

HILLSBOROUGH TOWNSHIP

MASTER PLAN

PART B

- SECTION 3 - HOUSING PLAN ELEMENT
- SECTION 4 - CIRCULATION PLAN ELEMENT
- SECTION 5 - UTILITY SERVICE PLAN ELEMENT
- SECTION 6 - COMMUNITY FACILITIES PLAN ELEMENT
- SECTION 7 - RECREATION PLAN ELEMENT
- SECTION 8 - CONSERVATION PLAN ELEMENT
- SECTION 9 - ECONOMIC PLAN ELEMENT
- SECTION 10 - HISTORIC PRESERVATION PLAN ELEMENT
- SECTION 11 - RECYCLING PLAN ELEMENT
- SECTION 12 - APPENDICES AND SOURCES

HOUSING
PLAN ELEMENT
SECTION 3

HOUSING PLAN ELEMENT

TABLE OF CONTENTS

3-1	INTRODUCTION.....	1
3-2	POPULATION.....	1
3-3	EMPLOYMENT.....	3
3-4	CURRENT TRENDS.....	3
3-5	AFFORDABLE HOUSING.....	6

HOUSING PLAN ELEMENT

3-1 INTRODUCTION

In conjunction with the Land Use Element, the Housing Plan intends to provide the opportunity for a mixture of housing types, options in the site layout of major housing developments, and the opportunity to provide a variety of housing to serve different market needs.

3-2 POPULATION

Hillsborough is growing at a faster rate than Somerset County, which is growing at a faster rate than the State as a whole. Somerset County has been a rapidly growing suburban ring around the New York Metropolitan area due in part to improved highway access to the metropolitan area. There is evidence the average family size is dropping in all areas of the State and, in Hillsborough particularly. In general, apartments and townhouses can be expected to attract smaller families. Also, the household size in the single family home has been declining due to lower birth rates in recent years. Both these conditions are influencing the Hillsborough population and, because of the rapid development in recent years, are expected to result in significantly different population characteristics by the year 2000.

Since 1970, Hillsborough reflected the type of age distribution typical for areas with recent development. These areas attract the more mobile families whose heads were 25-44 years old and whose children were in the under 14 age group. These were the only age groups in which Hillsborough exceeded the percentages shown at the County and State level. The housing needs of families with household heads who are 65 and over are quite different from those with younger household heads. The very young and the very old have smaller housing unit size requirements while those in the 45-64 age group generally find themselves in a transitional

if the birth rate increases, as many think it will, the impact on the Township population could be significant because of the large number of young couples in child bearing years and because of the growing base of single family homes with capacity to house growing families.

3-3 EMPLOYMENT

Hillsborough is not recognized as an employment center. Even though it has experienced very rapid housing development, new industrial and other job-generating uses have not yet materialized. In large part this is a reflection of the absence of regional highway improvements. The pattern of the type of jobs occupied by residents of the Township, wherever the jobs were located, indicated 82 percent were wage and salaried employees of private industry, another 4 percent were either self-employed or unpaid family workers, and 13 percent were government employees.

As to the type of industry in which people were employed, almost two-thirds were employed in manufacturing (28%), education (10%), retail trade (8%), communications (8%), and business and repair services (8%). With finance/insurance/real estate (6%) and health related professions (6%) added, three-quarters of the jobs were represented.

3-4 CURRENT TRENDS

A more complete picture of the development trends in Hillsborough includes the total housing market. The Township's growth has included a mixture of unit types and is projected to continue to permit flexibility in unit types and design. The residential areas shown in the Long-Range Plan provide capacity for another 5,070 units generally east of East Mountain Road on properties that are neither developed nor approved for development.

Residential uses represent about 3,100 acres or roughly 9 percent of the total Township. While single family dwellings dominate the acreage devoted to all residential types, garden apartments, townhouses, and the medium-rise units are an increasing factor in the

units in the central area of the Township. Housing types include mid-rise apartments, garden apartments, townhouses, patio houses, small lot single family houses, and cluster designs, as well as large residential lots.

There are also a wide range of single family lot sizes. One concentration of the small lots is in Flagtown. This subdivision was originally designed in the grid street pattern with 25 foot lots. However, most homes are on 50 and 75 foot lots, with many lots 100 feet wide or greater. Streets in this subdivision are narrow, some unpaved, and a portion are still undeveloped. Most single family lots created in recent years have lots ranging from one-half to one acre in size. Since the adoption of the "cluster" provisions in 1975, smaller lots with common open space have emerged. The remaining farms and isolated lots in rural areas generally have lots larger than 1-3 acres.

Since family size so strongly relates to housing unit needs, a comparison can be drawn between family size and the size of the housing unit needed to satisfy its basic housing requirements. In general, one person families will look for efficiency or one bedroom units, two person families will prefer two bedroom units, but in situations of limited choice or on a temporary basis will be satisfied with one bedroom units. Three and four person families will generally be satisfied with three bedroom units while the families with five or more persons will require housing with four or more bedrooms. Since families of 2-4 persons in New Jersey represented almost two-thirds of the State population, the strongest demand based on family size is for two and three bedroom units. As birth rates continue to decline and family sizes become smaller, it is expected that the demand for these medium sized housing units will increase.

In Hillsborough, virtually all housing production in the past 30 years was in the form of single family dwellings. Multi-family housing is a recent phenomenon. For example, 1972 and 1973 represented the highest levels of housing production to that date in the Township. More building permits were authorized

addition, the Township since 1970 has had 1,173 single family homes occupied with an estimated additional 1,913 having municipal approval and pending construction.

It should also be pointed out that the Tri-State Regional Planning Commission prepared a report entitled People, Dwellings and Neighborhoods which included recommendations for low and moderate income housing in the New York Metropolitan Area. In the case of Tri-State, there is a more direct policy of encouraging this housing in the urban centers where the need, mass transit and job concentrations exist. New Jersey is identified for 22 percent of the region's total allocation for lower-income households requiring assistance for the period 1975-2000. Somerset County is identified with less than 1 percent of the region's allocated 22,111 units over the 30 year period 1970-2000, or 737 units per year - 3 times the Tri-State projection. Since 1973, the year the Township received its first multi-family project, the Township has averaged 338 multi-family units being occupied each year which is 1.4 times the Tri-State's allocation for the entire Somerset County.

In 1986, the Township adopted an amendment to the Housing Element of its Master Plan to comply with the requirements of the Fair Housing Act as well as the regulations of the Council on Affordable Housing (COAH).

It is the intent of the program established in that amendment to provide for rehabilitation of the Township's indigenous housing units as well as funding for the remainder of the Township's fair share. The funding is accommodated through modest density bonuses to developers who already have or are pursuing plan approvals. The concept is to allow a few additional dwelling units or additional commercial/industrial square footage in developments having or pursuing plan approvals. The additional units or square footage in developments having plan approvals already will provide major cash contributions in a reasonably short time

D. Unit Subsidy Program

The Unit Subsidy Program is similar to the Mortgage Subsidy Program in many respects except in the Unit Subsidy Program, the subsidy is given to the developer so that the units may be more accessible to lower income households.

E. Accessory Housing Program

The concept of Hillsborough having the resources within its borders to effectuate a responsive "affordable" housing program applies also to an accessory housing program. Accessory housing units can be expected to be 700 to 800 square feet in size and no more than one bedroom. The intent of the program would be to make these units low income, preferably senior citizen accessory housing units. Thus the size of the unit and the tenant characteristics of retired persons equates to fewer people, fewer cars, and less parking needs. Considering that these units will be created in existing single family neighborhoods, gearing the housing to these characteristics is appropriate.

F. Regional Contribution Agreement (RCA)

From a planning standpoint, there are a number of negative impacts (environmental, traffic, support services, education, water and sewer) that have and will continue to result if the rapid pace of development continues. For that reason, Hillsborough's fair share plan attempts to make maximum use of existing resources rather than add even more high density development in order to create its fair share under the more recent COAH regulations.

With the possibility existing to mix housing types such as apartments, townhouses, patio homes and zero lot line designs, and including cluster provisions and transfer of development credit options, the Township has adequately provided the opportunity to meet its share of the regional housing needs. In fact, it has

CIRCULATION
PLAN ELEMENT
SECTION 4

CIRCULATION PLAN ELEMENT

TABLE OF CONTENTS

4-1	INTRODUCTION.....	1
4-2	ROAD SURVEY.....	1
4-3	SIGNS, CURB-CUTS, PARKING, AND SIGNALS.....	4
4-4	MASS TRANSIT.....	6
4-5	CIRCULATION PLAN.....	9

PLATES

PLATE 1	CIRCULATION PLAN.....	18
---------	-----------------------	----

CIRCULATION PLAN ELEMENT

4-1 INTRODUCTION

Hillsborough is traversed by three railroads, two overhead transmission lines, and two underground pipelines. About two-thirds its boundary are rivers. The Sourland Mountain is in the southwest corner. All these items have an impact on the street system due to the limited number of crossings. For example, there are only 25 locations where streets are able to cross the railroads, 9 river crossings (with 3 others in Manville and Millstone), and 2 mountain crossings. Of the railroad crossings, 14 are grade crossings. Several cross at or near a curve while others have poor visibility due to vegetation or their location at the crest of a hill. As with many old railroad bridges, the bridges in Hillsborough have visibility restricting characteristics such as being narrowness, sharp crests on overpasses, and reverse curves at either end of underpasses. With continued development and if rail traffic increases, the existing grade crossings on arterial streets (and possibly collector streets at a later date) will need evaluating for possible grade-separated crossings. The existing grade separated crossings should be widened and flattened to improve visibility.

