on July 13, 1987 to review the entire Comprehensive Plan, Volumes I and II, 1987; and

WHEREAS, pursuant to Section 302 of Act 247, the Board of Commissioners desires to adopt a complete Comprehensive Plan by Resolution.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Township of Haverford, County of Delaware, Commonwealth of Pennsylvania, that said Board of Commissioners hereby adopts "The Comprehensive Plan of Haverford Township, Delaware County, Pennsylvania, Volume I and Volume II" as the official complete Comprehensive Plan for the Township pursuant to Section 302 of Act 247.

RESOLVED this 13th day of October, A.D., 1987.

TOWNSHIP OF HAVERFORD


BY: STEPHEN W. CAMPETTI
President
Board of Commissioners

Attest: Thomas J. Bannar
Township Manager/Secretary

TABLE OF CONTENTS

Volume 1

- I. Introduction, Goals and Objectives
- II. Historic Heritage
- III. Demography
- IV. Natural Features and Environmental Quality
- V. The Economy

Volume 2

- VI. Land Use
- VII. Housing
- VIII. Circulation
- IX. Open Space and Recreation
- X. Community Facilities
- XI. Energy
- XII. Fiscal Analysis
- XIII. Implementation



I. INTRODUCTION, GOALS AND OBJECTIVES

I. INTRODUCTION; GOALS AND OBJECTIVES

The Comprehensive Plan has been called "the blueprint" for community development. In many respects it is just this. It is the master plan of the municipality that guides its development policies and which serves as the principal long range planning tool of the Township.

The Comprehensive Plan is provided for in law by the Pennsylvania Municipalities Planning Code. It states that the plan must, at a minimum, contain a statement of municipal development objectives, a land use plan, a circulation plan, a community facilities plan, and statement indicating the relationship of development plans with adjacent municipalities. This plan seeks to go beyond these minimum functions by also providing sections which deal with the Township's historic heritage, its people, environmental quality, the economy, housing, open space, energy and the fiscal state of the Township.

A Comprehensive Plan was previously prepared for the Township by a planning consultant in 1968-1969. However, it was never adopted except for a statement of objectives and a land use map.

This plan was prepared by the Haverford Township Planning Commission to the Board of Commissioners. It is anticipated that the plan will be thoroughly reviewed by the public and subjected to public hearing. Revisions may be necessary as a result of this process, but it is hoped that the plan can eventually be adopted by the Board of Commissioners as an official document of municipal policy.

Once this occurs, the Municipalities Planning Code requires that the plan be reviewed for its recommendation regarding major actions affecting streets, watercourses, public grounds and structures, and School District property. The Comprehensive Plan must also be consulted in the event of the adoption, amendment, or repeal of an official map, subdivision and land development ordinance, zoning ordinance, or planned residential development ordinance. These latter land use tools, such as the zoning ordinance, are not actually part of the Comprehensive Plan, but are used to implement its recommendation.

Goals and Objectives

The goals and objectives for Haverford Township are an attempt to define the future direction of the municipality. These goals and objectives are the items that the Comprehensive Plan seeks to reach and accomplish over a period of time through the implementation of sound and proper planning procedures.

However, the adoption of a Comprehensive Plan does not mean that the future direction of Haverford Township is on a fixed course. As new statistical data and related information are produced, gathered, and analyzed, the Comprehensive Plan should be periodically amended, revised, and updated and consideration should be given to renewing the goals and objectives. The Township's goals and objectives should be viewed as a framework in which both municipal officials and the citizens can mutually cooperate toward beneficial results.

Goal

To protect and promote the general health, safety, and welfare of present and future Township residents through sound land use planning.

General Objectives

1. To coordinate planning activities with all surrounding municipalities as well as with county, regional planning commissions and appropriate state or federal agencies.
2. To encourage citizen participation as an ongoing function in the overall Township planning program.
3. To ensure that all future development shall take into consideration its impact on both the human and physical

environment.

4. To prohibit incompatible land uses throughout the Township.

Residential Objectives

1. To provide safe and pleasant housing for present and future Township residents, regardless of their economic level.
2. To maintain pleasant and safe neighborhoods as an assurance of stable or increasing residential property values.
3. To encourage a variety in housing design, in construction, in type of structures, and in density per acre.
4. To control and, where possible, eliminate conditions which may create blight.
5. To encourage higher density and "cluster" type residential development in areas where such development is deemed appropriate to better utilize or protect existing natural or man-made resources.
6. To assure that new residential development provides for the open space and recreation needs of its intended residents.

Non-Residential Objectives

1. To encourage non-residential development at appropriate locations which is compatible with surrounding land uses and which is beneficial to the municipal tax base.
2. To coordinate new development with the circulation network.
3. To assure that non-residential development is of an appropriate scale for its intended function.

4. To orient new industrial development towards non-pollutant, light industrial uses, corporate offices, and laboratory-research programs.

Community Facilities Objective

1. To evaluate the need for facilities and programs to meet the needs of the public and to insure that such needs are met in an economical and efficient manner.

Circulation Objectives

1. To develop a vehicular, bicycle, and pedestrian circulation network for the Township which shall serve the present and future needs of Township residents in a safe and efficient manner.
2. To pay special attention to the needs of mass transit and bicycles and to their relationship to the circulation network.
3. To discourage through traffic from residential neighborhoods.
4. To identify existing traffic hazards so that they may be improved through state or Township action.

Open Space and Environmental Quality Objectives

1. To assure adequate open space for the enjoyment of Township residents by the preservation and enlargement of the existing network of public parkland and to encourage the preservation of privately owned open space to the greatest degree practical.

2. To insure that all future development will be coordinated harmoniously with the existing natural amenities.
3. To coordinate all future development with the availability of public services, especially public sewer and water facilities.

Energy and Utilities: Objectives

1. To encourage efficient energy conservation in existing and future development through the use of energy saving building materials and sound site design criteria.
2. To coordinate future development with the availability of public and/or private utilities in order to insure that adequate utilities are available to meet the needs generated by the new construction.

Financial Objectives

1. To evaluate future commercial and industrial development in light of its fiscal impact upon the community.
2. To prevent the loss of tax revenue by seeking to maintain and improve upon the Township's overall quality of life.
3. To properly forecast needed community expenditures in order that new and ongoing programs can be better coordinated with public demand.



II. HISTORIC HERITAGE

II. HISTORIC HERITAGE

Haverford Township was part of an original grant of 40,000 acres by William Penn in 1684 to companies of Quakers who left their native Wales to escape religious and political persecution. This Welsh tract or Barony was located along the west bank of the Schuylkill River and included land which today comprises the townships of Haverford, Radnor, and Upper and Lower Merion. The name Haverford was brought over from Europe by the early Welsh settlers who came from the vicinity of Haverfordwest in Pembrokeshire, South Wales.

In 1682 the first three European families settled in Haverford. In 1684 Penn ordered that the tract be surveyed and divided into townships of 5,000 acres. He also required that the land be cultivated and not allowed to lie as large vacant parcels. Soon thereafter, a steady immigration of Welsh Quakers settled in both Haverford and Merion, eventually spreading into Radnor and Newtown. The Welsh wanted the Barony to be a duplicate

of the old country as a separate autonomous state within the Province, and they fought to maintain their language and culture against the encroachment of the English civilization. However, conflict soon arose with the Provincial government which was trying to exercise political control.

The first minutes of the Haverford Quaker Meeting were recorded in 1684. At this time, meetings were being held in private homes. In 1688 or 1689 the settlers erected the Friends Meeting House on Eagle Road. All public meetings and elections were held here until the 1760's. This is the oldest place of worship in Delaware County and is still being used today after several additions and alterations.

A resolution in 1685 established a dividing line between Philadelphia and Chester Counties which ran through the Welsh Tract and separated the Haverford and Radnor settlements from those of Merion. Today, the same line forms the eastern boundary of Delaware County as far as the northern edge of Haverford Township. This line created much dissatisfaction and the Welsh declined to recognize it. In 1689 proceedings were initiated in the Provincial Council to resolve this conflict. The Welsh claimed that they had been promised a separate "Barony" within the Province, however, they had no written evidence. The Governor and Provincial Council voted to confirm the dividing line.

By late 1689, both Radnor and Haverford Townships were supplied with a full set of officials to serve within their

respective jurisdictions. With these and subsequent appointments, official recognition was given by the inhabitants of Haverford and Radnor to the dividing line. Enthusiasm for the Welsh Barony had waned and the residents submitted to the legal authority of Chester County. Delaware County was not separated from Chester County until 1789.

Henry Lewis, a Welsh Quaker, was one of the first European settlers in Haverford Township. He selected 500 acres, which was later to become known as the Grange, for his home. The remnants of the Grange remain today as a Township-owned historical site, although the structure has been added to and remodeled through the years. The site was a "country" haven for many leaders of the American Revolution.

In 1683 or 1684 Thomas Ellis received a grant of 1,000 acres in the Township. Part of this land was settled by his son-in-law, David Lawrence. The Lawrence family constructed a log cabin at the corner of Lawrence Road and West Chester Pike. The land containing this home was owned by the Lawrence family for over 250 years. When the land was sold and developed, the original log cabin was given to the Historical Society and moved to its current location in Powder Mill Park.

Other early Welsh settlers included: Morris Llewellyn, who built "Castlebith" in 1699; Daniel Humphreys, who built the original log section of "Pont Reading" in 1683; and the Hayes family who constructed the east end of "Narberth" in 1697. Most

of these original houses were named after home areas in Wales.

The original settlements in Haverford Township were clustered around Darby and Cobbs Creek, Roads followed as settlers made paths between properties. David Powell, deputy to the Surveyor-General, probably laid out Haverford Road in 1683. It was officially opened in 1696. On the map of Early Grants and Patents, which was never executed, Haverford Road bisects the Township from north to south with most of the land grants being lined up on either side similiar to William Penn's plan for Philadelphia. Darby Road was laid out in 1687. Mill Road, formerly named Dickinson Mill Road for the owner of an early saw mill along Cobbs Creek, is one of the oldest roads in the County. At one time, it connected Darby and Haverford Roads. Other early roads were constructed from Radnor, Marple, and Darby to the Quaker Meeting House in Haverford.

Table 1 contains a list of official early road openings in the Township. These dates should be considered the official date that the particular road was opened even though the road may have been in use prior to this date.

Table 1Official Early Road Openings

<u>Name</u>	<u>Year Officially Opened</u>
Ardmore Avenue	1869
Buck Lane	1810
College Avenue	
West of Golf House Road	1810
Vicinity of Haverford Road	1852
Vicinity of Haverford College	1872
Coopertown Road	
College to County Line	1836
County Line Road	
Northern section	1834
Ardmore Avenue to Haverford	1869
Darby Creek Road	1876
Darby Road	
Northern section	1704
Middle section	1709
Southern section	1687
Eagle Road	
Railroad tracks to eastern end	1697
Railroad tracks to West Chester Pike	1763
Western section (Steel Road)	1755
Earlington Road (Originally Lewis Lane)	
Southern section	1764
Northern section	1869
Haverford Road	1696
Highland Lane	1888
Lawrence Road	
Eagle Road to Ellis Road	1888
Ellis Road to West Chester Pike	1858
Manoa Road	
West of Darby Road	1755
East of Darby Road	1756
Marple Road	1759
Mill Road (Dickinson Mill Road)	1844
Old Lancaster Road	1814
Old Railroad Avenue	1872
Radnor Road	1818
Sproul Road (Radnor and Chester Road)	1691
Township Line Road	1816

Source: Map of Haverford Township, dated 1918. (Milton Yerkes)

Other settlements grew up around the Township's two streams, Darby and Cobbs Creek, because of the availability of water for domestic use and to power early industry. However, the Township was basically agricultural in nature. Cobbs Creek was originally known as Kaharikonk, which later became anglicized to Karakung, and meant "the place of the wild geese" to the Lenni Lenape Indians. The British began calling the creek Cobb's Creek around 1701 after William Cobb who owned a mill along the creek near Philadelphia.

Early mills along both Darby and Cobbs Creek were primarily saw or grist mills. The earliest recorded mill in the Township was Haverford Mill, a small grist mill built in 1688 along Cobbs Creek by William Howell. In 1703 Daniel Humphreys purchased the mill and added a saw mill, a fulling, and a dyeing mill. It remained in the Humphreys family until 1826 when it was purchased by Dennis Kelly. Other early mills included the Ellis fulling Mill, built along Darby Creek in 1790 by Humphrey Ellis; the Haverford New Mill, a grist mill erected in 1707 along Darby Creek; and Brown's (Garrigues) Mill, a saw and grist mill built on the headwaters of Cobbs Creek in 1800. Of special note is a saw mill built by Henry Lawrence along Darby Creek in the vicinity of Old West Chester Pike in 1807. This saw mill went out of existence in 1987. In 1832 William Lawrence added a stone grist mill just below the saw mill.

The early 1800's saw the introduction of two new types of mills along Cobbs Creek. These were the Nitre Hall powder mills and Kelly's woolen and cotton mills. The most famous mills were the Nitre Hall Powder Mills. These mills were built by Israel Whelen about 1800 to manufacture black powder which was used for mining and clearing for building. Between 1810 and 1840 the mills produced the second highest quantity of black powder in the U. S., and were a competitor of the E.I. deNemours DuPont Company in Delaware. Israel Whelen and his partner, William Rogers, owned and operated the mills until Whelen's death in 1825. Rogers continued to operate the mills until his death in 1840, but the prosperity of the mills declined sharply. Dennis Kelly purchased the mills in 1840 and converted them to a cotton and woolen factory. The mill master's house, Nitre Hall, remains today as an historic site owned by the Township.

In 1814 Dennis Kelly launched his woolen and cotton enterprises with the construction of a small stone woolen factory known as Clinton Mills. Kelly expanded his business with the purchase of Haverford Mills in 1826, which he converted to the manufacture of cotton and woolen cloth. He renamed them Castle Hill Mills and parts of these mills were in operation until 1880. Fourteen years later in 1840, he purchased Nitre Hall Mills (see above) and converted them into cotton and woolen mills. Kelly's mills furnished goods and clothing to the U.S. Army and Navy.

The Irish Great Famine (Potato Famine) of 1845-1852 spurred an immigration of Catholics to the Cobbs Creek Mill area. Dennis Kelly staked many of them to business starts and hired many others as mill hands. Kelly donated land for a Catholic Church and construction of St. Denis, the first Catholic Church in Delaware County, began in 1822. The first mass was celebrated in 1825, and the next year Kelly officially deeded the land to the diocese.

The Powder Mill Valley along Cobbs Creek was a center of manufacturing for nearly 200 years. However, in the late 1800's manufacturing activity declined and eventually ceased due to a decrease in water power and raw materials, changes in manufacturing methods and the economic structure.

Education was a very important factor in the lives of the early Quaker settlers. It was recommended that each local meeting should set aside sufficient land for a schoolhouse, house, garden, and cow pasture for the teacher. There also was a system of subscription schools in Haverford and the surrounding townships. These schools became quite common, with many Townships building and maintaining schools entirely through voluntary subscription.

These schools provided an education for Township residents from 1700 to 1834 when the public school system was initiated. Since that time, education in the Township has been regulated by state law which determines the powers of the local School Board.

The Federal School, which has been restored as an historic site by the Optimists of Havertown, is located near the corner of Darby and Coopertown Roads. Built in 1797, it is the oldest school building remaining in Delaware County. The school was originally a subscription school and became a public school sometime after the passage of the Pennsylvania Public School Act in 1834. The structure was used until 1872 and is now on the National Register of Historic Sites. The site is now reserved for public use.

The first Catholic school in Delaware County was built in the 1850's to serve the children of St. Denis' parish. It was located along Cobbs Creek opposite and just below Nitre Hall.

Haverford College was founded as a Quaker school in 1832 by prominent members of the Society of Friends from the Philadelphia area. Founders Hall was finished in 1833 and in the fall of that year the school opened. In 1856 the school incorporated as a college.

In 1775 Haverford had a population of 350 persons. In 1792 construction was begun on the 62 mile Philadelphia and Lancaster Turnpike (now U.S. Rte. #30). The road was completed in 1794 at a cost of \$500,000. It was probably the first road of its

kind to be constructed in the U.S. Soon it was extended to Pittsburgh and beyond in the west, and into New Jersey to the east, forming a continuous east-west thoroughfare of almost 400 miles. A large number of similar roads radiating from the turnpike soon appeared.

As new and improved roads were opened, the population expanded and new businesses appeared. The turnpike was the major route to the interior of the state and was frequented by stage coaches transporting passengers and Conestoga wagons carrying goods. The large amount of travelers necessitated the construction of inns and taverns. Many had farms connected with them and all were extremely profitable.