4-2 ROAD SURVEY

A field survey located 86 narrow bridges and/or culverts throughout the Township as shown in the 1975 Master Plan. These had a variety of widths, but the speed of traffic, road alignment, and width of the roadway at these points were sufficient to cause a notation during the survey. While some of the conditions have been corrected since the original survey, others have not. The replacement or widening of these structures should continue to be included in future road projects. Six of the above locations are the grade separated railroad crossings. Eight others are bridges exiting the northern and eastern boundaries of the Township. Six of these cross the South Branch Raritan River, one crosses the Raritan River, the other

The residential population growth and an increase in vehicular traffic during the past 20 years have severely taxed the available services and facilities of the Township. These factors have also exceeded the capacity of certain aspects of the Township's infrastructure which is not under the control of the Township; e.g., County bridges, State Route 206, and County roads. While some of these issues related to continued growth are outside the authority of the Township, the rate and levels of further growth fall within the context of the Municipal Land Use Law where Hillsborough has some level of control and responsibility. It is imperative, that the Township exercise its responsibility in guiding the future rate and levels of growth so the now inadequate infrastructure can be expanded and improved in a coordinated and fiscally responsible manner.

The Circulation Plan therefore anticipates road improvements that not only increase the capacity of Route 206, but also allows dispersal of traffic within the Township and anticipates adding two additional major exits - West County Drive to aid northbound traffic; the Intramunicipal Access Highway to aid north and eastbound traffic, but with another interchange besides Amwell Road. The Auten Loop and the Millstone/River Road By-Pass are also important to increasing the level of service of Route 206. They will serve to disperse local traffic to alternate, major routes within the Township thereby allowing a dualization of Route 206.

A staged plan is necessary to address present road capacities and the deterioration of the transportation system which has resulted from the existing level of development. The plan should set forth both the ultimate intensity of development along with road improvements that must occur before further increased levels of development are permitted.

The relationships and frequency of these characteristics combine together to create an overall condition requiring action. An isolated problem can be acceptable in the rural area of the Township if the condition is not too severe and the traffic volumes,

The number of access points to Route 206 is numerous and uncontrolled. They have contributed to accidents by poor design and the sudden turning movements they create. In 1978 there were 232 access drives to Route 206. Five were open curb-cuts where parked vehicles could back onto Route 206 directly from the parking space. All five were located in high accident areas. In addition, there were 27 street intersections for a total of 259 "intersections" with Route 206.

South of Amwell Road, the general absence of development has kept the number of intersections to a minimum. North of Amwell Road, the intensity of development creates a confusing maze of curb-cuts and turning movements. Overall, the design and condition of access drives were poor. There are narrow and deteriorating shoulders so vehicles must decelerate or accelerate in the traffic lanes. Several unpaved driveways had ruts along the roadway creating a significant bump which the vehicles had to negotiate.

A review of the 74 non-residential parking facilities along Route 206 revealed a total of almost 2,500 parking spaces in 1978. About one-quarter of the spaces were considered in poor condition and about half the remainder were considered only average. The poor conditions were mostly the result of unpaved lots and/or the poor condition of the driveway access, either or both of which were rutted due to previous muddy conditions, poor drainage, overgrown weeds, and undesirable locations. In total, the 74 parking lots averaged 33.6 spaces per lot. Quite apparent are the frequent driveway interruptions, inefficiency, and hazards due to the development of small lot, strip frontage development with individual access points. Numerous driveway locations inflict additional points where turning movements occur along the highway. By not coordinating adjoining lots with on-site connections, any customer desiring to visit more than one location along the highway is forced to reenter Route 206 adding artificial traffic to the highway. The connection of adjoining commercial and office parking lots should be encouraged.

act as a buffer while offering the opportunity to use the rail line for shipping. However, during the land use survey it appeared many industrial uses do not use the railroads. Instead they rely on highway transportation. The land use pattern itself indicates considerable vacant land along the railroads indicating the availability of rail service alone has not been sufficient to precipitate development.

The Reading Railroad, however, also provides passenger service. The service is limited to morning trains leaving Belle Mead at 7:34 and 8:38 a.m. and arriving in Newark in about an hour. Connections to New York are via both PATH (to the World Trade Center and downtown) and the Penn Central Railroad (to Penn Station and midtown). The afternoon trains from Newark arrive at Belle Mead at 5:36 and 6:27 p.m. In addition, the Central Railroad of New Jersey from either the Raritan or Somerville stations provides service to Newark. At Newark the same connections via either PATH or Penn Central are available into New York City. There are twenty-two trains a day from Somerville to Newark. Of these, eight leave between 6:00 and 9:00 a.m. The reverse flow (Newark to Somerville) has twenty-three trains per day with nine leaving Newark between 4:30 and 7:30 p.m. The trip is between an hour and fifteen minutes and an hour and forty minutes, depending on other stops. Other major rail service is available via Amtrak at the Park and Ride facility in New Brunswick. Equally accessible is the Central Railroad to New Jersey service in Somerville.

The most convenient bus service is commuter service to New York from Fire Company #2 opposite the Cost Cutters. Additional service exists from either Somerville or Manville with trips to New York City and New Brunswick. Most trips to New York are from 1.25 to 1.75 hours. Limited bus service is available into New Brunswick from East Millstone by Suburban Transit.

In general, the availability of mass transit is nearby, but not convenient enough to be exceptionally attractive. With continued population growth, and an increasing emphasis on the use of mass transit, it is

- 4) A relatively short travel distance between the two trip ends. Bus service is more effected by this consideration than are rail rapid transit or commuter rail service. The further one has to travel, the less likely he is to use the bus. The report indicates that bus utilization begins to break down after 1 mile, e.g., at 3 miles it is only 28-39% of what it is at 1 mile and at 5 miles is only 12-20%.

4-5 CIRCULATION PLAN

The most significant modification in this updated plan as shown on Plate 1, Circulation Plan, is the most extensive realignment of Route 206 plus the completion of the Millstone/River Road By-Pass north to Route 206 and northeast to re-connect to River Road just south of Manville. The result has been to coordinate the road proposals with the Reading Railroad corridor and the Township's expressed intent to encourage industrial development to balance job opportunities with its rapidly growing residential base.

With regard to Route 206, two alternatives appear logical. This Plan recommends the alternative considered to do the most appropriate job in light of all conditions. One alternative for improvements to the existing Route 206 would include such things as centerline dividers, widening the pavement to four lanes plus shoulders, limiting access, and control long left-turn movements. These would improve conditions on the highway, but would require either expensive acquisition of many established businesses and/or the retention of strip commercial patterns with unlimited access to the highway. Unlimited access in particular is not considered appropriate for a highway that is growing in both regional and local transportation importance.

The second alternative recommends a Route 206 Freeway beginning in Montgomery Township along a new alignment until rejoining the existing Route 206 at Old Somerville Road. From Montgomery Township it is recommended the highway either merge with the I-95

Millstone/River Road By-Pass north to provide direct access to Route 206 and to provide a connection northeast to re-join River Road just south of Manville. The present traffic volume on Millstone/River Road has an adverse impact is at variance with the State's and Township's intended purpose of preserving this area. It is the goal of the Township that the Millstone River Road corridor be preserved and that it neither be widened nor straightened. The Township encourages Somerset County to limit vehicular access along the roadway. It is the Township's goal to promote the views and vistas of the Millstone Valley.

The Millstone River Road By-Pass, more commonly known as Amsterdam Drive, runs North/South from Hillsborough Road to Hamilton Road by way of intersection with "Corporate Way" just south of Hamilton Road. Due to environmental restraints, flood free improvement of Sunnymeade Road is not possible and a more effective northerly link via Corporate Way to Millstone River Road is now envisioned. In this manner the traffic from Amsterdam Drive will re-join River Road just south of Manville. The road is envisioned as a major North/South collector for residents of the southeast portion of the Township and will help equalize North/South traffic in that area, providing relief for South Woods Road and existing Millstone River Road. This is consistent with the State's and Township's intended purpose of preserving the Millstone River Historic and Scenic Corridors, eliminating the need for realignment and widening of Millstone River Road.

In order to protect and preserve the quality of life for those existing and proposed residents along the intended corridor, the following design standards have been developed with the assistance of residents and the Somerset County Engineer's Office:

1. The roadway will have a somewhat serpentine alignment relying as much as possible on a 900 foot radius. This is both the minimum acceptable design radius and maximum desirable radius.
2. The 70 foot wide Right-Of-Way will be bounded on both sides by minimum 30 foot conservation easements.

206 and provide a direct connection east to the Millstone/River Road By-Pass for residents living in the southeast corner. With the dominant traffic pattern of residents being to areas north and east of the Township, this convenient dispersal of traffic should alleviate some of the congested conditions along the existing Route 206. Further, when new bridges across the Millstone River are constructed and connected to improved roads in the Township, ingress and egress across the Township's eastern boundary will be markedly improved.

The Circulation Plan also shows the re-aligned Amwell Road west of Beekman Lane as established in the 1975 Master Plan and as currently being implemented by the County and developers. In this same area, this plan retains the 1975 proposal to have Beekman Lane connected to Triangle Road then east across Route 206 to Falcon Road and into Manville in a combination of new road alignments, intersection re-alignments, and improved portions of existing to create an easier east/west function in this portion of the Township.

Other improvements are shown on Mountain View Road to provide a connection between Route 206 and the County's proposed West County Drive. The jog in Mountain View Road is recommended to be eliminated. In addition, it is recommended Mountain View Road be extended east across Route 206 to tie into the Route 206 Freeway, or if the Freeway is located east of the railroad, then to tie into a proposed "industrial road" that would serve the interior of the industrial park.