Taverns in early America played an important role in the social life of the community. They were the locations for food, drink, lodging, and perhaps, most importantly, a gathering place where many local meetings took place. The first application for a tavern license in Haverford (1731) was for an establishment called the Old Frog located above Coopertown. Other early taverns included The Sign of the Buck, The Spread Eagle Tavern, and The Black Bear Tavern. Eventually, the construction of the main line of the Pennsylvania Railroad and the opening of the canals provided a more efficient method of transportation. Thus, with the decline of travel by stage and Conestoga wagon, many inns and taverns were forced to close their doors.

The introduction of public transportation into the Township in the 1800's marked the beginning of the development of the Township as we know it today. The 82 mile Philadelphia to Columbia Railroad was opened in 1834. The railroad right-of-way ran along Railroad Avenue in the Township and a station was located in Humphreysville, now the Bryn Mawr Hospital Thrift Shop. It was called White Hall after the popular resort hotel of that name which was located on the site where the Bryn Mawr Hospital stands today.

In 1857 the Pennsylvania Railroad Company bought the Columbia and included it as a part of its Philadelphia to Pittsburgh main line. In the late 1860's they changed the grade and straightened the road bed, eliminating the White Hall curve and the tracks on Railroad Avenue. By this time, trains were serving the communities of Libertyville (Wynnewood), Athensville (Ardmore), and Humphreysville (Bryn Mawr). Around 1875 a new station serving Haverford College was added. At this point the College had approximately fifty students.

The Pennsylvania Railroad built a branch from Philadelphia to Newtown Square in 1893. The line entered the Township in the Llanerch section, proceeded through the middle of the Township to Eagle Road, where it continued on an angle towards the western boundary of the Township, reaching Darby Creek near Marple Road and paralleling the creek till it exited into Radnor Township. Stations were located at Llanerch, Grassland (Eagle Road),

Brookthorpe (above Marple Road), and Foxcroft (Sproul Road). Service on the line lasted until 1908 when passenger service was abandoned due to competition from the trolley lines. Freight service, however, continued, until 1980.

The Pennsylvania Legislature granted approval for a toll road from west Philadelphia to Newtown Square in 1848. Construction was completed in 1853 by the Philadelphia and West Chester Turnpike Road Company. In 1859 the Legislature created the Delaware County Passenger Railroad Company which operated a horse-car line parallel to West Chester Pike until 1867. John Shimer chartered the Philadelphia and West Chester Traction Company and in 1895 he purchased the Philadelphia and West Chester Turnpike Road Company. By 1898 trolley service extended from Newtown Square to West Chester.

In the early 1920's the Traction Company was forced to initiate bus service to prevent other bus lines from competing with the trolley lines. Thus, Aronimink Transportation Company was created and these bus lines eventually linked most of the residential areas in eastern Delaware County, and parts of Montgomery County with Philadelphia.

In 1901 the Ardmore and Llanerch Street Railway Company was incorporated. The completed line in 1902 ran from Llanerch up Darby Road and East Darby Road, across Eagle Road, down Hathaway Lane, across Haverford Road to the eastern edge of the Township at

County Line Road in Ardmore.

The Philadelphia and Western Railway Company was incorporated in 1902 in order to break the transportation power of the Pennsylvania Railroad. The P&W opened service through Haverford Township in May, 1907. Beechwood Park, an amusement park, was also opened in May, 1907 adjacent to the Beechwood Station of the P&W. Because the anticipated crowds never materialized, the park was abandoned in 1909. A concrete tower, a relic of the original Beechwood Park Station, is still standing at Mill Road. The light rail service originated at the 69th Street Terminal, built in 1907, and travelled through the eastern portion of the Township, stopping at West Overbrook (Township Line), Penfield, and Wynnewood Road stations, which were built in 1908. Other stops included Ardmore Junction (Hathaway Lane), Ardmore Avenue, and Haverford (Buck Lane). A station was added in 1909 at College Avenue to service the College but has since been abandoned. The P&W was completed to Norristown in 1912. In 1953 the P&W merged with the Red Arrow. The Red Arrow system was sold to SEPTA in 1970 for \$13.5 million.

Early development in the Township was centered around these transportation routes. New communities were populated by city workers who could now live in the suburbs and commute to work via public transportation. By 1912 Haverford was incorporated as a first class township with a population of 4,000-5,000 persons.

A 1918 map of the Township shows clusters of development in Llanerch, Brookline, South Ardmore, Grassland, Penfield, Beechwood, Ardmore Park, and Bryn Mawr. The remainder of the Township was relatively open and undeveloped with a high percentage of large estates, especially in the northern half of the Township.

John H. McClatchy, a realtor, began to build homes in the 69th Street area of Upper Darby during the 1920's. He was also responsible for the development of the 69th Street Boulevard Shopping Center. This, coupled with better transportation, precipitated a real estate boom in Upper Darby, Springfield, and Haverford Townships. In 1920 Haverford had a population of 6,631, which more than tripled during the next decade. The population continued to increase through 1940 when the majority of the land near existing transit routes was developed. Between 1940 and 1950, development occurred mainly in the vicinity of Darby Creek, and after 1950 the large open areas in the northern section of the Township were developed. By 1960 most of the Township had been developed and population growth began to stabilize at 55,000. The population has dropped slightly and stood at 52,371 in 1980.

In April, 1976 the voters in Haverford Township approved the adoption of the Home Rule Charter. This charter allows the Township to govern itself in all areas except those expressly forbidden by state law.

It has been noted that the written history of Haverford Township dates back as far as settlement by the Welsh Quakers in the 1680's. Fortunately, many structures of historical interest from this and ensuing periods have been preserved throughout the Township. Many of these structures were built by the early settlers, and although they have been physically altered over the years, many have retained their original Welsh names.

"The early settlers created our basic freedoms and established patterns of living that are our heritage. In these days of rapid growth and changing social and economic customs, a link with the past gives a sense of security and permanency. The blending of old and new add diversity and spice to the landscape, in addition to indicating the development of our Township."¹

In 1969 the Haverford Township Historical Society made a survey of buildings in the Township that were built before 1900 and that possessed historical and/or architectural value. This survey was updated in 1977. Appendix I describes buildings of major historical or architectural significance. Seventy additional structures of historic note or interest have also been identified but, in the opinion of the Historical Society,

¹Haverford Township Historical Society, 1969, Haverford Township Comprehensive Plan (unadopted), p. C-7.

are not of the same significance as those noted in Appendix I. These records are maintained by the Historical Society and by the Township.

The responsibility for preserving these historic resources rests principally with their owners, whether public or private. These owners normally have a full understanding and appreciation for the heritage of their property and often have made special efforts to preserve these features.

Local government can play an important role in preservation as well. This has been recognized by the courts as being a legitimate public purpose because of the educational, aesthetic, and economic values associated with the historic site. It has also been recognized by the State Legislature. The Pennsylvania Municipalities Planning Code enables municipalities to enact zoning ordinances which, among other things, allow "for the regulation, restriction, or prohibition of uses and structures at or near...places having unique historical or patriotic interest or value..."

The Legislature also adopted the Historical Architectural Review Act (Act #167) of 1961 as amended. The act authorizes municipalities "...to create historic districts within their geographic boundaries; providing for the appointment of Boards of Historical Architectural Review; empowering governing bodies... to protect the distinctive historical character of these districts

and to regulate the erection, reconstruction, alteration, restoration, demolition or razing of buildings within the historic districts."

The purpose of the act is to protect designated historical areas that recall "...the rich architectural and historical heritage of Pennsylvania . . . and to promote the general welfare, education and culture of the communities..."

Although the municipalities may write such an ordinance, it shall not take effect until the Pennsylvania Historical and Museum Commission has certified, by resolution, the historical significance of the designated district. A Board of Historical Architectural Review consisting of at least five (5) members, a registered architect, a licensed real estate broker, a building inspector, and two people with interest in historic preservation shall be appointed by the governing body. The board then only advises the governing body.

The governing body has the power "...to certify the appropriateness of the erection, reconstruction, alteration, restoration, demolition or razing of any building, in whole or in part, within the historic district..." In addition, the governing body "...shall consider the effect which the proposed change will have upon the general historic and architectural nature of the district." Only the appropriateness of the exterior architectural features which can be seen from a

public right-of-way shall be passed upon by the governing body. The overall relationship to other structures in the district has to be considered. Upon approval, the governing body then issues a certificate of appropriateness for the work to commence.

Consideration should be given toward the protection of major historic sites within the Township. The Powder Mill Valley (along Cobbs Creek) presents itself as a logical location for an historic district ordinance. This district should preserve the lands along Karakung Drive, including the sites of Nitre Hall and the Lawrence Cabin, as well as the adjacent lands of the Grange Estate. Much of this land is already in public ownership.

Protection of other significant historic structures outside of historic districts should also be explored, but here the legal rights of private owners must be weighed against those of the general public and the private rights protected. Some ordinances require renovation, particularly of the exterior, to be approved by an architectural review committee, but this requires careful study before such an ordinance is recommended.

Other techniques, short of ordinances, can be effectively used by both public and private sectors to promote historic preservation. These include easements, restrictive covenants, reversions and remainder interests, condominium ownership, and tax incentives.

Easements are non-possessory interests in real property which confer a right of use upon a person not in possession. The non-possessory easement provides an appropriate means for obtaining control over areas adjacent to significant historic structures and is particularly useful where effective environmental control through public ordinances is absent.

A restrictive covenant runs with the land in order to create a set of architectural controls that are administered by a control committee. The use of this tool to control historic architecture is rare in the American preservation movement.

Reversions and remainder interests are used by Colonial Williamsburg, Inc. for preservation. The corporation has purchased a number of historic structures under instruments reserving a life estate in the grantors, with remainders over to Colonial Williamsburg, Inc. As remainderman, the corporation can then prevent structural alterations by the tenant, but can restore the structure.

Condominium ownership is usually thought to be associated with apartment houses and not historic preservation. However, the plan involves the division of ownership in any given condominium into common property and individual property. Each dwelling unit is privately owned, while the exterior and the grounds are owned by all dwelling unit owners. This same concept could be applied to several dwellings located in a historic neighborhood.

Tax incentives can take numerous forms - assessment or rate reduction, assessment or rate freeze, temporary exemption, refund, etc. However, the basic idea is to encourage the owner to restore or preserve the structure by offsetting some of his improvement expenses with a type of tax relief.

Relief is already possible under the Federal Internal Revenue Code.

Finally, it should be noted that various grant programs are administered by federal and state authorities for the acquisition and restoration of historic sites. This is an eligible activity of the federal Community Development Block Grant Program. Haverford Township is participating in the program. Other federal grant programs for historic preservation are administered by the Heritage Conservation and Recreation Service, and on the state level by the Department of Community Affairs and the Pennsylvania Historic and Museum Commission.

The historic heritage of Haverford Township is a resource worthy of preservation and protection. As such, it is a goal of the Comprehensive Plan.

APPENDIX IBUILDINGS OF HISTORICAL AND/OR ARCHITECTURAL MERIT

The following buildings are considered to be of major historical or architectural significance. Six of them: Pont Reading, the Federal School, Nitre Hall, The Grange, Allgates, and Brookthorpe Station are on the National Register of Historic Places. Many of the others are on the Pennsylvania Register of Historic Sites and landmarks. The buildings are not listed in order of their significance, however the numbers do correspond to locations on the map that follows.

1. Old Haverford Friends Meeting, Eagle Road and St. Denis Lane. Owned by the Society of Friends. This is the oldest house of worship in Delaware County, and was the center of religious, civic and social activity in the "Welsh Tract." The east end was built in 1700, and an addition in 1800 replaced the original log structure built in 1688. A burial ground was laid out in 1684.
2. Haverford Monthly Meeting, Buck Lane. Owned by the Society of Friends. Built in 1834 after the 1827 Hicksite division of the Friends. Additions to the building were made in 1874 and 1903. Still has horse sheds.
3. Federal School (Haverford Seminary No. 1), West side of Darby Road between Marple and Coopertown Roads. Owned by Haverford Township. The oldest school building in Haverford Township. This one-room stone school was built in 1797 and was in use as a school until 1872. Privately owned until 1968 when it

again became township property. Interior restored by the Optimists of Havertown in 1976.

4. Founders Hall - Haverford College, Lancaster and College Avenues. Built in 1833 and originally called Haverford School, this first building housed the dormitories, classrooms and laboratories. Two houses used by faculty on College grounds also date to this time.

5. Lawrence Cabin Museum, Karakung Drive in Powder Mill Valley Park. Owned by the Haverford Township Historical Society. This log structure probably predates the deed for the property recorded in 1709 by Henry Lawrence. One room with a sleeping loft, the cabin is the oldest section of the "Three Generation House," long a landmark on Old West Chester Pike at Darby Creek. The two- and one-half story stone section, c. 1750, and the frame summer kitchen could not be saved when the log cabin was relocated on Karakung Drive in 1961. Furnished in the period before 1750 - open to the public.

6. Nitre Hall, Karakung Drive in Powder Mill Valley Park. Owned by Haverford Township. Home of the Powder Master for Nitre Hall Powder Mills, c. 1800. During the years 1810 to 1840, the Nitre Hall Mills produced the second highest quantity of black powder in the United States. Restored between 1970 and 1977.

7. Powder Magazine-Nitre Hall Mills, Karakung Drive in Powder Mill Valley Park. Only remaining mill building of the Nitre Hall Mills - Stone magazine in poor repair.

8. Pont Reading, 2713 Haverford Road. Privately owned. Original log section of this house built by Daniel Humphreys, who was among the first Welsh settlers of the Welsh Tract or Barony. Named for his home in Wales. Middle section of house built in 1730. Front section built by Joshua Humphreys in 1813. He was the first Naval Architect of the U.S. Navy and designer of the U.S.S. Constitution or "Old Ironsides." Joshua lived here from 1803 to 1838.

9. The Grange, Myrtle Avenue. Purchased by Haverford Township in 1974. Important and large comprehensive colonial estate. First section of main house built by Henry Lewis Jr., a Welsh Quaker, in 1700. Additions in 1750 produced a Georgian stone mansion occupied by Captain John Wilcox who named it Clifton Hall.

In 1770 the estate was purchased by Charles Cruikshank, who had the house enlarged, terraces cut, greenhouses built, and gardens developed. Cruikshank was a Loyalist who left the country soon after the American Revolution, but the house was purchased by his son-in-law, John Ross, who had been very active in the American cause. Ross entertained many leaders of the period, including the Marquis de Lafayette and George Washington. Ross renamed the estate "The Grange" in honor of Lafayette's home in France.

Although the estate consisted of 600 acres during the period of Ross's ownership, parcels were gradually sold off, and by 1974 the manor house remained on little more than ten acres. At this time there was a serious threat that the historic structure

would be demolished and the remaining acres developed for houses. To avoid this situation and to preserve the historical site, Haverford Township purchased the property, and today maintains the estate house, out buildings, and gardens as a historic and cultural center for residents of Haverford Township and the surrounding area.

10. St. James United Church of Christ, Myrtle and Warwick Roads. Originally a dairy barn for the Grange farm, built in 1851 by John Ashurst. Renovated for church use in 1948.

11. Tenant House, 138 Myrtle Avenue. Tenant house for the Grange - many alterations. Still part of Grange.

12. The Lawrence Homestead, Lawrence and Darby Creek Roads. Privately owned. The Homestead has field stone additions of 1790 and 1823. The log section is covered with siding. Beautiful carved wood mantles. The Lawrence family owned 285 acres along Darby Creek, and three very early log houses originally on this property still exist. In addition to the Homestead, there are the Lawrence Cabin and Flintlock, both of which have log sections.