Hillsborough Road is shown as an east/west collector road due to the need for a major east/west highway serving the southeast residential area. In order for this road to perform its function properly, the overpass at the railroad must be improved. At its eastern end, Hillsborough Road is realigned to implement the County Circulation Plan for a new Millstone River crossing and to provide a proper intersection with the proposed Millstone/River Road By-Pass.

Also in this southeast area, Willow Road is classified as a collector road in view of its direct access to Amwell Road, the proposed transportation center, Auten

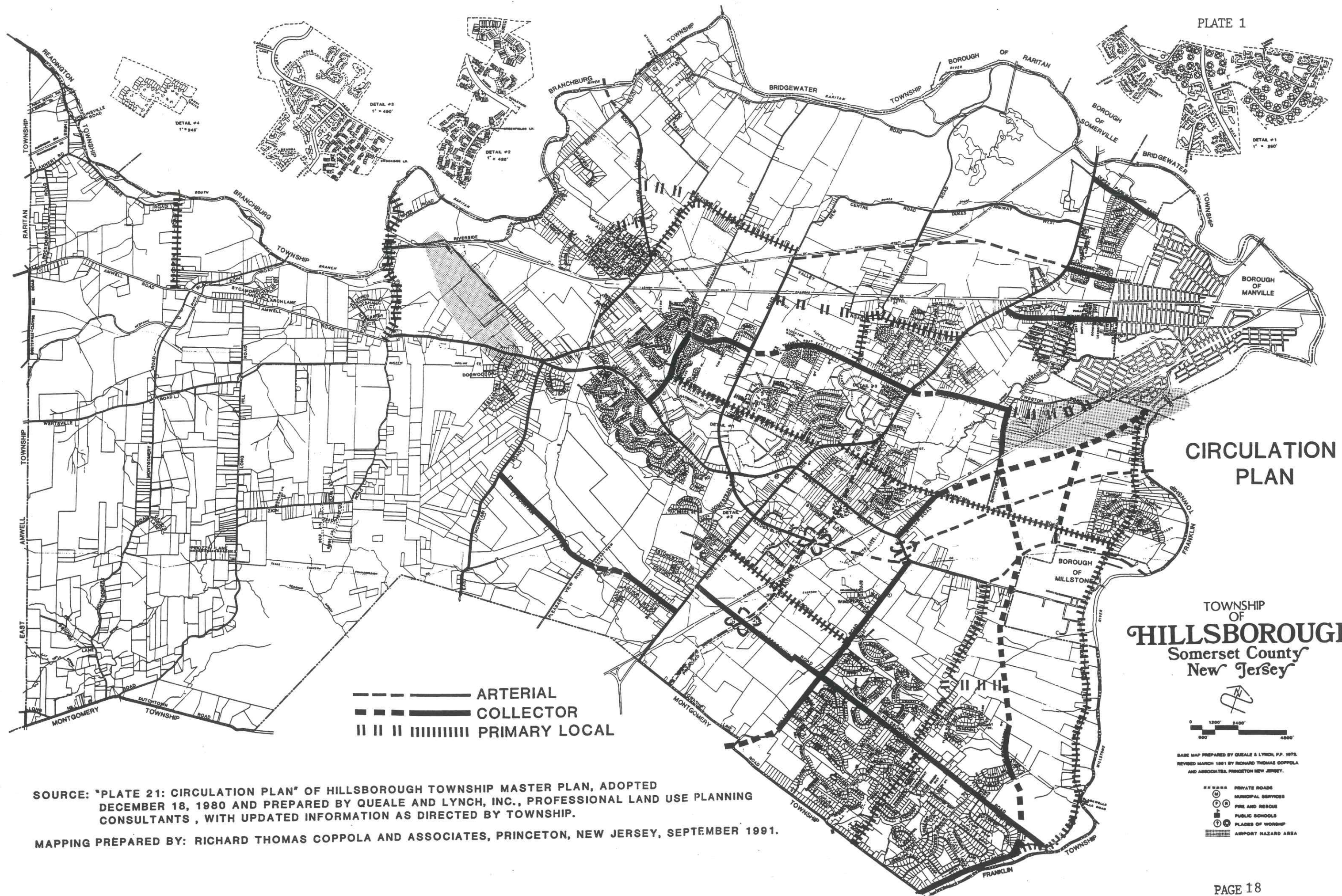
Loop Road is connected from Route 206 at Brook's Boulevard west to the existing Auten Road, Dukes Parkway West should be considered for vacation. The result will not only improve the preserve, but the Auten Loop Road will have better design criteria allowing more convenient and safer traffic flow.

The arterial street system is recommended to contain four lanes of moving traffic and two additional lanes as shoulders. Where possible, median strips are advisable. There should also be a strip at least ten or fifteen feet wide outside both sides of the cartway as a possible footpath, separate bike path, and/or utility corridor. A minimum right-of-way of 80 feet is recommended. All arterial roads should have controlled access in order to minimize the number of points where traffic disruption can occur. Where portions of abutting lands are already developed, little or nothing can be done to remove all the development, but a wider paved width, channelizing traffic functions, controlling left turn locations and similar features should improve the highway's functioning. Where existing alignments are through undeveloped areas, or where there are new alignments, developments should be designed with the least number of access points by using reverse frontage design or by having access to a parallel route or to an existing intersecting road. The purpose of the arterial street is to carry large volumes of traffic, often regional traffic, past a given point at sustained speeds. Intersection designs, radii, grades and other design features should be sufficient for the speed and volume of anticipated traffic. It is a goal of the Master Plan that by having well designed arterial streets, the streets with lower classifications will not have to be over-designed.

Collector streets are proposed to have at least two lanes for moving traffic and two shoulders. At intersections and other more intensely used areas, widened cartways might be necessary to separate traffic functions such as acceleration/deceleration lanes or traffic channelization. There should also be a strip of ten or fifteen feet wide outside each side of the cartway as a possible footpath, separate bike path, and/or utility corridor. A minimum right-of-way of 60 feet is recommended. The basic function of the

streets should be designed to discourage their use as through access streets.

It is Hillsborough's strong position that I-95 be built. Our Township, County and State require the highway to serve the planned industrial zones. These zones are necessary for, and an integral part of, a balanced community.



SOURCE: "PLATE 21: CIRCULATION PLAN" OF HILLSBOROUGH TOWNSHIP MASTER PLAN, ADOPTED DECEMBER 18, 1980 AND PREPARED BY QUEALE AND LYNCH, INC., PROFESSIONAL LAND USE PLANNING CONSULTANTS, WITH UPDATED INFORMATION AS DIRECTED BY TOWNSHIP.

MAPPING PREPARED BY: RICHARD THOMAS COPPOLA AND ASSOCIATES, PRINCETON, NEW JERSEY, SEPTEMBER 1991.

UTILITY SERVICE
PLAN ELEMENT
SECTION 5

UTILITY SERVICE PLAN ELEMENT

TABLE OF CONTENTS

5-1	INTRODUCTION.....	1
5-2	WATER.....	2
5-3	SEWER.....	4

PLATES

PLATE 1	LOCATION OF EXISTING AND PROPOSED WATER LINES.....	6
PLATE 2	LOCATION OF EXISTING AND PROPOSED SEWER FACILITIES.....	7

UTILITY SERVICE PLAN ELEMENT

5-1 INTRODUCTION

The Utility Service Plan identifies the service area of the Township of Hillsborough Municipal Utilities Authority (HTMUA). With some minor exceptions, this service area encompasses the Royce's Brook Drainage Basin. The Royce's Brook Drainage Basin has been and continues to be a logical area within which sewer service, water service, major highways, and existing development patterns combine in a relatively unique pattern to continue to attract additional development. Based on these existing characteristics and the logic of their existence, the Utility Service Plan in particular, and the entire Master Plan in general, continues to focus future development in the remaining areas within the Royce's Brook Drainage Basin.

As part of the Utility Service Plan, priority areas for future development based on sewerage capacity were prepared. The segment of the trunk sewer system between the Public Service Electric and Gas Company power lines and the pumping station on Sunnymead Road will be at capacity when all those units which now have approval are constructed. Those areas which can be developed and have the sewerage flow to the trunk system north of this point can enter the collection system without contributing to further capacity problems in the system. On the other hand, the major growth areas around the central core and the southeast merge into the system at a point which compounds the capacity problems.

Expansion of the collection system will be necessary in order for the Authority to assure sufficient capacity for the additional dwelling units and employment areas. It is expected this can be accommodated by parallel trunk lines and increased capacity at the pumping station. However, until this is completed the priority area for development based on the capacity of the collection system is the area north of Triangle Road.

It is the intent of the Utility Service Plan to concentrate efforts for the extension of the sewer and water lines in logical enlargements of the present system in order to encourage development in the core area along the existing distribution systems. Major extensions through undeveloped land to provide service to peripheral areas or even areas outside the service area of the HTMUA should be discouraged. Not only are costs increased for such long extensions, but the resulting land use pattern compounds the need to provide community-wide services such as police protection, school busing, spot storm water management solutions, and highway improvements to a scattered development pattern.

5-2 WATER

About 12 percent of Hillsborough's land area is provided public water service via the Elizabethtown Water Company. The area served is shown on Plate 1, Location of Existing and Proposed Water Lines. The remaining 88 percent of the Township obtains water from private wells. It is expected that as much as another one-third of the Township will have water service upon ultimate development of the Township. Hillsborough is one of 44 municipalities served by the Elizabethtown Water Company whose sources of water are 140 wells located in various areas throughout the system. The water plant which provides complete treatment for the water supply is located outside the Township. The primary water for use within the Township is residential. The highest use occurs between 6 and 9 p.m. during the summer months. Water flow and pressure is excellent and a water storage tank with a one million gallon capacity is located in neighboring Montgomery Township. It provides not only water storage, but also serves as a back-up supply if there is a break in the system. The system is fairly new and considered completely adequate. As also shown on Plate 1, water service in the northern section of the Township is provided by the Borough of Manville.

Expansion of the service areas are carried out at the expense of private developers. The water company makes no extensions on its own. The company foresees an eventual 16 to 30 inch water main running into Somerville in the Sunnymead Road vicinity to serve the northern portions of the Township. At present the Township is supplied through a 30 inch pipeline which is connected to a 60 inch supply. A 16 inch connection to Franklin Township and another 16 inch connection to Montgomery Township are served off the 30 inch line in Hillsborough.

With respect to the adequacy of Elizabethtown's capacity, regional water supplies are expected to be adequate for the next several decades to the extent that water supply alone would not act a constraint to growth. At current consumption levels, it is not expected that Hillsborough will exceed 1 percent of the Elizabethtown system until about the year 2000. However, there were some important "ifs" behind this conclusion:

- 1) Elizabethtown's safe yield was 132.5 million gallons per day (mgd) in 1976 when they were supplying 127 mgd to their customers. At their present rate of increase, they have already exceeded this 1976 safe yield. The additional supplies were expected from 80 mgd of water from the Spruce Run-Round Valley reservoirs which are currently unallocated. That water is expected to be allocated on a case-by-case basis.
- 2) If Elizabethtown were to receive all 80 mgd from the Spruce Run-Round Valley Reservoir, they would not be expected to intercept their new safe yield level until +/-1994-1997.
- 3) Two other water projects in the Raritan Basin would add another 88 mgd potential to the system, but they are not nearing completion:

- a) Confluence Reservoir 50 Million gallons per day
- b) Six Mile Run Reservoir 38 million gallons per day
- 4) Ground Water Supply - The remainder of Hillsborough not provided with public water draws its water from groundwater aquifers. According to the State and Federal authorities, New Jersey municipalities must begin to manage ground water resources to provide for future water supply needs.

5-3 SEWER

The Hillsborough Municipal Utilities Authority (HMUA) owns, operates and maintains over one hundred miles of sanitary sewer mains which service more than 7,800 homes and businesses in the central and eastern portions of the Township. The core of HMUA's service area is the Royce's Brook drainage basin. In addition, a number of fringe areas have been provided service via individual pumping stations. To date, eight such pumping stations are in operation and several others are in the design stages pending approval.

The system is designed to accommodate a maximum flow rate of six million gallons per day (mgd). In 1990, average daily flows were approximately 2 mgd with the daily peak flow reaching a rate of just over 3 mgd.

In accordance with a contract with the Somerset Raritan Valley Sewerage Authority, the sewerage collected in Hillsborough by the HMUA is conveyed to the regional plant in the Township of Bridgewater for treatment.

The geographic areas which may be serviced and those which may not be are designated on Plate 2, Location of Existing and Proposed Sewer Facilities and is part of the Township's Wastewater Management Plan. Sewer extension permits will not be granted to service areas which are delineated on that map as "Individual On-Site Septic Areas." It should be noted that there are

certain sections of the Township which have been so designated even though development of those areas (in accordance with the present Master Plan) would not be practical without sewers. Providing sewer service in such areas will require amendment to the Wastewater Management Plan.

As can be seen on Plate 2, several sections of the Township are serviced by sewer systems other than the HMUA. These systems include:

- 1) Valley Road Sewerage Co. servicing the Lindstrom Drive and Warner Drive areas.
- 2) Valley Road Sewerage Co. servicing the Surrey Drive/Riverview Terrace area.
- 3) Borough of Manville servicing the Green Hills and Village Green areas.
- 4) U.S. Government owned system servicing the V.A. Depot.
- 5) U.S. Government owned system servicing the G.S.A. Depot.

None of these systems could be utilized to service new or additional customers.

While the HMUA has provided the basic infrastructure which has made sewers possible to large portions of the Township, extensions of the collector system to service new development are the responsibility of the developer. A certain amount of flexibility has been designed into the Authority's collection system to accommodate the demands of a growing community. However, any significant zoning changes, or the proposed addition of any large developments to the system, would warrant an impact evaluation.

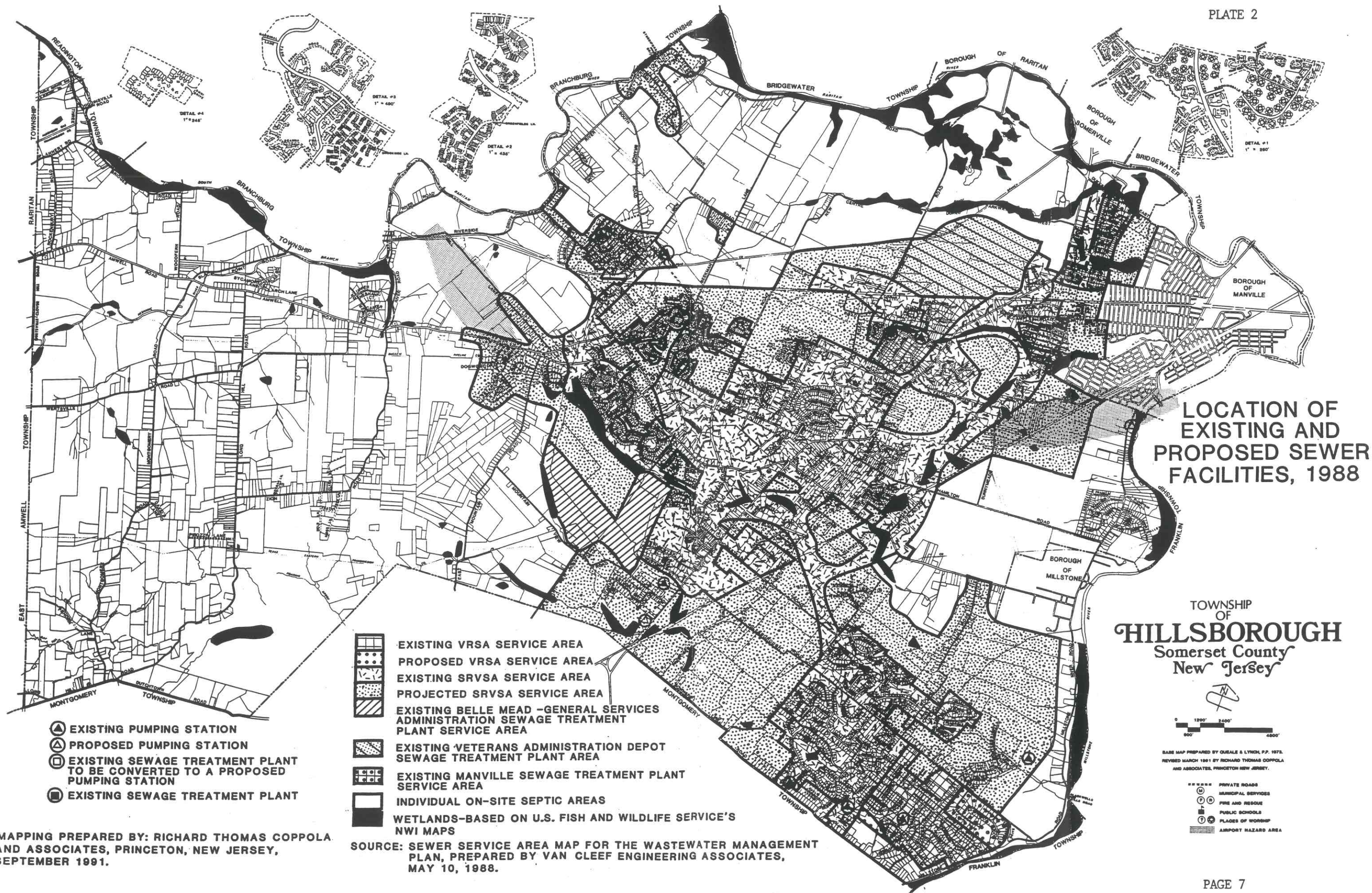


LOCATION OF EXISTING AND
PROPOSED WATER LINES, 1980

— EXISTING
— EXISTING: MANVILLE WATER CO.

TOWNSHIP
OF
HILLSBOROUGH
Somerset County
New Jersey

- 0 1000' 1000' 1000'
- BASE MAP PREPARED BY CHASE & LYNN, P.P. 1976.
REVISED MARCH 1981 BY ROBERT THOMAS GORTON
AND ASSOCIATES, PRINCETON, NEW JERSEY.
- PRIVATE ROADS
— MUNICIPAL SERVICES
— FIRE AND RESCUE
— PUBLIC SCHOOLS
— PLACES OF WORSHIP



COMMUNITY FACILITIES
PLAN ELEMENT
SECTION 6

COMMUNITY FACILITIES PLAN

TABLE OF CONTENTS

6-1	INTRODUCTION.....	1
6-2	POLICE.....	1
6-3	PUBLIC FACILITIES AND OPEN SPACE.....	5
6-4	SCHOOLS.....	6
6-5	LIBRARY.....	10
6-6	FIRE PROTECTION.....	11
6-7	EMERGENCY MEDICAL SERVICES.....	12
6-8	MUNICIPAL ADMINISTRATION.....	12

PLATES

PLATE 1	FACILITIES AND OPEN SPACE PLAN.....	14
PLATE 2	FIRE RESPONSE AREAS.....	15

COMMUNITY FACILITIES PLAN ELEMENT

6-1 INTRODUCTION

The concept of the Community Facilities Plan is to coordinate public services with population growth as it occurs. Facilities such as the main library, municipal building, police headquarters, are suggested in central locations in the Township. The firehouses have a larger service radii than the schools, but nevertheless are dispersed to be of primary service to certain areas. The park areas are less specific because it is contemplated that as development occurs, cluster and planned unit development concepts will be implemented so critical areas and other lands will be generated and set aside to serve public/recreational uses. This will allow open space to be an integral part of the design of new developments with maximum latitude allowed for the type of facility and the ability to coordinate the new facilities with other facilities in the Township. Health services are not shown, but a medical center centrally located with good road access would be considered an asset to the community as the population expands.