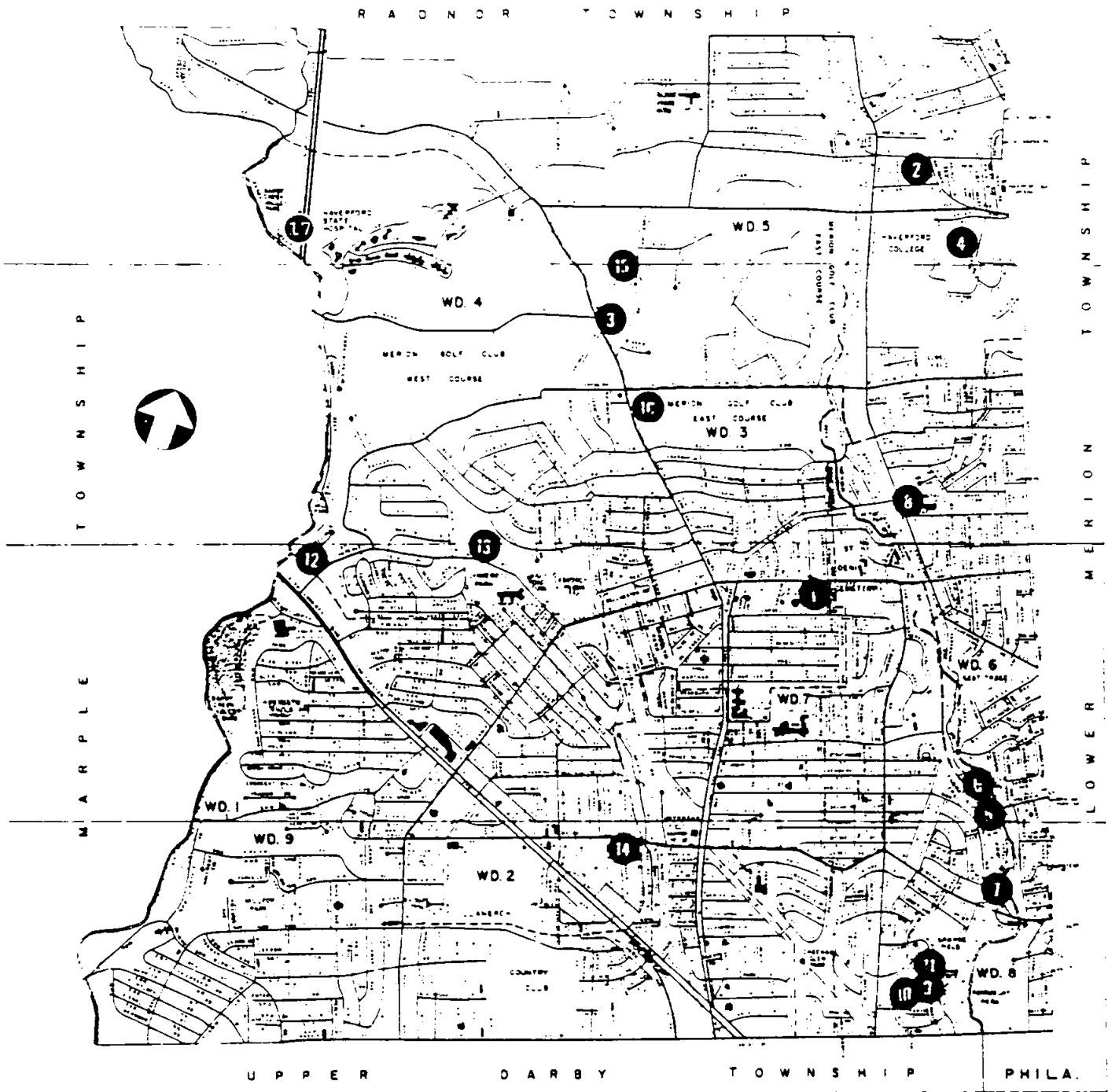
13. Flintlock, Lawrence Road east of Ellis Road. Privately owned. Named by the present owners, the middle section is built of hand-adzed squared logs, pegged together with dove-tailed corners and no chinking. This section is three stories, one room on each floor. Stone addition, west end, c. 1735. Modern addition 1963 and 1987. This addition and the log section are covered with vertical siding.

14. Narberth, 525 N. Manoa Road. Privately owned.

East end is the oldest section, built c. 1697 by Richard Hayes, whose Quaker father settled on this 50 acre tract in 1687 and named it for his home in Wales. Benjamin Hayes Smith built the middle section in 1799. The west end was added in 1811. George Smith was born here in 1804. Physician, legislator, school superintendent, co-founder and first president of the Delaware County Institute of Science in Media, 1833, Dr. Smith was the author of the "History of Delaware County," published 1862.

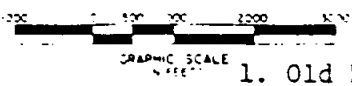
15. Allgates, west side of Coopertown Road, between Darby Road and College Avenue. The house was designed and built by Wilson Eyre. Formerly used as site of an Alternative High School by the School District of Haverford Township, it is now privately owned.

16. Casa al Sole, east side of Darby Road between East Golf View Road and Ardmore Avenue. Privately owned. Built around two early farm houses. Walnut woodwork, doors, frames, floors, etc.



TOWNSHIP OF HAVERFORD

JANUARY 1978



HISTORIC SITES

- | | |
|----------------------------------|---------------------------------------|
| 1. Old Haverford Friends Meeting | 9. The Grange |
| 2. Haverford Monthly Meeting | 10. St. James United Church of Christ |
| 3. Federal School | 11. Tenant House |
| 4. Founders Hall | 12. The Lawrence Homestead |
| 5. Lawrence Cabin Museum | 13. Flintlock |
| 6. Nitre Hall | 14. Narberth |
| 7. Powder Magazine | 15. Allgates |
| 8. Pont Reading | 16. Casa al Sole |
| | 17. Brookethorpe Station |



III. DEMOGRAPHY

III. DEMOGRAPHIC ANALYSIS

Haverford Township today comprises 9.95 square miles in the northeastern section of Delaware County in the Philadelphia Standard Metropolitan Statistical Area. It is also part of the western suburbs of the City of Philadelphia.

Municipalities immediately adjacent to Haverford include the Townships of Radnor, Marple, Springfield, and Upper Darby in Delaware County, Lower Merion Township in Montgomery County, and the City of Philadelphia. People frequently cross municipal boundaries for employment and shopping and, thus, any analysis of the Township must take into consideration its place in the region as a whole.

POPULATION GROWTH

As shown in Table III-1, Haverford Township's population more than tripled during the decade 1920 to 1930, and almost doubled between 1940 and 1960. Since 1960, the size of Haverford's population has stabilized because of the scarcity of prime developable vacant land remaining in the Township. Haverford Township today is almost totally developed with over 60% of its land area devoted to residential uses.

The large increase in Haverford's population between 1920 and 1930 was due primarily to increased accessibility as a result of the introduction of several modes of public transportation, as well as the availability and popularity of the automobile coupled with an improved road network, as noted in Section II.

A large transportation terminal was built at 69th Street in 1907 and replaced in 1936. During the 1920's John H. McClatchy, a realtor, developed the 69th Street Boulevard Shopping Center at this transportation mode, and began constructing homes in the surrounding area. This real estate/transportation boom greatly influenced the

TABLE III-1

POPULATION CHANGE BY DECADE

YEAR	HAVERFORD TWP.		RADNOR TWP.		MARPLE TWP.		SPRINGFIELD TWP.		UPPER DARBY TWP.		LOWER MERION TWP.		DELAWARE COUNTY		PHILA. SMSA	
	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change
1920	6,631	-	8,181	-	900	-	1,298	-	8,956	-	23,866	-	173,084	-	2,714,271	
1930	21,362	+222.2	12,263	+49.9	1,553	+72.5	4,589	+353.5	47,145	+526.4	35,166	+47.3	280,264	+61.0	3,137,040	+1
1940	27,594	+29.2	12,012	-2.1	2,170	+39.7	5,488	+19.6	56,883	+20.7	39,566	+12.5	310,756	+10.9	3,199,637	+
1950	39,641	+43.7	14,709	+22.5	4,779	+220.2	10,917	+98.9	84,951	+49.3	48,745	+23.2	414,234	+33.3	3,671,048	+1
1960	54,019	+36.3	21,697	+47.5	19,722	+412.7	26,733	+244.9	93,158	+9.7	29,420	+21.8	553,154	+33.5	4,342,897	+1
1970	56,873	+5.3	28,849	+32.9	25,040	+26.9	29,006	+8.5	95,910	+2.9	63,470	+6.8	601,425	+8.7	4,817,914	+
1980	52,371	-7.1	27,676	-4.2	23,642	-5.6	25,326	-12.7	84,054	-12.4	59,629	-6.1	555,007	-7.7	4,716,818	-2.1

Source: U. S. Bureau of the Census

population growth of the adjacent municipalities of Upper Darby, Springfield, and Haverford. Upper Darby's population increased by 526%, Springfield's by 353%, and Haverford's by 222% during the 1920 to 1930 decade.

The population increase in Haverford between 1940 and 1960 can generally be attributed to the post World War II baby boom, combined with the exodus of people from Philadelphia to the adjacent suburban townships. The population of the first ring of suburban townships continued to grow rapidly at this time. Haverford's population increased by 95%, Marple's by 808%, Springfield's by 244%, Upper Darby's by 63%, Lower Merion's by 50%, and Radnor's population increased by 47%.

During the decade of 1960 to 1970, Haverford, Upper Darby, Springfield, and Lower Merion saw very small increases in their population. Radnor and Marple, however, continued to grow although at a slower rate. The 1980 Census showed population declines in Haverford and the five adjacent suburban Townships. These declines ranged from 4.2% to 12.7% with a loss of 7.1% reported from Haverford Township. These declines were not the result of abnormal out-migration but were instead due to a general trend toward smaller household size, as explained below. These losses offset modest gains in the size of the housing stock for these communities. It will be noted that overall losses in total population were also experienced by Delaware County and by the entire Philadelphia Metropolitan (SMSA) area.

Because of Haverford Township's close proximity to Philadelphia, the municipality was subjected to development pressures prior to many of the other Townships further west along the "main line." Periods of rapid growth, and development within the Township are a thing of the past because of the scarcity of vacant developable land remaining in the Township. Since 1960, Haverford has experienced a relatively stable population with only small fluctuations in both numerical and

percentage changes and this trend is predicted to continue. Another element contributing to this trend is the fact that birth rates are declining nationwide.

Population growth can be the result of economics as well as land use. The growth of Haverford and the surrounding townships was primarily due to land use factors, as noted previously. However, an area's degree of success in attracting new generators of employment is a major determinant of net in-migration of persons in the young labor force age group, and therefore population growth.

The Philadelphia Metropolitan area (Philadelphia SMSA) grew steadily from 1920 to 1970 with the exception of the period from 1930 to 1940, when there was only a 2% increase. This slowing of growth between 1930 and 1940 was characteristic of Haverford and the surrounding townships as well, and was probably due to the depression. Since 1970, the region's population has declined by 2.1%. The population for Delaware County decreased by 7.7% during this period.

The Delaware Valley Regional Planning Commission is predicting a modest growth for the region over the next twenty years in terms of both jobs and people. They are projecting a population target of 4,874,000 persons, and an employment target of 2,379,000 jobs by the year 2000. This represents a 157,000 (3.3%) and a 248,000 (11.6%) increase respectively over the 1980 figures.

DENSITY

Density is a method of measuring how intensively the land is used. It is usually expressed as people, families, or dwellings per unit of land, such as an acre or square mile. In this section, it represents the number of people per square mile.

TABLE III-2
PERSONS PER SQUARE MILE 1960, 1970, & 1980

	<u>Square Miles</u>	<u>1960</u>	<u>1970</u>	<u>Difference 60-70</u>	<u>1980</u>	<u>Difference 70-80</u>
Haverford Township	9.95	5,429	5,716	+287	5,263	-453
Radnor Township	13.83	1,569	2,081	+512	2,001	-373
Marple Township	10.43	1,891	2,401	+510	2,267	-134
Springfield Township	6.29	4,250	4,611	+361	4,026	-585
Upper Darby Township	7.62	12,226	12,587	+361	11,031	-1,556
Lower Merion Township	23.64	2,514	2,682	+168	2,522	-160
Delaware County	184.1	3,004	3,277	+273	3,015	-262
Philadelphia SMSA	3,553	1,224	1,356	+132	1,328	-28

Source: U. S. Bureau of the Census

As seen in Table III-2, Haverford Township is much more densely populated than its neighboring townships of similar size, with the exception of Upper Darby. Haverford's density was 5,263 people per square mile in 1980, a decline of 453 from the 1970 density. This indicates the highly developed nature of the Township and reinforces the prediction that Haverford's population will remain fairly stable in the future due to a lack of developable land.

Upper Darby Township's density is much greater than that of Haverford and is a result of its proximity to the City of Philadelphia and the 69th Street real estate boom in the 20's. Much of this development occurred prior to enactment of Upper Darby's first Zoning Ordinance in 1938. Springfield Township, though slightly less densely populated than Haverford, was denser than most of the adjacent townships. Upper Darby, Haverford, and Springfield were the first to feel development pressure from the city because of their geographic location, and are, therefore, more highly developed. In addition, the zoning in these townships allows for more dense development. For instance, in Haverford minimum lot size requirements range from one acre to 4,000 square feet for single family homes, with the majority being under a quarter acre.

Radnor, Marple, and Lower Merion Townships have much lower densities of 2,001 to 2,522 people per square mile. Delaware County and the Philadelphia SMSA also have much lower densities, 3,015 and 1,328 respectively. Radnor, Marple and Lower Merion's lower densities are due to Zoning requirements, higher land values and their relative distance from the city. Lower Merion does share a boundary with the City of Philadelphia but densities in this portion of that Township are comparable with those in Haverford. Lower densities prevail in the western portion of Lower Merion. The lower densities of the SMSA and the County are a reflection of their larger land areas and the tendency for the population to be clustered in one or more small high density areas with the majority of the land remaining relatively open.

TABLE III-3

AGE GROUP COMPOSITION 1960, 1970 AND 1980

Age Group	Years	HAVERFORD TOWNSHIP						DELAWARE COUNTY						PHILADELPHIA SMSA					
		1960	%	1970	%	1980	%	1960	%	1970	%	1980	%	1960	%	1970	%	1980	%
Pre-School	0-4	5,380	9.8	3,951	6.9	2,928	5.6	63,310	11.4	46,663	7.8	33,031	5.0	474,877	10.9	397,448	8.2	304,461	6.5
School Age	5-14	10,957	20.3	11,164	19.6	7,153	13.7	108,504	19.6	118,773	19.8	76,402	13.8	791,138	18.2	951,213	19.7	708,330	15.0
	15-24	6,022	11.1	8,968	15.8	9,434	18.0	64,461	11.6	99,744	16.6	105,257	19.0	551,599	12.6	798,424	16.5	870,980	18.5
Young Labor Force	25-34	5,550	10.3	5,277	9.3	7,436	14.2	71,033	12.8	65,487	10.9	81,743	14.7	566,215	13.0	570,251	11.8	735,455	15.6
	35-44	8,352	15.5	6,579	11.9	5,288	10.1	84,616	15.2	70,320	11.7	56,404	10.2	637,454	14.6	568,777	11.8	523,845	11.1
Older Labor Force	45-54	7,706	14.3	7,895	13.9	6,081	11.6	66,869	12.0	80,804	13.5	63,153	11.4	528,067	12.1	603,001	12.5	512,770	10.9
	55-64	5,537	10.2	6,503	11.4	6,526	12.5	49,157	8.8	59,205	9.9	67,695	12.2	404,076	9.3	459,625	9.5	507,756	10.8
Senior Citizens	65+	4,587	8.5	6,356	11.2	7,503	14.3	45,124	8.1	59,039	9.8	71,322	12.9	390,098	8.9	469,175	9.7	552,193	11.7
TOTAL		54,019	100	56,873	100	52,349	100	553,154	100	600,000	100	555,007	100	343,524	100	4,817,914	100	4,716,818	100

NOTE: The 1970 figures for Delaware County are based on a population of 600,035 and not on the corrected figure of 601,425.

Totals are based on census information from age cohorts and may not equal total reported population.

SOURCE: U.S. Bureau of the Census, Haverford Township Department of Planning & Development, and Delaware County Planning Commission

TABLE III-5

POPULATION BY SEX AND AGE GROUP 1960, 1970 AND 1980

		HAVERFORD TOWNSHIP											
		1960				1970				1980			
	Age Group	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
Pre-School	0-4	2,703	10.3	2,605	9.4	2,033	7.4	1,918	6.5	1,517	6.0	1,411	5.2
School Age	5-14	5,582	21.3	5,375	19.3	5,733	20.9	5,431	18.5	3,624	14.3	3,529	13.1
	15-24	3,167	12.1	2,855	10.3	4,756	17.3	4,212	14.3	4,204	20.5	4,230	15.7
Young Labor Force	25-34	2,470	9.4	3,080	11.1	2,429	8.8	2,848	9.7	3,711	14.6	3,725	13.8
	35-44	2,937	15.0	4,415	16.0	3,165	11.5	3,594	12.2	2,474	9.7	2,814	10.4
Older Labor Force	45-54	3,686	14.1	4,020	14.4	3,745	13.6	4,150	14.1	2,833	11.1	3,248	12.1
	55-64	2,734	10.4	2,803	10.1	3,023	11.0	3,480	11.8	3,063	12.1	3,463	12.8
Senior Citizens	65+	1,913	7.3	2,674	9.6	2,590	9.4	3,766	12.8	2,973	11.7	4,530	16.8
TOTAL		26,192	100	27,827	100	27,474	100	29,399	100	25,399	100	26,950	100

		DELAWARE COUNTY											
		1960				1970				1980			
	Age Group	Males	%	Females	%	Males	%	Females	%	Males	%	Females	%
Pre-School	0-4	32,000	11.9	31,110	10.9	23,774	8.2	22,889	7.3	16,941	6.4	16,090	5.5
School Age	5-14	55,290	20.5	53,294	18.7	60,582	21.0	58,191	18.7	39,163	14.8	37,239	12.8
	15-24	31,634	11.7	32,827	11.5	49,660	17.2	50,084	16.1	53,743	20.3	51,514	17.8
Young Labor Force	25-34	33,619	12.4	37,414	13.1	31,575	10.9	33,912	10.9	40,293	15.2	41,450	14.3
	35-44	41,163	15.2	43,453	15.2	33,341	11.6	36,979	11.9	26,602	10.0	29,802	10.3
Older Labor Force	45-54	32,604	12.1	34,265	12.0	38,641	13.4	42,163	13.5	29,520	11.1	36,633	12.6
	55-64	23,678	8.7	25,479	8.9	27,625	9.6	31,580	10.1	31,565	11.9	36,130	12.5
Senior Citizens	65+	18,959	7.0	26,165	9.2	23,205	8.1	35,834	11.5	26,992	10.2	44,330	15.3
TOTAL		169,147	100	284,007	100	288,403	100	211,632	100	264,819	100	290,188	100

AGE COMPOSITION

The decade from 1970 to 1980 saw a decline in Haverford Township's population of 4,524 but an analysis of age cohorts shown in Table III-3 reveals that the trend was not uniform among all age groups.