The availability of facilities and services is a key factor in assuring the orderly growth of a community. The most important variables in anticipating facilities are population and development patterns. Future needs are based on expected growth. Monitoring of the growth process is necessary so facilities develop concurrently with growth. The Township is projected to grow to a population level of about 28,000 - 31,000 by the year 2000.

6-2 POLICE

According to the Hillsborough Township 1975 Master Plan, the Police Department was comprised of a chief, 1 lieutenant, 4 sergeants and 13 patrol officers. Nine

special officers assisted from time to time, a secretary-stenographer and a school crossing guard were also employed. The population in 1974 was estimated at 11,000.

By 1979, the Department had expanded to 28 officers, 13 special officers, 2 civilian dispatchers, and 1 secretary-stenographer, 2 part-time clerk typists, and a school crossing guard for a total of 47 positions. The population had grown to an estimated 19,000. The Police Department during these years was housed in a rented facility consisting of approximately 1300 square feet. Two trailers were added to make room for additional personnel and storage of equipment. As the Police Department expanded to provide the services required of a growing population, the need to relocate the Department to a larger facility became evident. Consideration had been given to a new municipal complex which would include the Police Department.

The Hillsborough Township Police Department was brought into a new era in 1991. The Department is now in a facility located within the new municipal complex. The population of the Township has grown and is currently estimated at 28,000. The Police Department consist of a chief, captain, 3 lieutenants, 6 sergeants, 27 officers, 6 dispatchers, 2 full time secretary-stenographers and 1 part-time secretary-clerk. Changes in New Jersey laws have limited the use of special officers for patrol duties. The 9 special officers are unarmed and duties are limited to crowd control.

Of the 27 officers, 2 are assigned as juvenile officers, 2 are assigned as detectives and 2 are assigned as D.A.R.E. officers. The remaining 21 officers, along with 4 sergeants perform the 24 hour, 7 days a week patrol functions. The remaining 2 sergeants and the traffic and training officers are assigned to administrative duties.

The Department has 11 marked patrol units, one of which is a 4-wheel drive traffic unit. There are 8 unmarked units and 1 motorcycle unit. All are radio equipped. The department is broken down into three divisions; Patrol, Investigative, and Services Divisions.

The Patrol Division provides for the day-to-day initial investigation of all incidents, traffic matters and public services.

The Investigative Division provides for detailed follow-up investigations, coordination of juvenile matters, investigation of permits and applications made by the public, custody of all evidence, and identification work.

The Services Division provides for the day-to-day logistical needs of the Department and its personnel.

The new police facility, located at the corner of Beekman Lane and Amwell Road, allows for an efficient operation. The communications center provides for dual dispatch positions. Much of the time two dispatchers are needed to handle the large volume of telephone and radio communications which exist. New radio equipment allows for dependable and clear communication with all police, rescue and fire units. Telephone and radio communications are monitored and recorded, allowing instant playback in case of emergency needs. Computerization has come to the Police Department; dispatchers input all calls for service as they are received.

The old facility required officers to seek out areas in which to interview and take complaints from the public. Officers of all ranks shared small cramped offices and were often asked to leave their offices to provide space for interviews or meetings. Prisoners presented a constant problem and were hard to isolate from the public. The new facility provides for detention cells, interview rooms, segregation of offices, as well as conference and training areas.

Police coverage continues to be provided 24 hours a day, 7 days a week throughout the approximate 54 square miles of the Township. The density of the population and traffic congestion have been the primary cause for the need to expand the Police Department. What did not exist in 1974 were the State mandates for enforcement of particular laws and for specific training. Some incidents which once took one officer under an hour to

resolve now require two and sometimes three officers to properly resolve the issue over a 1-2 hour period. These State mandates also apply to in service training requirements for all officers.

The future of Hillsborough Township's citizens, of utmost importance to the Police Department, is being addressed in the Drug Awareness Resistance and Education program known as D.A.R.E.. Two officers are assigned to this program. They work hand-in-hand with the Hillsborough Township school administration and students, providing for a close, open relationship between the students, starting at an early age, and the police.

The D.A.R.E. lessons focus on four major areas; providing accurate information about alcohol and drugs, teaching decision-making skills, showing how to resist peer pressure, and giving ideas for alternatives to drug use. This program can only enhance the future adult lives of these students.

The future needs of the department are as follows: addressing the continuing traffic and population issues by keeping pace with their growth through the patrol division; continuing and expanding the D.A.R.E. program, as well as providing more services in the area of juvenile intervention, expanding the Investigative Division to allow for further investigation of crimes, expanding the Services Division ability to handle and request for reports and copies, traffic/training, personnel changes, enforcement of traffic trouble areas, and specialized investigation of serious traffic accidents.

An expansion of the Police Department is anticipated with the continuing population growth. An average of 1.5 police officers per 1,000 population would result in a police force of 46 for an expected population of 31,000 people by the year 2000.

Plate 1, Public Facilities and Open Space Plan, designates specific locations for major public facilities. As a continuing theme on all the Plans, environmentally sensitive areas are to be protected and preserved. A prime example is the County's Sourland Mountain Park. Because of the sensitivity of the mountain, an expansion of the County Park will further advance the goals of protecting the watershed qualities and preventing development in a very environmentally sensitive area, while at the same time preserving open space. For the most part, environmentally sensitive areas have been avoided in the selection of sites for major facilities. Wherever possible, it is recommended recreation uses be included in these critical areas when convenient to residential developments. However, these areas should be kept free of major grading, buildings, and paved areas even if used for recreational purposes. In the more sensitive areas, the land can be an integral part of a project aesthetic and passive recreational purposes.

The Plan also contemplates continuation of the existing three fire stations with a fourth station proposed in the industrial area near or at the intersection of Hamilton Road and the Millstone By-Pass. This location will provide additional service to more spread-out development contemplated in the eastern portion of the Township. It will also locate this station at an important intersection giving convenient north/south and east/west access into other portions of the Township. With this fourth station, fire service remains evenly distributed with the stations located on major streets for good access in all directions to major areas of development.

6-4 SCHOOLS

The following tables and charts are provided by the Hillsborough Township Board of Education to show the 1992 status of the Township's school system.

The school system is comprised of six elementary schools, one middle school and one high school. These facilities are identified on Table 1, Comparison of School Facilities.

Table 2, School Enrollment Trends and accompanying Chart 1, School Enrollment, 1971-1991 provide student enrollment data for the 10 year period ending in 1991.

Even though there are large issues that will influence population movement, e.g., mass transit, fuel shortage, more rapid birth, a renewed interest in the cities, etc., the Township will continue to pursue proposed school sites to preserve its options. Such sites will be evaluated according to the standards of the New Jersey Department of Education including size, topography, accessibility, relationship to population being served, neighborhood characteristics, environment, safety, utility service, soil conditions, and potential for proper siting of the building on the property. The site sizes and capacities based on generally accepted guidelines are as follows:

<u>School</u>	<u>Site Size Guidelines</u>	<u>Capacity</u>
Elementary (K-5)	10 acres plus 1 acre/100 pupils	300-500 pupils
Middle (6-8)	20 acres plus pupils	750-1,000
High School (9-12)	30 acres plus 1 acre/100 pupils	1,000-1,200 pupils

TABLE 1

COMPARISON OF SCHOOL FACILITIES
Hillsborough Township
 1991

<u>School</u>	<u>Grades</u>	<u>Year Constructed</u>	<u>Additions</u>	<u>No. Classrooms</u>	<u>Site Area</u>
Amsterdam Hillsborough Sunnymeade	K - 5	1989-90	---	26	34 acres
	K - 5	1950-51	1956	30	12.7 acres
	K - 5	1959-60	1966	22	26 acres
			1989		
Triangle	K - 5	1962-63	1986	22	10.3 acres
			1989		
Woodfern	K - 5	1962-63	1986	16	12 acres
Woods Road	K - 5	1966-67	---	20	11.3 acres
Middle School	6 - 8	1975-76	1989	45	31.8 acres
High School	9 - 12	1969-70	1986	55	60.25 acres
<u>School</u>	<u>Special Facilities</u>	<u>Permanent Recreation Equipment</u>			
Amsterdam	Library, gym, cafeteria, music, art, computer lab	Multi-piece unit; 2 soccer fields; 2 baseball diamonds with backstops			
Hillsborough Sunnymeade	Library, gym, 2 cafeterias, art	Baseball diamond with backstop; asphalt basketball court			
	Library, gym, cafeteria, music, art, computer lab	Two multi-piece units; climber; slide; see saw; whirl; asphalt basketball court; baseball diamond with backstop			
Triangle	Library, gym, cafeteria, music, art, computer lab	Tire playground; jungle gym; multi-piece unit; asphalt play area; baseball diamond with backstop; funnel ball			
Woodfern	Gym, cafeteria	Two multi-piece units; climber; tire playground; asphalt basketball court; 2 asphalt play areas; baseball diamond backstop			
Woods Road	Library, multi-purpose room, music	Tire playground; asphalt basketball court; baseball diamond with backstop; sliding board; jungle gym; soccer field			
Middle School	Library, gym, cafeteria, vocal music, instrumental music, 2 art, 2 computer labs, industrial arts, home economics, 3 science rooms	Two soccer fields; 2 baseball diamonds with backstops			
High School	Library, 2 gyms, weight room, cafeteria, auditorium, vocal music, instrumental music, 2 art, 5 computer labs, 2 typing labs, business machine room, 2 home economics, 5 shops (art, metal, wood, drafting, graphic arts), field house	Track; 2 football fields; 2 baseball fields; 2 softball 6 tennis courts; 3 soccer/lacrosse fields; field hockey field			