A significant decline in those under age 14 is directly attributable to the general trend toward declining birth rates. In 1960, there were 873 live births in Haverford Township for a rate of 16.1 per 1,000 population. By 1974, the rate declined by half to 440 or 8.0 per 1,000. Since then the trend has "bottomed out" and in 1972, 587 births were recorded, a rate of 11.2 per 1,000.

A significant factor is the net increase in the sector of the population between ages 15 and 34. These numbers increased at rates slower than would have been anticipated by the natural aging process, without influence from migration. Nonetheless, the increase indicates that Haverford has remained a reasonably attractive location for young adults in the family formation period.

Age groups between 35 and 54 lost population over the decade and the group between ages 55 and 64 remained relatively static.

Another significant trend is evidenced by the population group aged 65 or older. This group increased significantly in size and, in 1980 constituted 14.3% of the total Township population. This was up from 11.2% in the preceding decade and exceeds the share of senior citizens found in both the County and metropolitan area.

MEDIAN AGE

Median age is influenced by fluctuations and changes in the various age groups and reflects just how "young" and "old" the population is at a specific time. It is not the average age but rather the exact middle value for the population, above and below which are an

equal number of people. The median age for Haverford Township has been relatively static, slightly from 33.7 in 1960 to 33.2 in 1970 and rising to 33.8 in 1980.

The changes in Haverford are modest combined to a comparison of median ages in nearby townships. All showed increases but the impact was most dramatic in the case of Marple and Springfield Townships where median ages increased by 20% and 15% respectively.

The increase in Haverford was less than that experienced by both the County and the metropolitan region.

TABLE III-4
MEDIAN AGE 1960, 1970 AND 1980

	<u>1960</u>	<u>1970</u>	<u>% Change</u>	<u>1980</u>	<u>% Change</u>
Haverford Township	33.7	33.2	- 1.5	33.8	+ 1.8
Radnor Township	30.2	26.8	-11.2	30.1	+12.3
Marple Township	30.9	31.3	+ 1.3	37.7	+20.4
Springfield Township	31.2	32.9	+ 5.4	38.1	+15.8
Upper Darby Township	34.0	33.3	- 7.1	33.6	+ 0.9
Lower Merion Township	37.6	37.6	0.0	37.9	+ 0.8
Delaware County	31.1	29.8	- 3.5	32.4	+ 8.7
Philadelphia SMSA	31.5	29.7	- 6.1	31.4	+ 5.7

Source: U. S. Bureau of the Census

SEX COMPOSITION

Sex composition is another important demographic characteristic as it directly affects the incidence of marriages and births. The sex ratio is most frequently used to reflect sex **composition**. The sex ratio is expressed as a ratio of males per 100 females.

Table III-5 lists the breakdown of Haverford's population by sex and age group for the years 1960, 1970 and 1980, and compares it with that of the County. The population in both the Township and the County is split fairly equal between males and females. Males are more numerous in both the pre-school and school age groups. Females are more numerous in all age groups over 25. In the senior citizen age group, females outnumber males to a much greater extent than any other age category. This is due to the shorter life expectancy of males.

The entire population of Haverford Township in 1980 was fairly evenly split between 25,399 males (48.5%) and 26,950 females (51.5%). The sex ratio for this year was 94.2

TABLE III-6

SEX RATIO FOR 1960 - 1970 - 1980

	<u>1960</u>	<u>1970</u>	<u>1980</u>
Haverford Township	94.1	93.4	94.2
Radnor Township	103.8	98.0	91.8
Marple Township	97.3	93.5	92.2
Springfield Township	94.9	93.7	92.6
Upper Darby Township	90.3	86.7	86.2
Lower Merion Township	82.2	81.7	81.6
Delaware County	94.8	92.5	91.3
Philadelphia SMSA	95.2	93.1	90.0

Note: The 1970 figures for Delaware County are based on an uncorrected population figure of 600,035.

Source: U. S. Bureau of the Census and Haverford Township Department of Planning and Development.

The sex ratios for the five surrounding townships, Delaware County and the Philadelphia SMSA is lower than that in Haverford, indicating higher female representation in the total population.

RACIAL COMPOSITION

The number of minority group members residing within Haverford Township is small. The non-white population of the Township increased slightly during the period 1960 to 1980. There were 1,633 non-white residents of Haverford Township in 1970, approximately 3% of the total population. The largest single minority group is that of the blacks, comprising 2.1% of the total population. All other minority groups total approximately 1% of Haverford's population. Among the other non-white population groups, Asians account for 75% of the total.

TABLE III-7

RACIAL COMPOSITION 1960, 1970 and 1980

	1960				1970				1980			
	Black	%	Other Non-White	%	Black	%	Other Non-White	%	Black	%	Other Non-White	%
Haverford Township	666	1.2	49	0.1	908	1.6	171	0.3	1,112	2.1	521	1.0
Radnor Township	673	2.3	39	0.1	805	2.9	173	0.6	1,053	3.8	497	1.0
Marple Township	79	0.3	16	0.6	76	0.3	82	0.3	89	0.4	425	1.8
Springfield Township	404	0.2	4	.07	26	0.1	82	0.3	84	0.3	316	1.2
Upper Darby Township	163	0.1	69	.07	157	0.2	388	0.4	1,138	1.4	1,461	1.7
Lower Merion Township	2,793	4.4	114	0.1	2,462	3.9	366	0.6	2,688	4.5	906	1.5
Delaware County	38,451	6.3	637	0.1	43,574	7.3	2,044	0.3	49,989	9.0	6,571	1.2
Phila. SMSA	670,939	13.9	9,686	0.2	844,300	17.5	13,037	0.2	884,405	18.8	129,031	2.7

Source: U. S. Bureau of the Census

Non-white population in Haverford and the surrounding Townships is well below the representation found in the County and the Metropolitan area.

Education

Another important characteristic of population is education. The educational level of a population can be useful in predicting what types of jobs the municipality should be encouraging to locate in the area and in determining housing types and price range for new construction. School years completed is the tool most commonly used to measure educational achievement, and the 1980 statistics for Haverford Township are shown in Table III-8.

TABLE III-8

Years of School Completed - 1980		
(Persons Age 25 or Older)	Number	% of Total
3 years of High School or less	7,027	17.8
4 years of High School	15,126	38.3
1-3 years of College	7,318	18.5
4 years of College	5,529	14.0
5 or more years of College	4,482	11.4

The Table indicates that more than 82% of all Haverford Township residents aged 25 or older had completed 4 years of High School while just under 25% had the equivalent of 4 or more years of College.

TABLE III-9
PER CAPITA INCOME BY JURISDICTION

	<u>1981</u>	<u>1979</u>	<u>% Change</u>
Haverford Township	\$10,854	\$ 8,810	23.2
Radnor Township	14,170	11,802	20.1
Marple Township	11,409	9,302	22.7
Springfield Township	11,542	9,417	22.6
Upper Darby Township	9,405	7,710	22.0
Lower Merion Township	18,430	15,705	17.4
Delaware County	9,832	8,044	22.2

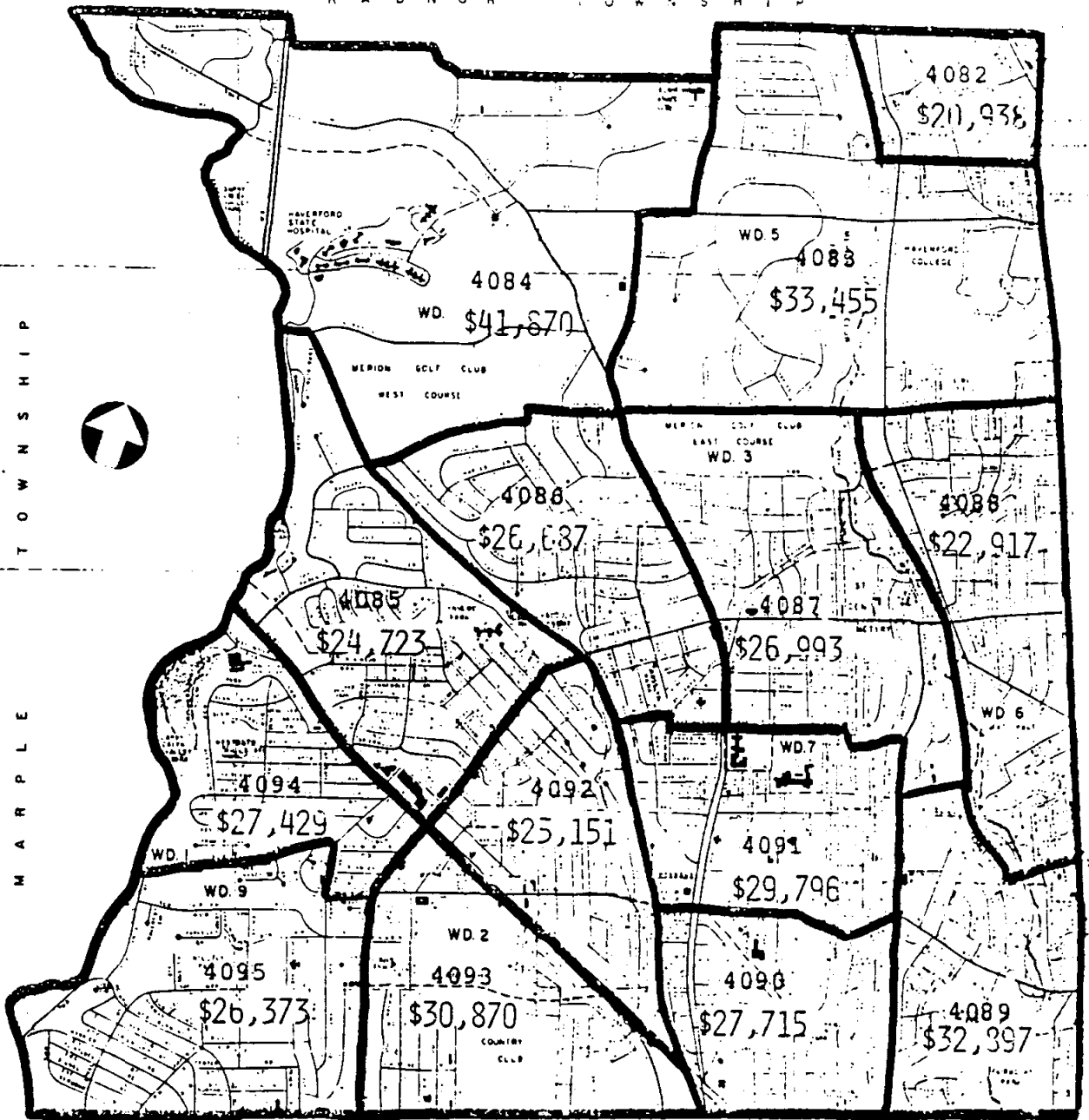
Haverford's per capita income growth showed the greatest increase of all surrounding municipalities but in absolute numbers it ranked 5th ahead of only Upper Darby. Nonetheless, its per capita income of \$10,854 was more than \$1,000 greater than the County average.

An analysis of family income by census tract as shown in Table III-10 illustrates wide variations in income levels. The highest income level occurred in Tract 4034 in the northwest part of the Township where the median family income of \$41,870 was more than double that reported for Tract 4082 in the northeast part of the Township.

Median Family Income

Income is frequently used as an indicator of the vitality of a community. Income is directly related to job availability and translates into purchasing power. Thus, one can estimate the demand for goods and services by analyzing the income of the population.

R A D N O R T O W N S H I P

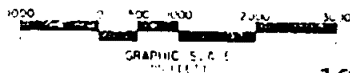


U P P E R D A R B Y T O W N S H I P P H I L A

TOWNSHIP OF HAVERFORD

CENSUS TRACTS

JANUARY 1978



1979 MEDIAN FAMILY INCOME BY CENSUS TRACTS

Although the median family income for Haverford Township increased by over 114% between 1970 and 1980, much of this increase was due to inflation. After adjusting the income figures to compensate for inflation, the "real" increase in the median family income was only 4.1% during this ten year period, only 25% of the increase during the preceding decade, 1960-70. As Table III-11 shows, the income figures have been adjusted using the Consumer Price Index (C.P.I.). The C.P.I. is simply a percentage comparison of price levels in different time periods. For example the indices for 1960, 1970 and 1980 were 88.4, 117.8 and 241.4 respectively, indicate that a sampling of consumer goods costing \$100 in 1967 could be purchased for \$88.40 in 1960, \$117.80 in 1970, and would cost \$241.40 in 1980.

TABLE III-11

ADJUSTED MEDIAN FAMILY INCOME

	Unadjusted Median Family Income Hav. Twp.	% Increase	CPI 1967=100	Adjusted Median Family Income Hav. Twp.	1960-1970 % Increase
1960	\$ 8,888	-	88.4	\$ 10,054	
1970	13,791	55.2%	117.8	11,707	16.4%
1980	28,437	113.5%	241.4	12,192	4.1%

The adjusted median family income was arrived at by dividing the unadjusted median family income by the C.P.I. and multiplying by 100. Thus, the adjusted median family income increased from \$10,054 to \$11,707 or 16.4% between 1960 and 1970 but only to \$12,192 in 1980.

Median family income is a device which is frequently used to exhibit income trends.

The median family income for residents of Haverford Township increased by \$4,903 between 1960 and 1970. The median family income for 1970 was \$13,791. By 1979, median family income had increased to \$29,437, substantially more than the County median income of \$26,186. More recent estimates of 1981 per capita income have been compiled by the Census Bureau. These are shown in Table III-9 for Haverford and its surrounding municipalities.

Family and household income by category is shown in Table III-12.

TABLE III-12
INCOME IN 1979 BY HOUSEHOLDS AND FAMILIES

	<u>Households</u>	<u>Families</u>
Less than \$ 2,500	256	113
\$ 2,500 to \$ 4,999	676	161
\$ 5,000 to \$ 7,499	797	370
\$ 7,500 to 9,999	976	617
\$10,000 to \$ 12,499	929	620
\$12,500 to \$ 14,999	949	688
\$15,000 to \$ 17,299	1,057	839
\$17,500 to \$ 19,999	1,013	856
\$20,000 to \$ 22,499	1,328	1,204
\$22,500 to \$ 24,999	1,105	960
\$25,000 to \$ 27,499	1,166	1,031
\$27,500 to \$ 29,999	861	799
\$30,000 to \$ 34,999	1,707	1,607
\$35,000 to \$ 39,999	1,148	1,108
\$40,000 to \$ 49,999	1,488	1,397
\$50,000 to \$ 74,999	1,170	1,104
\$75,000 or more	391	352
Median (Dollars)	23,693	26,176
Mean (Dollars)	26,798	29,437

Although family income for the Township as a whole has been rising during the past decade, there is still a portion of Haverford's population living at or below the poverty level. The poverty level varies by size of family unit, sex, and age of household head (over or under 65), and farm and non-farm residence. 388 (2.8%) of the

families in Haverford were living at or below the poverty level in 1970. The poverty threshold for non-farm families of four in 1979 was defined as an annual income of \$7,412. Of these 385 families, 45 were headed by someone age 65 or older.

The 1970 census also recorded the number of non-farming households living at or below the poverty line. Households differ from families in that they include all persons occupying a housing unit, both families and unrelated individuals. In 1970 there were 500 households living at or below the poverty level. This was 2.9% of all Township households. Of these non-farming households, 247 were headed by someone age 65 or older.

TABLE III-13

1979 INCOME BELOW POVERTY LEVEL

	<u>Number</u>	<u>Percent</u>
Families	388	2.8%
Non-Family Households	500	2.9%

Source: U. S. Bureau of the Census

Household Size

In 1980, Haverford Township had a population of 52,349 in 17,112 households. This population excludes those living in group quarters. A household is defined by the Census as "All the persons who occupy a group of rooms or a single room which constitutes a housing unit. A group of rooms or a single room is regarded as a housing unit when it is occupied as separate living quarters, that

is, when the occupants do not live and eat with any other persons in the structure, and when there is either 1.) direct access from the outside of the building or through a common hall; or 2.) complete kitchen facilities for the exclusive use of the occupants of the household."

The average household size is obtained by dividing the population in households for a certain year by the number of household heads for that year. It is a useful tool in predicting the number and size of housing units that may be needed at a given point in the future.

The average household size for Haverford Township dropped slightly between 1960 and 1970 from 3.56 to 3.41. The significance of this statistic is that as family size continues to decrease, smaller dwelling units are, on the average, needed to meet forecast needs.

The size of individual households living in occupied housing units in 1980 is shown in Table III-14, as are the number of each category living in rental property. It will be noted that 8,273 households consisted of 2 or less persons while 2,769 households were 5 persons or larger. 20% of these smaller households are living in rental accommodations but only 5% of the larger group were renters. This probably reflects the predominately smaller size of rental units in the Township.

TABLE III-14

PERSONS AND TENURE BY HOUSEHOLD (1980)

<u>Size of Household</u>	<u>Total</u>	<u>Renter-Occupied</u>
1	2,710	884
2	5,563	785
3	3,180	400
4	2,890	225
5	1,549	76
6 or more	1,224	63

Source: U. S. Bureau of the Census

Group Quarters

Group quarters are defined by the Census as "living arrangements for institutional inmates or for other groups containing five or more persons not related to the person in charge." Examples of group quarters include hospitals, institutions, college dormitories, convents, boarding houses and military barracks.

TABLE III-15

GROUP QUARTERS 1960 & 1970

<u>Municipality</u>	<u>1960</u>	<u>%</u>	<u>1970</u>	<u>%</u>	<u>1980</u>	<u>%</u>
Haverford Twp.	566	1.0	1,375	2.4	1,506	2.9
Delaware County	11,603	2.0	13,139	2.1	15,570	2.9

Source: U. S. Bureau of the Census

In 1960, 566 residents of Haverford Township lived in group quarters. Of these, only two were inmates of institutions. By 1980, the number of Haverford residents that lived in group quarters

had increased to 1,506, of which 776 were inmates of institutions. The dramatic rise in the number of inmates of institutions between 1960 and 1980 was due almost exclusively to the opening of the Haverford State Hospital. Haverford will continue to have a sizable quantity of residents living in group quarters because of the large number of institutional uses with group quarters in the Township. Today such uses in the Township include: Haverford State Hospital, Haverford College, three nursing homes and several religious institutions.

The proportion of group residents in Haverford Township is roughly equal to the percentage of group residents in Delaware County.

Population Change

There are three major determinants of population change: births, deaths and migration. Birth rates fluctuate according to accepted social norms and financial ability. Death rates depend on sanitation methods and advances in medical technology in preventing and curing disease. Migration is primarily a result of regional economic differences and the availability of jobs, education, housing and public services.

Annual births in Haverford Township have been declining generally from 1960 to 1974. However, birth rates tend to be cyclical and recent trends should not be regarded as permanent. Birth rates are once again on the rise, as the annual number of births has increased each year since 1975 (with an unusually high spike in 1979).

Births decreased from a high of 874 in 1961 to a low of 440 in 1974. Levels in 1983 had reached the approximate levels of the early 1970's.

TABLE III-16

Births 1960-1982

	<u>Haverford Twp.</u>	<u>Delaware County</u>
<u>Year</u>	<u>Births</u>	<u>Births</u>
1960	873	12,379
1961	874	
1962	842	
1963	814	
1964	772	
1965	783	10,403
1966	716	
1967	711	
1968	653	
1969	695	
1970	627	9,325
1971	570	
1972	502	
1973	484	
1974	440	
1975	443	6,711
1976	478	
1977	481	
1978	519	
1979	602	
1980	558	7,367
1981	570	
1982	587	

Source: Pa. Dept. of Health, Bureau of Vital Statistics

Delaware County has witnessed a similar trend of declining birth rates until 1975 with an upturn thereafter.

The modest upturn in birth rates still lags behind birth rates of the post World War II period. This is due to several factors, including: (1) the increasing tendency of couples to have fewer children for economic and social reasons; (2) the inclination of young couples today to delay having children; (3) the outmigration of couples in the Young Labor Force, ages 25 to 44, particularly from Haverford, Delaware County, and the Philadelphia SMSA, in search of better employment and housing opportunities; and (4) the increasing numbers in the age groups over 45. The modest current rise in births could be due to the fact that "Baby Boomers" who had previously postponed starting a family appear to be having their children now.

Migration between regions is primarily a result of regional economic differences. Thus, people tend to relocate to another region because of job availability. Intraregional migration, however, is due to such reasons as quality of the public school system, type of residential area, amount of taxes, level of local services and amenities, safety, and accessibility of employment. The respondents to the 1977 Township questionnaire indicated the following reasons, in order of their importance, for selecting their neighborhood: (1) attractive surroundings; (2) price of house; (3) good place to raise children; (4) schools; (5) convenient to work; and (6) taxes.

Population Projections

A population projection is a useful demographic tool in that it gives an indication of the possible growth pressures that will be exerted on both governmental and non-governmental services. It enables

elected officials to make decisions about the future based on reasonably accurate estimates of future population growth. Such decisions would involve estimates of the basic space needs of different land use categories such as housing, recreation, educational facilities and community facilities. Population projections can also be useful in estimating the demand on sewer and water facilities, utilities, especially energy oriented companies, police and fire departments, and transportation networks.

Any long range population projection can only be an approximation based on certain assumptions. It should not be regarded as an absolute or finite figure. The conditions on which the assumptions are based could change dramatically. For instance, unpredictable economic conditions, radical changes in the birth and death rate, and medical and technological breakthroughs may occur at any time. Birth rates have historically tended to be cyclical, but it cannot be foreseen how long the current trend of lowered birth rates might continue. In fact, there is some evidence that this trend is beginning to reverse itself, as seen earlier.

The Township has lost population since 1970 due to the absence of vacant land for new development and generally declining household size. This trend is expected to continue despite the evident modest increase in births. The Delaware Valley Regional Planning Commission has predicted a continued gradual decline in the population through the year 2000, when Haverford's population is expected to be 48,500. This decline is significant because a slip below the 50,000 population

threshold will place the Township in a different category for certain types of Federal grants and will make it compete with large numbers of communities than the current one.



IV. NATURAL FEATURES, ENVIRONMENTAL QUALITY

IV. NATURAL FEATURES & ENVIRONMENTAL QUALITY

Natural features consist of such elements as streams and flood plains, rock formations, soils, topography, climate and woodlands. All are important determinants of how the land can be utilized. It is important that those natural features which exist in Haverford Township be inventoried so appropriate measures can be taken for their preservation. Furthermore, it is imperative to assure that future land development is compatible with the constraints imposed by such natural features.

Location

Haverford Township is located wholly within the Piedmont Plateau of the Appalachian Highlands which is generally characterized by gently rolling uplands with occasional low hills and ridges. Within the Piedmont Plateau are two sections, the Piedmont Upland, in which Haverford Township is located, and the Triassic Lowland, part of which is in the northern part of Chester County.

The Piedmont Plateau generally slopes in a southeast direction toward the Atlantic Coastal Plain. Larger waterways tend to follow the slope pattern and flow southeast toward the Coastal Plain without regard to the rock orientation which generally follows a southwest to northeast pattern.

Climate

Climate is important because of its influence on the overall quality of life. The climate of a region influences what human activities can be performed and what economic activities can be developed. A mild climate (as well as job availability and housing supply) can have a persuasive influence on locational decisions.

Haverford Township is located approximately midway between areas that have long hot summers and long cold winters. Due to this midway location, vegetation is often a mixture of both northern and southern types, with little or no advantage to either. Because of the Township's location between the Appalachian Mountains to the west and the Atlantic Ocean to the east, the climate is on the whole moderate. The mountains tend to break up the majority of the storms coming from the west.

The prevailing westerly winds carry weather systems across the country. Because of the dominance of the prevailing westerlies, weather systems fluctuate on a frequent basis with the greatest variation occurring during winter and spring. However, the opposite situation takes place during the summer months when the

humidity is high and weather systems often remain in the region for several days at a time.

Prolonged periods of hot and cold weather as well as excessively high or low temperatures are infrequent. The average annual temperature for the region is 54.6°F with the average high being 64.2°F and the average low being 44.9°F. During the summer months, temperatures of 90°F or above occur on an average of less than 30 days, while temperatures of 100°F or above occur only about once a year. However, the proximity of the Atlantic Ocean is responsible for long periods of high humidity during the summer.

From late autumn through early spring, subfreezing temperatures near 0°F occur only about once a year. The first frost usually occurs after October 15, while the last frost is normally around April 5, but has occurred as late as May 12. The region has an average frost-free growing season of about 190 days for a high and can vary to a low of 170 days. Average frost penetration depth is about one foot to eighteen inches, while an extreme penetration is about thirty inches.

The period from late December, 1976 to mid-February, 1977 was the exception to most of the meteorological averages previously calculated because of the length of time the temperature was under 32°F. The length and severity of the frost this winter was the worst in over two hundred years. This extreme meteorological phenomenon was a result of the upper atmospheric wind patterns staying in a prolonged northwest direction and not shifting as

soon as expected.

The precipitation for the region is spread uniformly throughout the year with the mean annual amount being approximately 45 inches. The maximum amount usually occurs during the late summer and the minimum during February.

Severe intense rainfalls occur occasionally as summer thunderstorms or early autumn hurricanes, but they are not common. Such storms can lead to flooding along the Township's waterways because of the increased runoff. Flooding is most critical in the late spring because of the combined effects of melting snow and rainfall. On the average there will be a storm which, once a year, will last for 24 hours producing 2.6 inches of rainfall. Statistically, once in one hundred years a storm of that duration will produce 7.1 inches of rain.

TABLE IV-1

Frequency and Maximum Rainfall

<u>Period</u>	<u>Precipitation for 24 hour Duration</u>
1 year	2.6
2 years	3.2
5 years	4.2
10 years	5.0
25 years	5.8
50 years	6.3
100 years	7.1

Source: Haverford Township Comprehensive Plan (unadopted) Part I, Kendree and Shepherd Planning Consultants 1968, p. B-3.

Precipitation during the winter months occurs as snow.

The average annual snowfall is about 25 inches and normally occurs

between late November and early March. A snow storm of ten inches or more usually occurs once in five years. The winter of 1977-1978 was unusual because of the large snowfall. 54.9 inches of snow fell during this winter, just missing the record of 55.4 inches set during the winter of 1898-1899. This weather extreme was caused by persistent arctic winds which drove storms coming across the country down south where they gathered moisture and proceeded up the east coast, thus avoiding the dissipating effects of the Appalachian mountains.

Westerly winds are the predominant influence on the weather pattern in this region as they carry the particular systems across the United States. Southwesterly winds are most prevalent during the months of May through October while northwesterly winds are most prevalent during the winter months.

Wind velocities equal to or below 12 miles per hour occur approximately three-fourths of the time. The average annual wind velocity is 9.6 miles per hour. Colder winds with greater intensity occur during the winter months, but winds with a high destructive force are uncommon, except as gusts during the summer thunderstorms.

Geology

The study of the underlying rock formations and their individual properties are important for all of the following reasons:

- a. land forms and slopes are determined by them

- b. they influence the location of the transportation network
- c. all land use patterns are influenced by them
- d. they are a natural determinant in the quality and quantity of ground water
- e. they are a natural determinant in structural design and construction costs and methods
- f. they are a natural indicator for earthquakes, rockslides and natural foundations
- g. they are a natural determinant for soil series and soil associations.

Haverford Township has four major underlying rock formations:

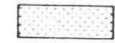

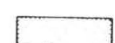
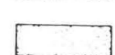
- 1) Wissahickon formation, 2) high terrace gravel, 3) gabbro, and
- 4) granite, quartz diorite, quartz monzonite, and granitic gneiss.

1) Wissahickon formation. These rock formations of schist and gneiss are the predominant formation within the Township and occur at the surface over a large area. This type of rock is medium to coarse grained, banded, and is characterized by large amounts of mica. A fairly good source of water supply, this type of rock can yield an average of approximately 23 gallons per minute.

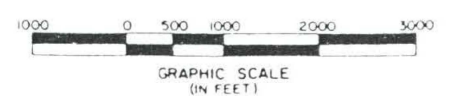
2) High terrace gravel. More commonly called the Bryn Mawr Terrace, this particular type is found more extensively in the region around the vicinity of Bryn Mawr. Depths do not usually exceed 20 feet and it is



ROCK FORMATIONS

-  HIGH TERRACE GRAVEL
-  GABBRO
-  WISSAHICKON FORMATION
-  GRANITE, QUARTZ, DIORITE
QUARTZ MONZONITE
GRANITE GNEISS

TOWNSHIP OF HAVERFORD
DELAWARE COUNTY, PA.



T O W N S H I P
M A R P L E

T O W N S H I P
M E R I O N
L O W E R

U P P E R D A R B Y T O W N S H I P P H I L A .

- found in the central part of Haverford Township north of Steel Road. This type occurs in a banded belt with the gravel consisting of well rounded quartz pebbles cemented to a conglomerate known as "ironstone." This type of rock is unimportant as a source of ground water because of its small distribution and favorable drainage.
- 3) Gabbro. This type occurs as a small triangular shape in the eastern corner of Haverford Township. The rock is among the youngest types in the Wissahickon belt and is usually medium grained and massive. Rust colored boulders make it easily recognizable. Large quantities of water are rarely gotten from this type.
 - 4) Granite, Quartz diorite, Quartz Monzonite, and Granite Gneiss. This combination is found south of Steel Road as a narrow strip. Because of the variety of rock types, characteristic properties vary greatly. However, the main rock mass is generally coarse grained and the water yield is small.

Soils

General soil areas are called soil associations. Each soil association contains a few major soils and several minor soils that form a representative pattern. Specific soils within an association can differ greatly among their individual properties; such as, in natural drainage, depth, stoniness and slope. Thus, any specific site must be closely examined to determine its suitability for development. Soil associations are named for the major soil series

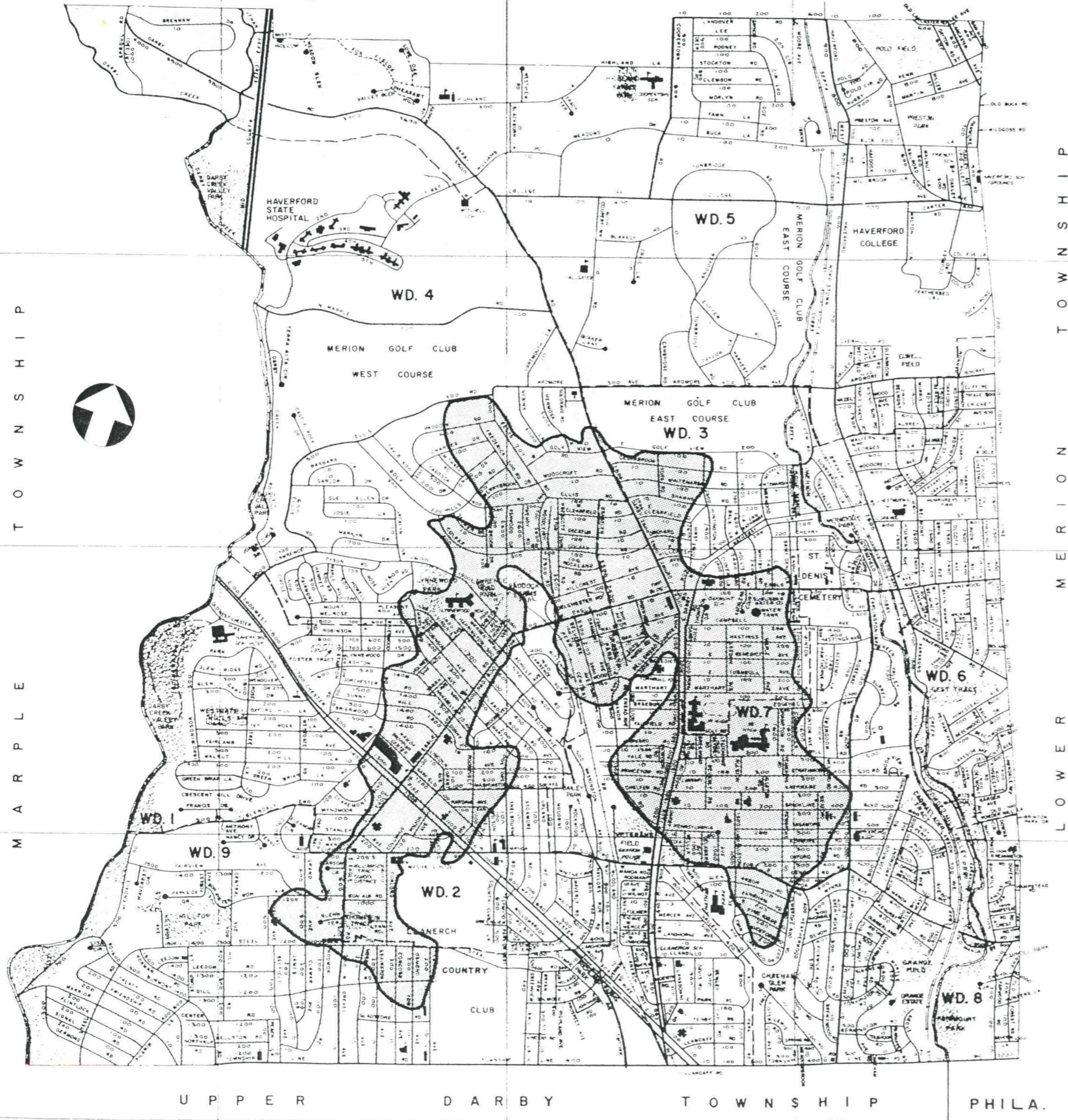
in them, however, other soil series may be present.