Source: Board of Education
 Compiled by Joan Vilato
 March, 1992

SCHOOL ENROLLMENT TRENDS
September 30 Each Year

TABLE 2

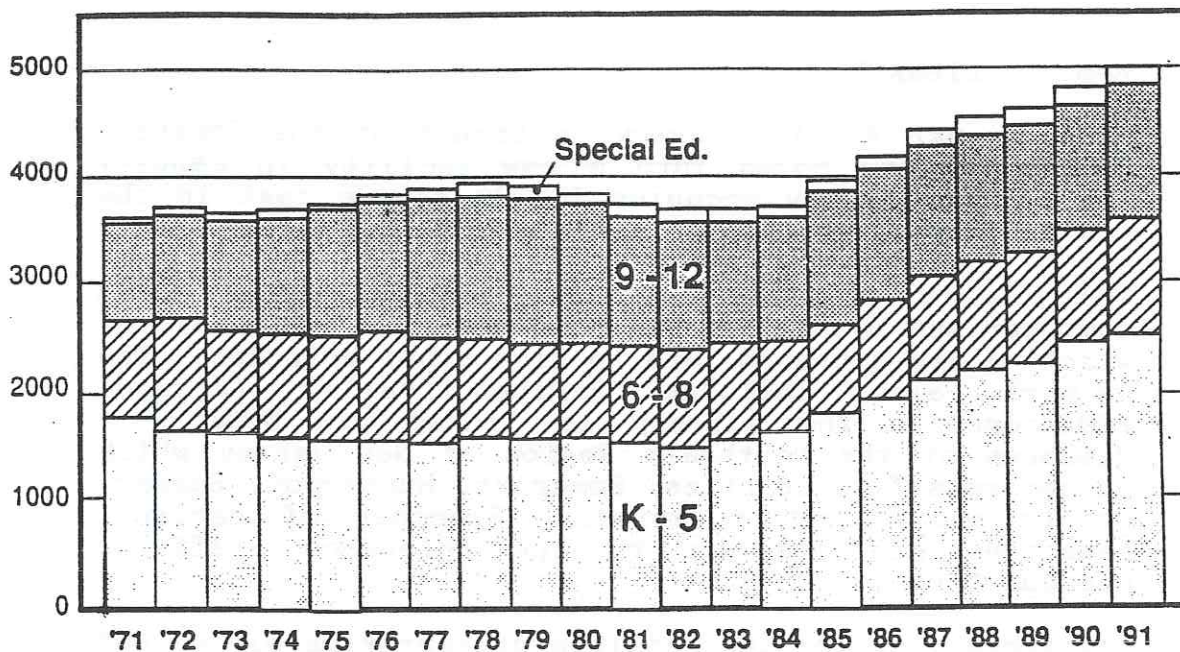
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
<u>Grade</u>	<u>-71</u>	<u>-72</u>	<u>-73</u>	<u>-74</u>	<u>-75</u>	<u>-76</u>	<u>-77</u>	<u>-78</u>	<u>-79</u>	<u>-80</u>	<u>-81</u>
K-5	1798	1755	1642	1612	1552	1518	1528	1513	1553	1556	1550
6-8	857	888	1011	938	987	978	1015	958	920	863	864
9-12	<u>*681</u>	<u>922</u>	<u>991</u>	<u>1041</u>	<u>1079</u>	<u>1171</u>	<u>1203</u>	<u>1313</u>	<u>1323</u>	<u>1349</u>	<u>1304</u>
SUB-TOTAL	3336	3565	3644	3591	3618	3667	3746	3784	3796	3778	3718
Spec.Ed.	<u>27</u>	<u>27</u>	<u>28</u>	<u>32</u>	<u>39</u>	<u>35</u>	<u>53</u>	<u>67</u>	<u>72</u>	<u>79</u>	<u>81</u>
TOTAL	3363	3592	3672	3623	3657	3702	3799	3851	3868	3857	3799
Percent Change		6.9%	2.2%	-1.3%	0.9%	1.2%	2.6%	1.4%	0.4%	-0.3	-1.5%

*Does not include grade 12

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<u>Grade</u>	<u>-82</u>	<u>-83</u>	<u>-84</u>	<u>-85</u>	<u>-86</u>	<u>-87</u>	<u>-88</u>	<u>-89</u>	<u>-90</u>	<u>-91</u>	<u>-92</u>
K-5	1510	1474	1534	1614	1764	1905	2072	2169	2231	2412	2502
6-8	877	898	880	831	824	908	960	995	1026	1028	1089
9-12	<u>1231</u>	<u>1193</u>	<u>1141</u>	<u>1172</u>	<u>1269</u>	<u>1242</u>	<u>1237</u>	<u>1205</u>	<u>1197</u>	<u>1201</u>	<u>1233</u>
SUB-TOTAL	3618	3565	3555	3617	3857	4055	4269	4369	4454	4641	4824
Spec.Ed.	<u>86</u>	<u>78</u>	<u>71</u>	<u>62</u>	<u>68</u>	<u>95</u>	<u>106</u>	<u>139</u>	<u>145</u>	<u>142</u>	<u>152</u>
TOTAL	3704	3643	3626	3679	3925	4150	4375	4508	4599	4783	4976
Percent Change	2.5%	-1.6%	-0.4%	1.5%	6.7%	5.7%	5.4%	3.0%	2.0%	4.0%	4.0%

Source: Board of Education
Compiled by Joan Vilato
March, 1992

CHART 1
SCHOOL ENROLLMENT - 1971 TO 1991



Source: Board of Education
Compiled by Joan Vilato
March, 1992

6-5 LIBRARY

Hillsborough Public Library, a branch of the Somerset County Library moved into a new facility in January 1991. The library occupies 18,000 square feet in the new municipal building.

The library is fully automated and is linked via a computerized system to the Somerset County Library, of which we are a branch, and to five other branches. The network also includes Raritan Valley College. Additionally, the library is linked via NUCILS, a database of the Northeast Region of New Jersey which encompasses five counties: Somerset, Hunterdon, Sussex, Morris and Warren counties. Searches of national databases are provided by the reference staff at headquarters library.

The library collection consists of approximately 65,000 volumes, 180 periodical subscriptions, 13 newspapers, 2500 video cassettes, and a collection of CD, LP, and audio cassettes which number approximately 15,000 items.

The staff consists of six full time and two part-time professional librarians, ten para-professionals and ten part-time shelvers. The library is open fifty-five hours per week: Monday, Friday and Saturday from 9:30 AM to 5:00 PM and Tuesday, Wednesday and Thursday from 9:30 AM to 9:00 PM. The facility is closed on Saturdays during July and August.

Two additional branch libraries are proposed in two of the designated shopping centers; one on Auten Road at its intersection with the proposed extension of Triangle Road, and the other in the shopping center on the re-aligned Hillsborough Road at the Millstone Bypass. The location of these libraries is intended to maximize the exposure of the library and expand the library facilities as the population grows. The selected shopping centers are intended to be neighborhood convenience facilities which provide the daily needs of families and are those most frequented. As a result, parking is convenient for both shoppers and library users and the location provides the

opportunity to visit the library without making the extra trip that would be necessary if the library were located on a separate site.

6-6 FIRE PROTECTION

A single fire district encompassing the entire Township was established in 1977. Five elected fire commissioners are responsible for administration and funding of the district. Four independent volunteer fire companies provide fire protection for the Township. Each company is responsible for fires in its response area as shown on Plate 2, Fire Response Areas. Two companies are dispatched for all daytime alarms due to a shortage of daytime volunteers.

Hillsborough Volunteer Fire Company #1 operates two pumpers, a field truck, and a 3,000 gallon tanker. The firehouse is located on Equator Avenue in Flagtown.

Hillsborough Volunteer Fire Company #2 operates two pumpers, a 65' ladder truck, a mini-pumper, a field truck, and a utility van. The firehouse is located on Route 206 near Hamilton Road.

Hillsborough Volunteer Fire Company #3 operates two pumpers, a field truck, a 3,500 gallon tanker, and a utility van. The firehouse is located on Woods Road. Neshanic Volunteer Fire Company operates two pumpers, a mini-pumper, a 3,500 gallon tanker, and a utility van. The firehouse is located on Maple Avenue in neighboring Branchburg Township. The fire company plans to build a substation in the future on property it owns at the intersection of Amwell and Long Hill Roads.

The fire district budgets money each year for operating expenses and replacement apparatus for Fire Companies 1, 2, and 3. The Neshanic Fire Company is under contract to serve this area.

Adequate water supplies for fire fighting remain a primary concern for all new construction.

6-7 EMERGENCY MEDICAL SERVICES

Emergency medical services in the Township are provided by the Hillsborough Rescue Squad. The Squad operates five basic life support ambulances, a four-wheel drive ambulance, a rescue truck, and a boat. Two volunteer night crews cover the 12 hour period starting at 6:00 PM each evening. Crew #1 operates out of the Amwell Road building and covers the western portion of the Township. Crew #2 responds from the Hamilton Road substation and covers the area east of the high school. The East Millstone and Manville Squads also cover small portions of the Township adjacent to their municipalities.

In 1988, faced with a critical shortage of daytime volunteers, the squad formed the Hillsborough Emergency Medical Services Corporation (HEMS Corp) which employs daytime Emergency Medical Teams. The paid HEMS Corp crew covers 6:00 a.m. to 6:00 p.m. seven days a week.