Haverford Township has two major soil associations, the Beltsville-Sassafras-Butlertown Association, and the Glenelg-Manor-Chester Association. The perimeter of Haverford Township and the general area around Naylor's Run and its tributary contain the Glenelg-Manor-Chester Association. The Beltsville-Sassafras-Butlertown Association is found in the interior part of the Township in a shape that extends southward from Ardmore Avenue then splits into two above Eagle Road with both areas extending below Manoa Road.



The majority of Haverford Township has soils belonging to the Glenelg-Manor-Chester Association. These soils are shallow to deep, silty and channery soils and are underlain generally by Wissahickon and Peter's Creek schist and Baltimore gneiss. The majority of the soils making up this association occur as gentle to moderate slopes. These soils are susceptible to erosion and require protection.

Chester soils are deep, well drained productive soils with moderate permeability and moisture capacity. Glenelg soils are similar to the Chester soils but are somewhat shallower. They are well drained soils of uplands. Many soils are shallow, underlain by weathered schist, and well drained.

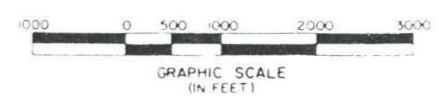
The other major soil association within the Township is the Beltsville-Sassafras-Butlertown Association. These are deep, silty or sandy soils on coastal plain sediments. The soils are mostly gentle sloping. Beltsville soils are deep, moderately well



SOIL ASSOCIATIONS


-  BELTSVILLE - SASSAFRAS - BUTLERTOWN ASSOC. DEEP, SILTY OR SANDY SOILS ON COASTAL PLAIN SEDIMENTS
-  GLENELG - MANOR - CHESTER ASSOC. - SHALLOW TO DEEP, SILTY AND CHANNERY SOILS ON GRAYISH-BROWN SCHIST AND GNEISS

TOWNSHIP OF HAVERFORD
DELAWARE COUNTY, PA.





SOIL CONSTRAINTS

 NOT RECOMMENDED FOR LARGE, HEAVY BUILDING

 NOT RECOMMENDED FOR ANY CONSTRUCTION

TOWNSHIP OF HAVERFORD

DELAWARE COUNTY, PA.



GRAPHIC SCALE (IN FEET)

drained and have a fragipan. The Sassafras soils are deep, sandy and well drained while Butlertown soils are moderately well drained.

Soils are important determinants for on lot sewage disposal systems, foundations, flood plains and erosion. Particular care must be taken to assure that the soils are suitable for the type of development proposed.

Topography

The topography of any area is conveniently expressed as the slope. The slope of an area indicates the frequency at which elevations change. It is expressed as a percentage which equals the amount of vertical change per one hundred feet horizontal distance. Percent of slope is not the same as degree of slope.

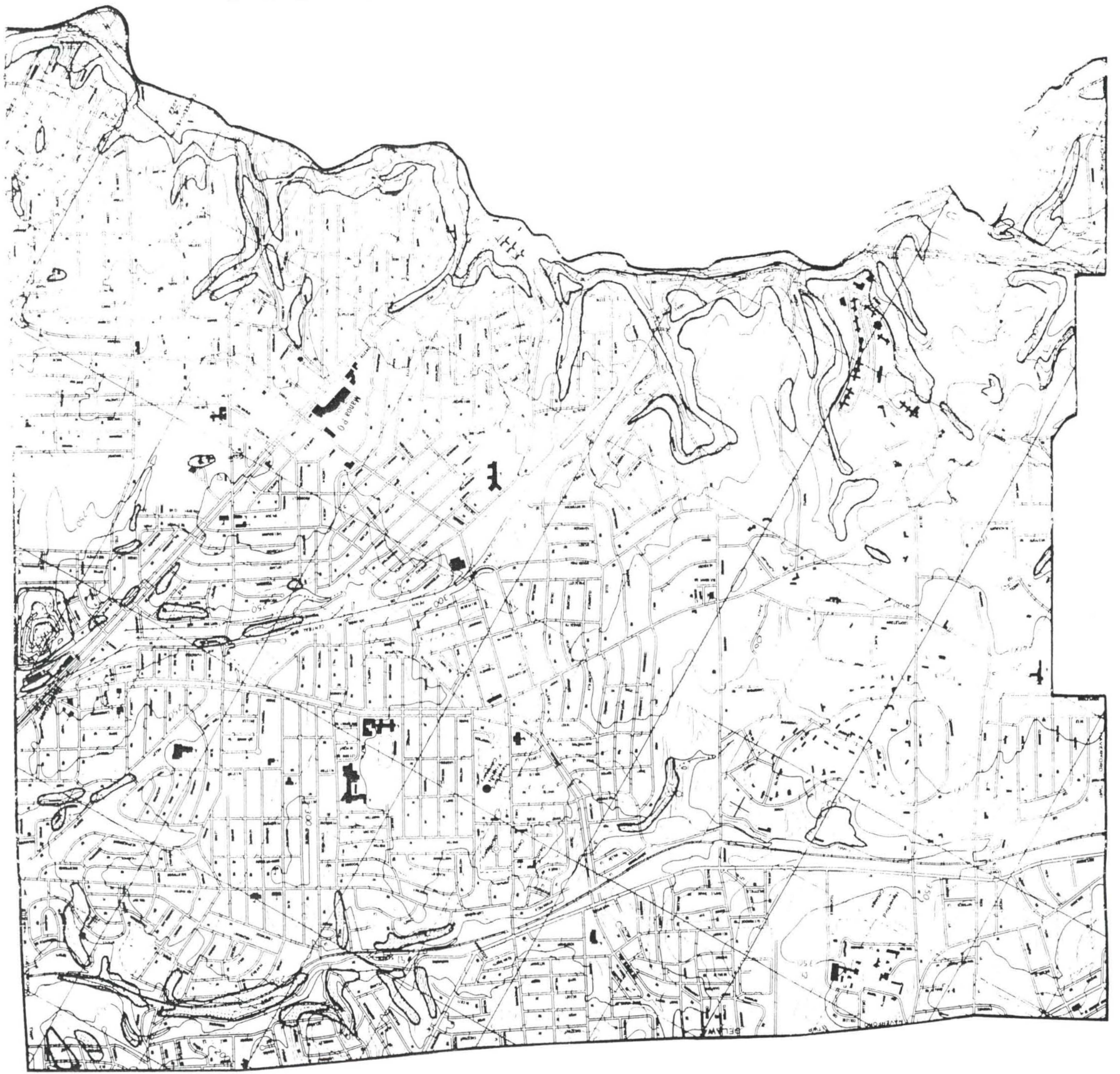
The steepness of slope acts as a natural determinant for any future development within a municipality. The steeper the slope, the more limited becomes construction methods and thus, building costs are greatly increased. All types of development are attracted to relatively level sites in order to reduce grading and excavation costs. With development on steep slopes comes the increased risk of soil erosion, drainage problems, and dangerous road conditions, which in turn could limit accessibility.

The United States Department of Agriculture's Soil Conservation Service suggests that the following slope standards be observed for planning purposes.



M A R P L E T O W N S H I P

H A V E R F O R D T O W N S H I P P H I L A .



L O W E R M E R I O N T O W N S H I P

TOPOGRAPHY
&
STEEP SLOPES

TOWNSHIP OF HAVERFORD
DELAWARE COUNTY, PA.



TABLE IV-2Suitability of Slopes for Development

- 0%-3 - Nearly level. Suitable for all types of commercial, industrial, institutional, residential, and recreational uses.
- 3%-8% - Gently sloping. Suitable for residential subdivisions, industrial and commercial uses and most crop purposes.
- 8%-15% - Moderately sloping. Suitable for residential subdivisions with proper care for on-lot sewage facilities, when public sewage facilities are not available. Generally, this slope is too steep for most industrial, commercial or high density residential development and crop land.
- 15%-25% - Strongly sloping. Suitable for individual homes, but generally too steep for residential subdivisions.
- 25% & up - Steep and very steep slopes. Suitable for pasture, wild life, forestry, and natural uses.

Most of the land in Haverford is under 25%. However, there are several areas which have slopes of 15% or greater. These areas are generally found along Darby Creek and its tributaries in the western section of the Township and along the southern portion of Cobbs Creek, below the intersection of

Haverford Road and Karakung Drive.

The vast majority of Haverford Township's topography, though, is in the 0% to 8% slope range. For planning purposes, this means that most residential, commercial, industrial, institutional, and recreational uses can be constructed within the Township. Since most level land in the Township has already been developed, there is increasing pressure to improve land which is moderately sloping, strongly sloping, steep and very steep. The Township should consider regulating development more carefully on environmentally critical slopes by adopting appropriate legislation.

Three approaches for regulating steep slopes have been developed by other municipalities. The first is a slope-density ordinance, which decreases allowable development densities as slope increases. This functions on the principle that as slope increases so does the potential environmental degradation, including slope failure, increased erosion, sedimentation, and run-off.

The second approach is through the use of soil overlay maps. This approach designates soils that occur on steep slopes and are rated for rapid surface run-off and erosion, and then develops special restrictions on development in these soil areas. In Haverford Township there are at least five soil types on which development should be restricted because they are found on slopes ranging from 25% to 50%, and are of moderate to severe erodibility.

The last approach is one that uses guiding principles or policies. This approach does not use precise standards as the other two approaches have, but uses, instead, evaluation principles. These principles, such as "to discourage mass grading and excessive terracing," leave considerable room for discretion and are, therefore, not recommended.

The first approach, that of a steep slope ordinance, is recommended because it stands the greatest opportunity to withstand legal challenge. It is suggested that the drafting of such an ordinance be a high priority of the Township.

Drainage Basins

Drainage refers to the natural tendency of all water to flow down towards the sea, and the vehicle by which the water travels over or under the ground. A drainage basin or watershed includes the total area above a given point on a stream that contributes water to the flow of the stream at that point.

Haverford Township is drained by three significant waterways, Darby and Cobbs Creeks, and Naylor's Run. Naylor's Run flows into Cobbs Creek which, in turn, flows into Darby Creek. Darby Creek, which is a tributary of the Delaware River, enters that waterway at the Tinicum Wildlife Refuge. These three waterways and their respective tributaries are part of the Darby-Cobbs Creek watershed, which has a total drainage area of 77.9 square miles, and includes portions of Delaware, Chester and Montgomery Counties, and the southern portion of the City of Philadelphia.

Haverford Township is wholly within this drainage basin.

Darby Creek has an overall length of 26.2 miles, 4.5 of which are in the Township. It is the major drainageway in the area, having a total watershed drainage area of 54.7 miles. Darby Creek drains the western half of the Township. Cobbs Creek has an overall length of approximately 10.9 miles, 3.4 of which are in the Township. The entire Cobbs Creek watershed drains a 21.4 square mile area. It drains the eastern portion of the Township. Most of the creek is confined to concrete or stone channels and culverts. Naylor's Run has an overall length of about 4.3 miles, 1.1 which lies within the Township. It drains an area of about 1.8 square miles. Like Cobbs Creek, most of Naylor's Run has been restricted to concrete or stone channels.

Water Quality

It is important to identify water quality problems since they usually lead to limitations on the intended purposes (water supply, recreation, etc.) of water. This section will review the water quality problems which exist in Haverford Township.

According to the COWAMP/208 Water Quality Management Plan for southeastern Pennsylvania, the streams in our sub-basin exhibit some serious water quality problems. The headwaters areas of most of these streams exhibit good quality, since they are rural and less densely developed areas. However, at the urban/suburban areas located closer to the Delaware River, the streams exhibit more severe water quality problems.

Haverford Township is located in this urban/suburban area. According to the Department of Environmental Resources, the Darby Creek Basin exhibits extremes in water quality. Excellent conditions are found above Route 3 (West Chester Pike), where natural trout production occurs. The major degrading influence downstream in the past has been the Radnor-Haverford-Marple treatment plant. This plant was located on Darby Creek at Glendale Road and was a 7.6 million gallon per day sewage treatment plant that served a population of more than 65,000 persons. This plant was phased out in 1978 and its flow was conveyed to the Philadelphia Southwest Plant. However, water quality improvements in Darby Creek due to the phasing out of the Radnor-Haverford-Marple treatment plant may be limited because of runoff from the intense urbanization of the lower creek basin.

The impact of urbanization can be seen at Cobbs Creek by U.S. Route 1 (Township Line Road). The Philadelphia Water Department monitoring program indicates that water quality problems at U.S. Route 1 increase with flow and are thus storm-related.

Routine sampling information is also available for Naylor's Run. Naylor's Run exhibits problems in water quality and has been contaminated from an abandoned ground-water disposal well. EPA has moved a portable treatment unit into the area, but even with active groundwater pumping and treatment, problems will likely persist.

Water quality problems can also be related to landfills and other residual waste disposal activities. In Haverford Township there is one landfill on Darby Creek by the old maintenance yard, located in Darby Creek Valley Park. This landfill is no longer in operation but leachate from this fill is still entering Darby Creek.

It has been indicated that most of the water quality problems exhibited by the creeks that flow through Haverford Township are associated with increased erosion and sedimentation from runoff, construction, and roadside drainage. Increased erosion and sedimentation load to surface waters can cause channel erosion, increased turbidity, high suspended solids concentrations and sediment loads and other factors harmful to organic life.

In particular, an increase in land coverage by impervious surfaces has led to higher rates of runoff. Impervious surfaces reduce the amount of water that can be absorbed by the soil and increase the volume and rate of water which flows directly to streams and rivers. This results in lower water quality because the fast moving storm water increases erosion as well as flushes other pollutants into receiving waters.

In Haverford Township there are limitations on the extent to which this problem can be corrected because most of our land is already developed. However, certain considerations should be taken into account for future development proposals. These include management practices such as minimizing the amount of

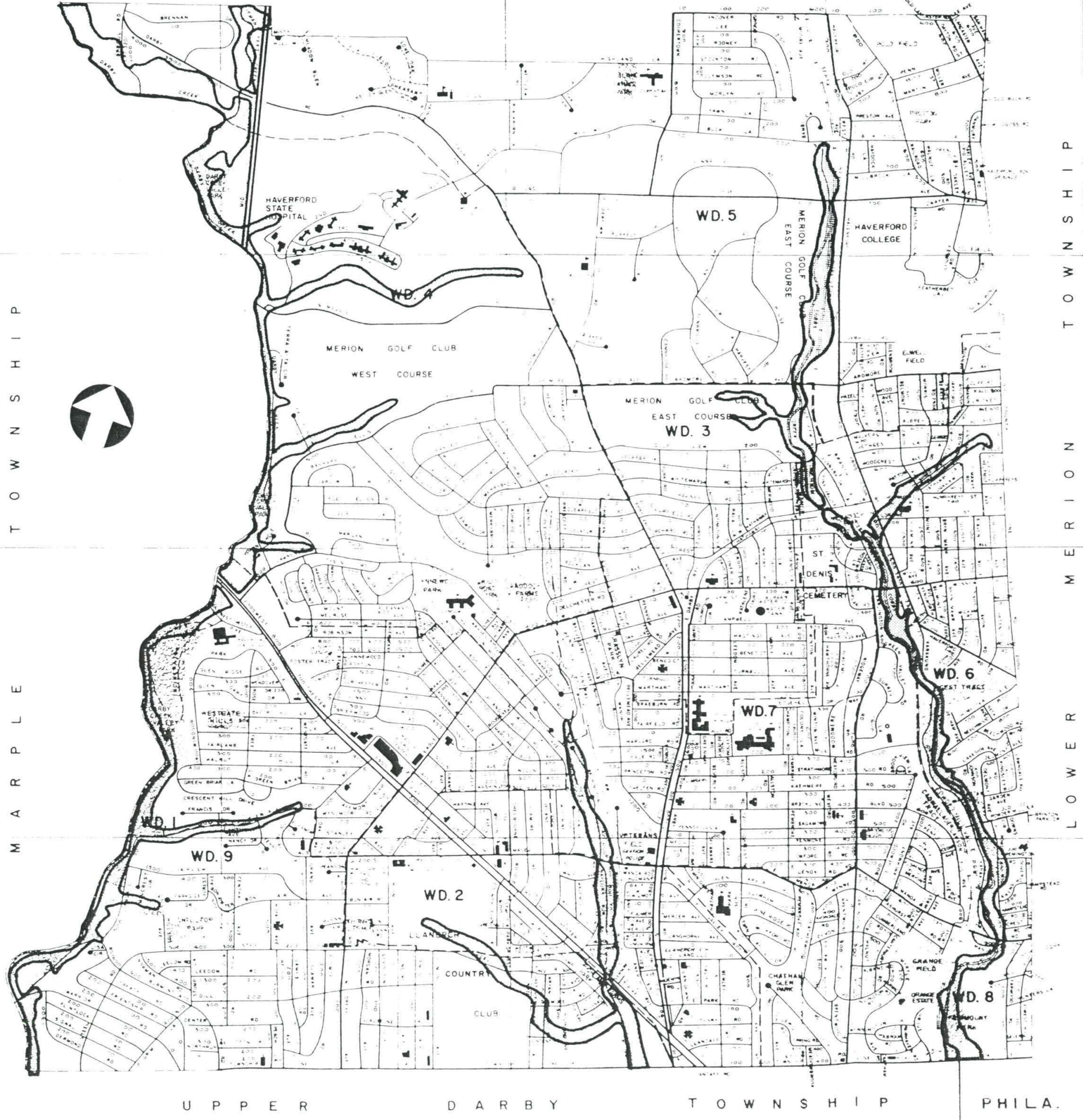
impervious cover on a site and using as much porous pavement as possible. Also, techniques such as the use of natural swales and retention/detention ponds can slow runoff from the site to approximately the pre-developed rate. During construction, appropriate soil and erosion controls should be used and there should be a minimum removal of vegetation. All of these practices are currently being utilized in Haverford Township and should be continued.

Flood Plain

Flood plains are the relatively flat areas adjoining streams and rivers which are at one time or another covered by the flood waters of the stream. The one most commonly referred to is the one hundred year flood plain. This is the area that is flooded by the waters of a storm of such severity that it has a 1% chance of being equaled or exceeded in any given year.

Flood plains function as natural storm sewers as they carry the increased volumes of water during floods which are caused by heavy rains. They can be identified by their flat topography and the alluvial soils characteristic of low lying areas adjacent to streams. There are four types of alluvial soils found in Haverford Township. They are: Chewacla Silt Loam, Ch; Congaree Silt Loam, Cn; Melvin Silt Loam, Mn; and Wehadkee Silt Loam, We.

Encroachment on the flood plain reduces the flood carrying capacity of the stream and thus increases the height of the flood waters. Consequently the location and design of all land development can substantially affect the extent of flooding and flood damage.



M A R P L E T O W N S H I P

P H I L A . T O W N S H I P M E E R I O N

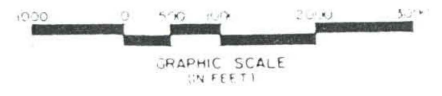
U P P E R D A R B Y T O W N S H I P P H I L A .

AREA OF 100 YEAR FLOOD

SOURCE - U.S. DEPT. OF HOUSING & URBAN DEVELOPMENT, 1977

NOTE - THE AREAS SHOWN ON THIS MAP ARE APPROXIMATE. OFFICIAL MAPS ARE WITH THE HAVERFORD TOWNSHIP DEPARTMENT OF PLANNING AND DEVELOPMENT.

TOWNSHIP OF HAVERFORD DELAWARE COUNTY, PA.



There is not a significant amount of development along the Darby Creek flood plain in the Township. Most of the land has been retained as open space and parkland. There are, however, a few structures in this flood plain. Extensive residential and commercial development has taken place adjacent to both Cobbs Creek and Naylor's Run.

The flood plain is composed of two districts. The floodway and the floodway fringe. The floodway is that portion of the flood plain which is necessary to carry the waters of the 100 year flood without raising the water surface elevation at any point more than one foot above existing conditions. Thus, any type of development should be prohibited in the floodway. The floodway fringe is the remainder of the flood plain which lies beyond the floodway. Development can occur in this area without increasing the water surface elevation of the 100 year flood.

The U.S. Department of Housing and Urban Development, Federal Insurance Administration, has delineated the boundaries of the floodway and the floodway fringe for the 100 year flood plain along Darby and Cobbs Creek, Naylor's Run and their tributaries in Haverford Township. These flood plains are protected by local ordinance. Development is prohibited in the floodway. It is, however, permitted within the floodway fringe if the structures are waterproofed or raised above flood elevations.

While the restriction of encroachment on the flood plain in Haverford will lessen the amount of flooding, storm water runoff remains a problem. Development contributes to increased storm

water runoff for many reasons. It reduces the ability of the ground to absorb water due to soil compaction and impervious cover. In addition, it destroys the natural vegetative cover which causes a change in the amount of water stored in the soil and transpired by plants. Finally, storm sewers replace natural drainage systems and increase the rate at which runoff is transported to local streams and ponds. This, in turn, contributes to flooding. The Township today requires on-site storm water controls for all new developments.

Trees

Trees are an important physical, environmental, aesthetic, and psychological asset. Trees moderate the effects of extremes in climate. In the winter, coniferous trees deflect cold winds. In the summer, deciduous trees provide shade and cool the air. They improve water quality by stabilizing the soil and thus reducing the amount of erosion and the siltation of streams. They also act as a filter for water which is recharging ground water reservoirs. Trees serve as a buffer to noise and air pollution. They are also frequently used to provide a visual screen. Trees slow down runoff and thus allow more water to percolate through to underground reservoirs, which in turn reduces the likelihood of flooding. Finally, trees add diversity to the landscape and increase property values.

Although Haverford Township is almost totally developed, there are several heavily treed areas remaining. These areas are found primarily along Darby and Cobbs Creek and in the

northern section of the Township. The area along the length of Darby Creek in the Township is beautifully wooded, and in some cases, slopes exceed 15%. While most of this land is restricted to parkland and conservation uses, and is therefore protected, there are several privately owned tracts.

Very little of the land adjoining Cobbs Creek is publicly owned. These areas, which include the Gest Tract, Merion Golf Manor, Powder Mill Valley and Fairmount Parks, are the only ones with significant amounts of trees. Farther north, Cobbs Creek is bounded by the East Course of the Merion Golf Club, which affords the trees in the area a temporary protection from development.

Other areas of the Township which have notable tree cover are portions of Hilltop Park, Haverford College, Haverford State Hospital, and Allgates. Of particular importance is the area immediately to the north of Marple Road which is heavily wooded. In addition, the larger estates in the northern section of the Township are, for the most part, well treed. Many of these trees are quite large and very old. Increasingly larger properties in the Township are being subdivided and sold. Special care should be taken to ensure the preservation of trees in this area when the estates are sold for development.

While it is important to protect the remaining large groupings of trees in the Township, it is also necessary to protect individual trees of special value. The Township has a Tree Protection Ordinance which prohibits the removal of any tree

eight inches or larger in diameter, within a specified "tree protection zone," or any tree having a diameter of thirty inches or greater, regardless of location. The ordinance is aimed at retaining as many trees as possible during the development process and at protecting them from mechanical injury. When applying for subdivision and/or land development approval, a developer must indicate all trees having a diameter of eight inches or greater by species, size and condition.

Conclusions

Although the majority of the land in Haverford Township has been developed, there are several natural features remaining which should be preserved for the enjoyment of present and future generations. Since the Township is almost totally developed, there is increasing pressure to develop those lands that were passed over previously, among them steep slopes (>15%) and flood plains.

Probably the most valuable of Haverford's natural features are the stream valleys. These valleys are important not only for their beauty, recreational potential, and drainage functions, but also because the majority of the open land in the Township is located here. These are also the areas of steep slopes and notable tree cover. While the Township's flood plains and trees are protected by ordinance, steep slopes are not. An ordinance should be enacted to protect these highly sensitive areas. In addition, efforts should be made to preserve as much of the land

as possible along the stream corridors as open space. This will be discussed in the Open Space section.



V. THE ECONOMY

V. ECONOMY

Any analysis of the economy of Haverford Township must include an analysis of the entire region. The soundness of the Township's economy depends on two factors: (1) the production capacity of the various manufacturing firms located within the Township, and (2) the income of Township residents, regardless of where they work. (Higher income levels mean greater purchasing power which in turn increases the demand for goods and services, and thereby aids the Township's economy.) This second item is particularly important for Haverford due to the small amount of land in the Township devoted to industrial use.

The majority of the land in Haverford is devoted to residential uses. Township residents commute to other locations in Delaware County and throughout the Delaware Valley region for employment. Thus, trends will be examined for the entire Philadelphia metropolitan region (Chester, Delaware, Bucks, Montgomery, and Philadelphia Counties in Pennsylvania, and Burlington, Camden, and Gloucester Counties in New Jersey) as well as for the Township and Delaware County.

Regional Economy

The Delaware Valley Regional Planning Commission (DVRPC) has predicted a moderate growth in population and employment for the region over the next twenty years. They have determined population and employment targets for the nine county area for the year 2000, based on actual 1980 figures.

TABLE V-1

Regional Population Projections

<u>County</u>	<u>1970</u>	<u>1980</u>	<u>% Change (1970-1980)</u>	<u>2000</u>	<u>% Change ('80-2000)</u>
Bucks	416,000	479,180	15.2	586,000	22.3
Chester	277,700	316,660	14.0	376,000	18.7
Delaware	603,500	555,013	- 8.0	511,000	- 7.9
Montgomery	624,100	643,377	3.1	675,000	4.9
Philadelphia	1,950,000	1,688,210	-13.4	1,500,000	- 9.1
Burlington	323,100	362,542	12.2	453,000	25.0
Camden	456,300	471,650	3.4	508,000	7.7
Gloucester	172,700	199,917	15.8	265,000	32.5
Region	4,832,900	4,716,549	- 2.2	5,200,000	10.3

Source: Delaware Valley Regional Planning Commission

As can be seen in Table V-1, DVRPC is anticipating a 10% growth in population for the region by the year 2000 but growth will be unevenly distributed through the metropolitan area. Although most counties will gain population, Philadelphia and Delaware Counties will lose population, continuing a trend observable since 1980. The greatest growth will occur on the edges of the region, in Bucks, Burlington, Chester, and Gloucester Counties, where more vacant land is available. These counties are, however, more remote from the economic center of the region, downtown Philadelphia. Pennsylvania has slightly different

forecasts but the general trend is similar to DVRPC's. The state's projections show Delaware County by the year 2000, a population of 531,068, a decline of 4.3% from 1980.

TABLE V-2
Regional Employment Targets

<u>County</u>	<u>1970</u>	<u>1980</u>	<u>% Change</u>	<u>2000</u>	<u>% Change ('80-2000)</u>
Bucks	135,300	183,000	35.3	252,000	37.7
Chester	101,900	134,000	31.5	167,000	24.6
Delaware	174,300	198,000	13.6	204,000	3.0
Montgomery	296,000	360,000	21.6	453,000	25.8
Philadelphia	1,032,000	836,000	-19.0	849,000	1.6
Burlington	100,600	132,000	31.2	150,000	13.6
Camden	143,800	184,000	28.0	216,000	17.4
Gloucester	36,900	62,000	68.0	88,000	41.9
Region	2,021,400	2,257,000	11.6	2,379,000	5.4

Source: Delaware Valley Regional Planning Commission

DVRPC is projecting a 5% increase in jobs for the region through the year 2000 but, as with population, there is a wide diversity by county, as shown in Table V-2. All counties will experience some growth but in Delaware and Philadelphia Counties this increase is expected to be modest. They are expected to show an increase of only 3% and 1.6% respectively, while outlying counties experience growth of up to 42% in job opportunities.

DVRPC has also allocated the projected growth in population and employment among the minor civil divisions making up the nine counties. These figures for Haverford and the surrounding municipalities can be found in Table V-3 along with action 1980 figures.

TABLE V-3

Year 2000 Projections for Haverford and the Surrounding Municipalities

<u>Municipality</u>	<u>Population</u>			<u>Employment</u>		
	<u>1980</u>	<u>2000</u>	<u>% Change</u>	<u>1980</u>	<u>2000</u>	<u>% Change</u>
Haverford	52,349	48,500	- 7.4	12,232	13,168	7.7
Radnor	27,676	28,000	1.2	17,390	19,124	9.8
Marple	23,642	23,000	- 2.7	8,464	9,291	9.8
Springfield	25,325	21,300	-15.9	12,397	13,107	1.3
Upper Darby	84,054	70,700	-15.9	21,996	21,062	- 4.2
Lower Merion	59,651	57,100	- 4.3	35,751	40,421	13.1

Source: Delaware Valley Regional Planning Commission

Population in Haverford and its surrounding municipalities is expected to decline through the year 2000 with only Radnor showing a modest gain. Radnor has more vacant land than any of the other adjacent townships. Haverford's projected loss of 7.4% is significant but less than half the decline anticipated in both Springfield and Upper Darby.

On the employment side, Haverford and all nearby townships are forecast to increase their employment bases except for Upper Darby, which continues to decline. Haverford's 12,272 jobs in 1980 are expected to rise by 7.7% to 13,128 in 2000.

Delaware County Economy

Delaware County, of which Haverford is a part, developed very slowly until the introduction of the railroad which spurred rapid migration from the City of Philadelphia to the outlying suburbs. The area along the Delaware River was developed at an early date as it was a prime location for industry. Today the county is highly developed with a density of 3,000 persons per square mile, among the densest counties in the state. As a result, there is relatively little undeveloped land remaining for either residential or industrial expansion, particularly in the southern and eastern portions of the county.

The distribution of employment in the county by sector is shown in Table V-4. Manufacturing once was the leading industry in the county in terms of numbers employed. While manufacturing employment in the county is still strong, employment in this sector of economy stood at 44,800, substantially below the 1968 high of 57,176. Manufacturing is the only sector of the Delaware County economy that is expected to decline through 2000, when employment will drop another 13.6% to 38,700. Manufacturing plays a smaller role in Haverford Township's economy. The Philadelphia Chewing Gum Company on Eagle Road is the largest manufacturing establishment in the Township with a current employment of 250.

TABLE V-4

Delaware County Employment by Sector

<u>Industry</u>	<u>1980</u>	<u>2000</u>	<u>% Change</u>
Total	197,800	204,000	3.1
Agricultural services, forestry, fisheries	1,400	1,500	7.1
Mining	300	400	33.3
Contract Construction	10,000	11,600	14.8
Manufacturing	44,800	38,700	-13.6
Transportation, utilities and communication	7,400	8,300	12.2
Wholesale trade	7,400	8,700	17.6
Retail trade	39,200	41,300	5.4
Finance, insurance and real estate	11,400	12,800	12.3
Services	52,300	55,900	6.9
Government	23,400	24,700	5.6
Military	100	100	0.0

Source: Delaware Valley Regional Planning Commission

The service sector has surpassed manufacturing as the largest component of the county's economy with 55,900 jobs. When combined with its public sector equivalent, government, these service oriented jobs account for nearly 40% of all jobs in Delaware County.

Table V-5 lists major employers in Haverford Township and confirms that, with the exception of Philadelphia Chewing Gum, all of the largest employers in the Township fall into the service and government category.

TABLE V-5Major Employers in Haverford Township (1985)

<u>Establishment</u>	<u>Full-time Employees</u>
Haverford School District	575
Haverford State Hospital	567
Haverford College	419
Philadelphia Chewing Gum Company	250
Haverford Community Hospital	170
Haverford Township	183

Retail Trade

Retail trade is defined as "establishments primarily engaged in selling merchandise to customers for personal, household, or farm use." It is the third largest sector of employment in the county and by 2000, it will pass manufacturing as the second largest component of the economy. Collectively, retail trade plays a major role in providing employment opportunities in the Township, but these are diffused among a large number of relatively small employers. For example, the Clover Store on Township Line Road is one of the largest in the Township but employs only about 35 full-time workers. Ten year retail trends in the Township, shown in Table V-6, show that employment has continued to grow despite a 13% decline in the number of establishments.