Twenty-four hour advanced life support is provided by hospital-affiliated Mobile Intensive Care Units (MICU) staffed by mobile intensive care nurses and/or paramedics. MICUs are available from Somerset Medical Center, Hunterdon Medical Center, and from Robert Wood Johnson University Hospital. Somerset Medical Center stations an MICU in Hillsborough during the 12 hour period starting at 7:00 a.m. each day.

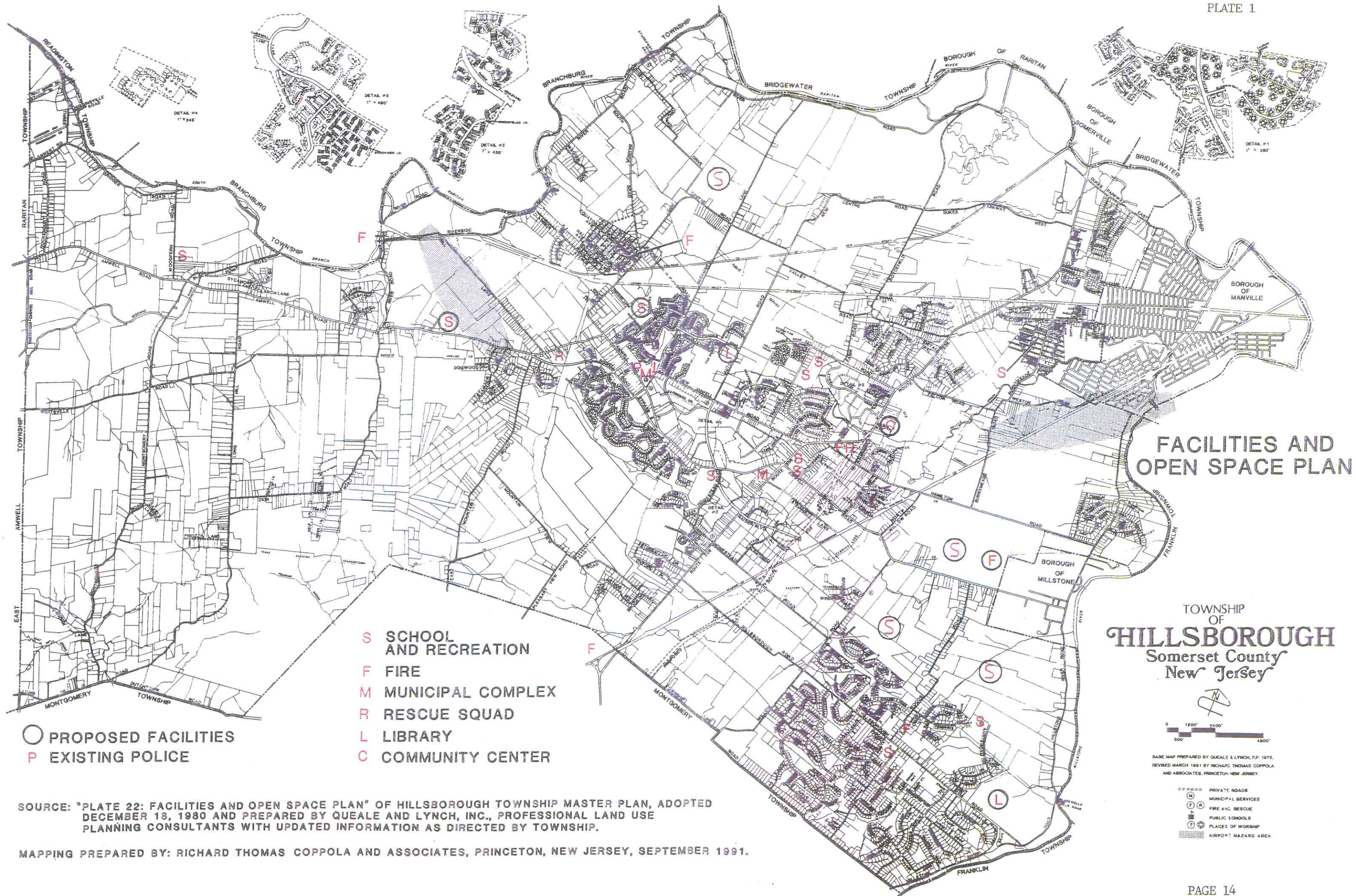
There is no direct tax support for emergency medical services. The Squad conducts mail fund drives in the spring and fall to raise operating funds. The Township committee provided emergency vehicles through the capital budget and also makes a cash contribution to the squad each year.

6-8 MUNICIPAL ADMINISTRATION

The Township is served by a municipal building, a garage located on a three acre site in Neshanic, and the Van der Veer House on Route 206 for the Hillsborough Municipal Utilities Authority and other meetings. The Township Department of Public Works now has a recently expanded garage and offices at the old

municipal building site. The department is currently in a period of transition from a maintenance operation to one of maintenance and construction for the periodic replacement and addition of equipment to be made.

Refuse collection in the Township is carried out by three private contractors who make arrangements with individual residents of the Township. The majority of refuse is disposed of outside the County.



SOURCE: "PLATE 22: FACILITIES AND OPEN SPACE PLAN" OF HILLSBOROUGH TOWNSHIP MASTER PLAN, ADOPTED DECEMBER 18, 1980 AND PREPARED BY QUEALE AND LYNCH, INC., PROFESSIONAL LAND USE PLANNING CONSULTANTS WITH UPDATED INFORMATION AS DIRECTED BY TOWNSHIP.

MAPPING PREPARED BY: RICHARD THOMAS COPPOLA AND ASSOCIATES, PRINCETON, NEW JERSEY, SEPTEMBER 1991.



RECREATION
PLAN ELEMENT
SECTION 7

RECREATION PLAN ELEMENT

TABLE OF CONTENTS

7-1	INTRODUCTION.....	1
7-2	RECREATION FACILITIES.....	1
7-3	COMMISSION RESPONSIBILITIES.....	3
7-4	FUTURE CONSIDERATIONS.....	3

PLATES

PLATE 1	FACILITIES AND OPEN SPACE PLAN.....	5
PLATE 2	SOURLAND MOUNTAIN PRESERVE.....	6

RECREATION PLAN ELEMENT

7-1 INTRODUCTION

Recreation requirements vary with population characteristics, but can be related to some generally accepted standards as outlined below. The need for more accessible areas to meet the total demands of children, young adults, adults, and senior citizens, while addressing the needs of the physically challenged individuals remains constant. For example, the use of the automobile has changed the manner in locating and designing park and recreation facilities. Since people generally have easy access outside their own neighborhood, extensive tracts of park land are often better provided by the State or County with more intensive recreation use provided at a local level.

Automobiles have also created a need to place facilities so they can be reached by younger children with minimum crossing of thoroughfares. The linking of recreational sites through a comprehensive system of sidewalks, bicycle, and jogging paths should allow full access without the use of automobiles and offer comparable community facilities within their respective neighborhood. This system should be integrated into the overall transportation network, especially in view of the need for energy conservation. The burden of providing these facilities should not only fall solely on the Municipality, but should be supplemented through private development.

7-2 RECREATION FACILITIES

The various components which are vital in making up a comprehensive recreational program within the Municipality are tot lots, general playgrounds, large recreational areas, such as parks, and passive areas utilized for picnicking, hiking, bike trails, and horseback riding areas. In addition to these, playing fields should be provided for activities such as baseball, football, track and field, field hockey and soccer. It is also important to develop areas that can provide tennis courts, along with basketball and

volleyball courts. The development of such recreational areas should not be at the expense of natural features such as wooded areas or existing streams or lakes.

Swimming facilities, golf courses and tennis courts for the general use of the population are becoming more prominent in community recreational programs. Ideally, these would be provided by a Municipality, but alternately, private development also results. A community center has also become a significant element in a broad comprehensive recreational program which would provide indoor activities and meeting space for the overall population of the community. A senior citizens club exists. It is partially funded by the Township, but is operated entirely by members of the club. These facilities can be supplemented through either State or County funding or private development. However, with regard to providing indoor courts, such as basketball courts, the utilization of the existing school gymnasiums can supplement this need for the short term. Plate 1, Facilities and Open Space Plan shows the proposed and existing recreational facilities in the Township.

There are a number of private recreational facilities in the Township. These include the Roycefield Swim Club, the Hillsborough Country Club, Falcon Club, and the Hillsborough Racquetball Club.

Passive recreation and reservation areas are proposed in the Sourland Mountain Preserve by the Somerset County Park Commission, Millstone River State Park, and the Confluence Reservoir proposed by the State of New Jersey. That portion of the proposed Sourland Mountain Preserve which is located in Hillsborough is shown on Plate 2, Sourland Mountain Preserve. The remainder of the Preserve is in Montgomery Township. Together these areas will total 1,600 acres. The Somerset County Park Commission should be encouraged to continue acquisition to enlarge the Sourland Mountain Preserve in view of the Sourland Mountain's environmental sensitivity. The Township should develop an independent program for open space acquisition and management around the perimeter of the park. Access is a primary concern and must be

limited to roads which can easily assimilate the traffic generated with little effect on neighboring properties.

7-3 COMMISSION RESPONSIBILITIES

The Recreation Commission of Hillsborough Township oversees the provision and administration of all recreational activities directly funded by the Municipality. The commission supplies a quarterly brochure outlining all upcoming recreational activities provided to the residents of Hillsborough Township. The commission also assists private sport organizations within the Municipality in obtaining recreational facilities which meet their specific needs. The recreational activities provided by the commission are year-round, participatory programs for residents of Hillsborough Township.