TABLE V-6

Retail Trends Haverford Township 1972-1982

	<u>1972</u>	<u>1982</u>	<u>Change</u>
Number of establishments	374	324	- 13.4
Sales (\$000)			
Current \$	\$ 73,358	\$ 126,203	72.0
(Adjusted \$)	\$ 57,762	\$ 45,234	- 21.7
Proprietors and Employees	1,976	2,045	3.5

Source: U. S. Bureau of the Census

As Table V-6 indicates, retail sales in Haverford Township have grown over the past ten years in terms of current dollars, but during the period 1972-1982 that growth has not kept pace with inflation. Adjusted sales declined 21.7% during that period. These figures are presented by type of trade in Table V-7. Here it can be noted that the number of establishments declined in every category. Adjusted sales declined at a faster rate than the number of establishments in two categories for which comparative data was available: apparel/accessory shops and furniture/home furnishing/ equipment stores. The only categories to show an absolute gain in adjusted sales were eating/drinking establishments and drug/proprietary stores.

The largest planned retail area in the Township is the Manoa Shopping Center, a 125,000 sq. ft. community center. Most other retail activity is concentrated in strip commercial developments

principally along Eagle Road and West Chester Pike. A large free standing Clover discount store is located near the intersection of West Chester Pike and Township Line Road. The only significant parcel of vacant commercially zoned land in the Township is an abandoned quarry on Township Line Road now being used as a landfill. It will be unavailable for commercial development for at least ten (10) years. Many Haverford residents patronize retail areas in adjacent municipalities and the regional Granite Run, Springfield Malls, and King of Prussia Malls. A 1977 survey of local residents by the Haverford Township Department of Planning and Development found that 40% of those polled did most of their weekly shopping outside of the Township.

TABLE V-7

Haverford Township Retail Trade by Kind of Business

Kind of Business	1972			1982			% Change # Est.	Adjusted \$
	Number of Establishments	Sales (\$000) Current \$ Adjusted \$		Number of Establishments	Sales (\$000) Current \$ Adjusted \$			
Building Materials, Hardware, Garden Supply, Mobile Home Dealers	17	\$ 3,508	\$ 2,762	7	\$ 4,933	\$ 7,768	-58.8	-36.0
General Merchandise Group Stores	6	1,495	1,177	2	-	-	-66.7	-
Food Stores	47	15,987	12,588	30	23,978	8,594	-36.2	-31.7
Automotive Dealers	14	17,243	13,577	8	27,183	9,743	-42.8	-28.2
Gasoline Service Stations	33	7,640	6,015	23	15,381	5,513	-30.3	- 8.3
Apparel and Accessory Stores	23	6,261	4,929	10	1,865	668	-56.5	-86.4
Furniture, Home Furnishings & Equipment Stores	27	4,246	3,343	23	7,198	2,580	-14.8	-22.8

TABLE V-7 (cont'd.)

Kind of Business	1972			1982			% Change # Est.	Adjusted \$
	Number of Establishments	Sales (\$000) Current \$	Adjusted \$	Number of Establishments	Sales (\$000) Current \$	Adjusted \$		
Eating and drinking places	45	\$ 4,137	\$ 3,257	44	\$ 11,918	\$ 4,272	- 2.2	31.2
Drug and proprietary stores	10	1,518	1,195	6	3,762	1,348	-40.0	12.8
Miscellaneous retail stores	152	11,323	8,915	43	-	-	-71.7	-

Source: 1972 and 1982 Census of Retail Trade

Table V-8 indicates the growth of retail trade for Delaware County, Haverford, and the surrounding townships. The number of establishments declined in the County and in three of the five listed municipalities with Marple and Haverford exceeding the County rate of decline. Radnor and Springfield were the only municipalities to show an increase.

In the number of total establishments, despite gains in sales as expressed in current dollars, only Springfield showed absolute growth in adjusted sales. The decline in Haverford was three times the County's overall rate of decline, showing Haverford's relative loss of strength as a retail center. The largest drop in the area occurred in Upper Darby, which saw a loss in sales volume of 64%, adjusted for inflation. Upper Darby was also the only reported jurisdiction to experience a loss in retail employment.

TABLE V-8

Retail Trade Haverford and Surrounding Municipalities 1972 and 1982

Sales (\$000)

<u>Municipality</u>	<u># of Establishments</u>			<u>1972</u>		<u>1982</u>		<u>% Change Adj.</u>	<u>Paid Employees</u>		
	<u>1972</u>	<u>1982</u>	<u>% Change</u>	<u>Current</u>	<u>Adjusted</u>	<u>Current</u>	<u>Adjusted</u>		<u>1972</u>	<u>1982</u>	<u>% Change</u>
				<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>%</u>			
Delaware County	4,536	4,083	-10.0	\$1,266,576	\$997,303	\$2,582,339	\$925,569	- 7.2	29,281	34,142	16.6
Haverford Twp.	374	324	-13.4	73,358	57,762	126,023	45,234	-21.7	1,704	1,860	9.1
Marple Twp.	200	156	-22.0	67,147	52,871	157,716	56,533	6.9	1,425	1,838	29.0
Radnor Twp.	305	332	8.9	122,046	96,099	207,053	74,212	-22.8	2,729	3,380	23.9
Springfield Twp.	266	330	24.1	164,709	129,692	403,246	144,583	11.4	3,645	5,157	41.5
Upper Darby Twp.	705	633	-10.2	209,802	165,198	363,672	59,211	-64.2	4,848	4,190	-13.6

Source: U. S. Census of Retail Trade, 1972 and 1982

Wholesale Trade

Wholesale trade includes establishments or places of business primarily engaged in selling merchandise to retailers; to institutional, industrial, commercial, and professional users; or to other wholesalers; or in negotiating as agents in buying merchandise for or selling merchandise to such persons or companies.

Table V-9 shows the change in wholesale trade during the ten-year period from 1972 to 1982 for the state of Pennsylvania, selected counties and townships in the Philadelphia metropolitan area.

These figures indicate significant growth in adjusted sales for both Haverford and Springfield Townships although it is interesting to note that there appears to be little relationship between the increased sales and levels of employment. The number of establishments remained approximately the same in both municipalities but sales increased by 112% and 353% respectively. During the period, employment increased by only 24% in Haverford and 18% in Springfield. By contrast, Marple saw strong increases in both the number of establishments and employment but adjusted sales actually fell by 8%. Nonetheless, these communities had relatively small volumes of wholesale trade sales, accounting for 17% of the county total. Radnor Township had less than half the total number of establishments in Haverford, Marple and Springfield but its sales were more than double the combined sales of the other three townships.

Philadelphia's adjusted sales dropped by 30% during the period 1972-82 while Delaware County's sales increased by 299. In terms of volume, however, Delaware County lags well behind both Philadelphia and Montgomery Counties.

TABLE V-9
Wholesale Trade 1972 and 1982

	<u># of Establishments</u>			<u>Sales (\$000)</u>					<u>% of Employees</u>		
	<u>1972</u>	<u>1982</u>	<u>% Change</u>	<u>1972</u> <u>Current \$</u>	<u>1982</u> <u>Adjusted \$</u>	<u>1972</u> <u>Current \$</u>	<u>1982</u> <u>Adjusted \$</u>	<u>Adj. Sales</u> <u>% Change</u>	<u>1972</u>	<u>1982</u>	<u>% Change</u>
Pennsylvania	17,731	17,873	0.2	\$32,374,007	\$25,491,344	\$78,446,663	\$28,117,083	10.3	206,144	221,346	7.4
Phila. Co.	3,276	2,284	-30.3	7,966,166	6,272,571	12,306,497	4,410,931	-29.7	49,388	36,911	-25.2
Delaware Co.	746	796	6.7	1,307,436	1,029,477	3,713,291	1,330,929	29.3	6,630	7,911	19.3
Montgomery Co.	1,672	1,976	18.2	4,668,139	3,675,700	10,479,819	3,756,208	2.2	18,392	22,314	21.3
Laverford	78	78	0	60,524	47,656	281,619	100,939	111.8	360	447	24.2
Marple	53	72	35.9	88,461	49,796	178,634	64,027	- 8.3	534	836	56.5
Radnor	94	107	13.8	481,599	379,211	1,520,434	544,958	43.7	916	1,420	55.2
Springfield	30	31	3.3	18,611	14,654	185,213	66,385	353.0	135	149	17.8
Upper Darby	103	96	- 6.9	141,913	111,742	156,343	56,037	-49.9	830	708	-14.7

Source: U. S. Bureau of the Census, Wholesale Trade 1972 and 1982

Labor Force Characteristics

The second major factor in the Township's economy is its labor force. The occupations of Township residents effect the economic structure of the Township due to the income earned and, consequently, expended for goods and services in the Township. The inter-relationship of the Township's labor force as an income producing and goods and services consuming group, together with the development of commercial activity within and without the Township, is a crucial variable in any analysis of existing and projected employment, income and/or development in Haverford Township. An examination of the labor force will serve to underscore its relative importance.

The Pennsylvania Department of Labor and Industry, Bureau of Employment Security defines labor force as: "All persons 16 years of age and over residing within a specific geographic area who are classified as employed, unemployed and seeking employment, or involved in a labor dispute. It consists of both the civilian labor force and the armed forces."¹ For the purpose of this section, however, labor force will include only the civilian labor force.

Table V-10 illustrates the composition of Haverford's labor force by industry for 1970 and 1980. It reflects the occupation of Haverford residents rather than the number of employment opportunities in the Township.

In both 1970 and 1980, retail trade employs the largest portion of the work force but it was exceeded by the sum of professional workers in the categories of Health, Educational and other services. By 1980

¹Guide to Labor Market Terminology, Commonwealth of Pa., Dept. of Labor and Industry, Bureau of Employment Security, p. 4.

these three categories accounted for 27% of all Haverford workers. Most notable is the growth in health services, which increased by 75% over the 1970 level.

Strong proportional growth was also experienced by those employed in business and repair services, up 57%.

By contrast, the manufacturing sector continued to decline, reflecting the county-wide trend. Declines were also noted in the communications/ utility/sanitary service sector and among "other" industries. The latter primarily reflects those employed in agriculture and, although the percentage group is large, the total number employed is less than 1% and reflects the near total development of Haverford and the surrounding area.

Between 1970 and 1980 the Haverford Township labor force increased from 21,421 to 23,557, a 10% increase. This increase occurred during a period when the Township's overall population declined by 8%. This underscores the importance of second wage earners in households. 32% of all Haverford women with children under 6 years of age were in the labor force and that percentage increases to 56% of local women with children aged 6 to 17 years old.

TABLE V-10

Labor Force by Industry for Haverford Township

<u>Industry</u>	<u>1970</u>	<u>% of Total</u>	<u>1980</u>	<u>% of Total</u>	<u>% Change</u>
Construction	1,254	5.8	1,332	5.7	6.2
Manufacturing (Total)	3,859	18.0	3,313	7.2	-14.1
Durable Goods	1,971	9.2	1,610	6.8	-18.3
Transportation	588	2.7	883	3.3	50.2
Communications, utilities and sanitary services	930	4.3	784	3.3	-15.7
Wholesale Trade	1,149	5.3	1,302	5.5	14.9
Retail Trade	4,029	18.8	4,386	18.6	8.9
Finance, insurance and real estate	1,737	8.1	1,854	7.9	6.7
Business & repair services	892	4.1	1,403	6.0	57.3
Personal Entertainment and recreation	703	3.2	734	3.1	4.4
Professional service					
Health services	1,278	5.9	2,233	9.5	74.7
Educational services	2,399	11.1	2,674	11.4	11.4
Other professional and related services	1,284	5.9	1,488	6.3	15.9
Public Administration	948	4.4	983	4.2	3.7
Other Industries	371	1.7	188	0.8	-49.3
Total	21,421		23,557		10.0

Source: U. S. Bureau of the Census,
Labor Force Characteristics of the
Population 1970 and 1980.

TABLE V-111980 Labor Force by Occupation for Haverford Township

	<u>Number</u>	<u>Percent</u>
Managerial, Professional and Specialty Occupations		
Executive, Administration and Management	3,599	15.3
Professional Specialty	4,505	19.1
Technical and Related Support	677	2.9
Sales Occupation	3,213	13.6
Administrative Support including Clerical	4,753	20.2
Service Occupations		
Private Household Service	108	0.4
Protective Services	324	1.3
Other Services	1,894	8.0
Farming, Fishing and Forestry	208	0.9
Precision Production		
Craft and Repair	2,534	10.7
Operators, Fabricators, Machine Operators, Assemblers & Inspectors	682	2.9
Transportation	510	2.2
Handlers, Cleaners, Laborers	550	2.3
Total	23,557	

Source: U. S. Bureau of the Census

Table V-11 lists the occupational breakdown of the Township's labor force in 1980. The greatest number of Township residents were employed in professional specialties (19.9%) followed closely by executive, management and administrative workers. Together, these two categories accounted for one in three of every Haverford worker. Other occupations with a large number of Township residents were sales workers and administrative support personnel.

Commuting Patterns

The place of work of Haverford Township's labor force connotes several things. First, it gives an indication of the center of economic activity in the region. Secondly, it denotes the distance one is willing to travel for employment and gives insights into commutation patterns.

Table V-12 illustrates the place of work of Haverford Township residents in 1970 and 1980. In 1970, 18,612 (96.5%) of the Township's work force was employed within the Philadelphia SMSA. Of these the greatest number 7,205 (37.3%) were employed in Delaware County. The second most numerous place of employment was Philadelphia with 6,943 persons (36%). The balance of the metropolitan area employed 4,464 (23.1%). 3.5% of the work force was employed outside of the SMSA.

In 1980, the percentage of Township residents working within the SMSA increased to 97.2%. The number of Township residents employed in Delaware County increased to 9,033 or 42% of the total while commutation to Philadelphia declined as a proportion of all workers to 31% (6,674). About 24% of the remaining labor force commuted to other parts of the region, including 641 workers who were employed out of state.

TABLE V-12

Place of Work of Haverford Township Labor Force

<u>Place of Work</u>	<u>1970</u>	<u>% of Reported Total</u>	<u>1980</u>	<u>% of Total</u>	<u>% Change 70-80</u>
Delaware County	7,205	37.3	9,033	42.2	25.4
Philadelphia County	6,943	36.0	6,674	31.2	- 3.9
Balance of SMSA	4,464	23.1	5,120	23.9	14.7
Outside of State ¹	-	-	641	-	-
Outside SMSA	682	3.5	598	2.8	-12.3
Not reported	1,596	-	1,827	-	-
Total reported	19,294		21,425		11.0

¹There is some duplication in these numbers for workers employed in Burlington, Camden and Gloucester Counties.

Source: U. S. Bureau of the Census, 1970, 1980.

TABLE V-13Means of Transportation to Work - Haverford Township Labor Force

<u>Transporation</u>	<u>1970</u>	<u>% of Total</u>	<u>1980</u>	<u>% of Total</u>	<u>% Change 60-80</u>
Car, Truck or Van	15,594	37.3	18,260	79.3	17.1
Public Transportation	3,469	16.5	3,055	13.3	-11.9
Walk to work	1,012	4.8	1,066	4.6	5.3
Other means	418	2.0	309	1.3	-26.1
Worked at home	442	2.1	327	1.4	-26.0
Total reported ¹	20,935		23,017		

¹The total number of workers in the total workers category does not equal the total labor force in the Township due to the number of workers who were not noted by the Census Bureau.

Source: U. S. Bureau of the Census,
Census population 1970 and 1980

Table V-13 indicates that in both 1970 and 1980 the majority of Township residents (75% and 79%) commuted to work by automobile, truck or van. Only 17% of Township residents in 1970 and 13% in 1980 used public transportation to get to work. Roughly 5% walked to work each year.

Of those using private vehicles, 18% of the total (4,160) were involved in car pools. The proportion of workers using private vehicles increased by 17% in the past decade while public transit usage declined by 12%

Interestingly, contrary to some observed national trends, the percentage of Haverford workers employed at home dropped by 26% during the past decade and accounts for only 1.4% of the total work force.

TABLE V-14
1980 Travel Time to Work for
Haverford Residents in Minutes

<u>Minutes</u>	<u>Workers</u>	<u>Cumulative %</u>
Less than 5	604	2.6
5 to 9	2,304	12.7
10 to 14	2,812	25.0
15 to 19	2,890	37.6
20 to 29	4,340	56.6
39 to 44	5,558	80.1
45 to 59	2,642	92.5
60 or more	1,725	100.0

Source: U. S. Bureau of the Census

Table V-14 displays the average commute for Haverford workers. It is generally assumed that a 20 to 30 minute commute to work is acceptable but only 38% of residents meet the first standard and only 57% of workers meet the second. That means that 43% of workers must commute more than a half-hour to work each day. Some workers will do this by choice but it may be an indication for others that they cannot find affordable housing closer to their place of employment. This is indicative of a regional housing concern.