7-4 FUTURE CONSIDERATIONS

As development and expansion of the Township continues, recreational sites and facilities should be concurrently expanded so they are best located to continue to meet the demands of the community. Even though some sites will be developed privately, the trend within the community is for developers to dedicate recreational and open space areas to the Township. The future development of such sites, whether initially private or primarily designed for public usage, should have close review by, and coordination between, the Planning Board, Capital Planning Committee, Recreation Commission, Township Engineer, developers and adjoining municipalities.

Future recreational needs should be carefully reviewed and considered so that parcels are located within areas of need and accessible to all. Small, isolated parcels for recreational purposes have limited value and are not desirable. However, consideration should be given to the protection of flood plains, provision of buffers between residential neighborhoods, and the preservation of natural features of the community in the development of recreational areas and facilities. Land developed for public usage must be large enough to

provide a facility that can allow efficient maintenance, or no maintenance if landscaped properly. The development of narrow strips of publicly owned recreational sites is not desirable and should be discouraged.

Sites designated as open space or recreational sites which developers have dedicated to the Township should be properly cleared, graded, and stabilized by the developer and incorporated within the initial site planning stage of the proposed development.



TOWNSHIP
OF
HILLSBOROUGH
Somerset County
New Jersey

BASE MAP PREPARED BY QUEALE & LYNCH, P.F. 1973
REVISED MARCH 1991 BY RICHARD THOMAS COPPOLA
AND ASSOCIATES, PRINCETON, NEW JERSEY

	PRIVATE ROADS
	MUNICIPAL SERVICES
	FIRE AND RESCUE
	PUBLIC SCHOOLS
	PLACES OF WORSHIP
	AIRPORT HAZARD AREA

S SCHOOL
AND RECREATION

F FIRE

M MUNICIPAL COMPLEX

R RESCUE SQUAD

L LIBRARY

C COMMUNITY CENTER

SOURCE: "PLATE 22: FACILITIES AND OPEN SPACE PLAN" OF HILLSBOROUGH TOWNSHIP MASTER PLAN, ADOPTED DECEMBER 18, 1980 AND PREPARED BY QUEALE AND LYNCH, INC., PROFESSIONAL LAND USE PLANNING CONSULTANTS WITH UPDATED INFORMATION AS DIRECTED BY TOWNSHIP.

MAPPING PREPARED BY: RICHARD THOMAS COPPOLA AND ASSOCIATES, PRINCETON, NEW JERSEY, SEPTEMBER 1991.



CONSERVATION
PLAN ELEMENT
SECTION 8

CONSERVATION PLAN ELEMENT

TABLE OF CONTENTS

8-1	ENVIRONMENTAL ANALYSIS.....	1
	8-1.1 Topography.....	1
	8-1.2 Geology and Groundwater Hydrology.....	2
	8-1.3 Soils.....	3
	8-1.4 Critical Areas.....	4
	8-1.5 Surface Drainage and Flood Hazard Area....	5
	8-1.6 Wetlands.....	6
8-2	SELECTED REFERENCES.....	7

PLATES

PLATE 1	TOPOGRAPHY.....	13
PLATE 2	CRITICAL AREAS.....	14

CONSERVATION PLAN ELEMENT

8-1 ENVIRONMENTAL ANALYSIS

8-1.1 Topography and Slope

Topography refers to the lay of the land or the shape of the landscape. It includes land characteristics such as slope, relief or elevation, and land forms such as hills or flats. Slopes can affect the functioning of septic systems, the placement of roads, the cost of grading, and the construction of foundations for homes.

The Hillsborough Township Natural Resource Inventory defines slopes 2 to 6% as moderate; 6 to 12% severe; and over 12% as critical. Disturbance of slopes over 12% can cause accelerated erosion and sedimentation, increased runoff, and flooding. The steeper the slope, the greater the risk of runoff and erosion, particularly when combined with other factors such as geology, hydrology, vegetative cover, and soil characteristics.

When steep slopes are denuded of vegetation, adjacent bodies of water may be inundated with mud. The results are loss of water quality, diminished wildlife habitat, and lowered property values.

Plate 1, entitled Topography illustrates the general topography of Hillsborough using one hundred foot contours. The topography is for the most part flat to gently rolling with areas of steep slopes occurring along river banks, stream cuts, and in that section of the Township known as the Sourland Mountain.

In general, elevations range from 100 feet at stream corridors forming part of the Royce's Brook Watershed, to over 500 feet along the Sourland Mountain ridge. Here, the entire eastern face of the mountain has slopes that exceed 10%, with one-third greater than 20%.

There are also extensive areas of 10 to 20% slopes found between the Sourland Mountain and the Neshanic River, and in the area of Three Bridges and Hockenbury Roads.

In most of Hillsborough, slopes pose no difficulty for development. Slopes greater than 12%, however, should be considered environmentally sensitive, and should require special design review standards. Critical slopes greater than 18% should be left undeveloped or developed at a lowered density than the rest of the lands within the Township.

8-1.2 Geology and Groundwater Hydrology

Geological formations and processes are responsible for the landscape for the hills and valleys, for its flatlands and steep places. Geology also determines the amount of water available in the ground, how it is stored, how it is replaced, and how it is transmitted to the surface.

There are primarily three types of subsurface geological formations which serve as aquifers or sources of water in Hillsborough. They are: Brunswick shale, Lockatong argillite, diabase.

Approximately 82% of Hillsborough is underlain by Brunswick shale. Although shale has very little primary porosity, it is highly fractured which allows water to infiltrate into the formation and makes it one of the best aquifers in the region.

On the other hand, in terms of groundwater yield, the Sourland Mountain zone which comprises 18% of the Township is underlain by argillite and diabase, considered to be the poorest aquifer in the State. What little water is available is found in tightly compressed fractures and widely spaced joints.

Over the past decade, several important technical studies have been conducted which specifically address the problem of ground water availability, aquifer recharge, and well interference. These site specific

studies identify "safe water yields" in the Brunswick formation ranging from 110,000 to 250,000 gallons per day per square mile; and, 40,000 to 100,000 gallons per day per square mile in the argillite and diabase.¹

For planning purposes, however, a further concern involves the ability of the soils to safely treat septic disposal without degrading our groundwater resources. Using the so-called Douglas Nutrient Dilution Model, groundwater experts have calculated the amount of land area needed to safely dilute the nitrates in septic effluent, and at the same time provide sufficient quantities of water to meet the needs of local residents.²

Based on these studies, the recommended average lot size in the Brunswick shale should be 3 to 5 acres, and 5 to 12 acres in the argillite and diabase. The data makes it clear that where on-site septic systems and wells are used, the more limiting factor will be having sufficient land area to safely dilute sewage.

8-1.3 Soils

Soils refer to the surface layers of the ground which are influenced by weather and climate. Soils are classified according to their textures which are dependent on particle size.

The United States Department of Agriculture, Soil Conservation Service has mapped and identified all of the major soil types in Hillsborough Township. The soils are further defined by degree and kind of

1. "Managing Growth in Developing Communities, "Peter Pizor, 1982.

"Sourland Mountain Ground Water Management Report, "Robert Hordon, 1984.

"Hydrogeologic Study of Water-Well Failures in Argillite Bedrock, "Hugh Houghton, 1988.

2. "Septic Tank Density and Ground Water Contamination, "Marylynn Yates, 1985

"On-Site Waste Water Treatment, "Proceedings of the 4th National Symposium on Individual and Small Community Sewerage Systems, 1984.

limitation in the Somerset County Soil Survey. For development purposes this might include slope, depth to seasonal high water, depth to bedrock, erodibility, foundation problems, and septic field limitations.

While the generalized nature of the soils maps published by the Soil Service require site specific investigations to verify actual conditions, they are still sound indicators of the presence of broad development constraints.

Areas of seasonal high water are considered to be those areas where the water table fluctuates 0 to 4 feet from the surface over a period of at least twelve weeks during the early spring. The areas with high water table conditions are susceptible to ground water pollution because of the reduced filtration capacity of saturated soils. As a result, soils with a critical seasonal high water table 0 to 1 foot from the surface are given reduced credit in Hillsborough Development Code.

Depth to bedrock which is an important consideration in the placement of septic systems, foundations, and roads. The most serious problem for development occur where depth to bedrock is shallower than 3.5 feet. In areas where there is shallow depth to bedrock, and where the rocks are highly fractured there is the possibility of septic system effluent entering the groundwater supply.

8-1.4 Critical Areas

Plate 2, Critical Areas is a composite map which indicates those areas of Hillsborough Township where there are critically steep slopes as defined by the Natural Resource Inventory and shown on Plate 1; where there are areas of critical season high water; and where there are flood hazard areas as defined and mapped by the Federal Emergency Management Agency. Specifically, flood hazard areas within the 100-year floodplain boundary are lands which have a 1% chance of flooding in any given year, or which would be flooded in the size storm predicted to occur once in a 100-year period.

It is intended that this Critical Areas map be used as a reference in administering the density provisions of the Land Development Ordinances. On any given parcel, the permitted density would be reduced by that portion of the site which falls within critical areas. It would be the responsibility of the developer when an application is submitted, to provide the Planning Board or Board of Adjustment with definitive measurements of the "critical areas" on the property for which development approval is sought.

8-1.5 Surface Drainage and Flood Hazard Areas

Hillsborough Township lies primarily within the Upper Raritan Watershed Basin, a large drainage area that is made up of numerous sub-watersheds.

Within this area, the Federal Emergency Management Agency has mapped flood plains, flood ways, and flood hazard areas along all waterways and their tributaries. These include the Neshanic, the South Branch of the Raritan, the Millstone, and the Raritan Rivers. Development within the flood hazard areas is strictly controlled by the New Jersey Department of Environmental Protection. In addition, these areas are regulated by the local Municipality, by the County, and by agencies such as the D&R Canal Commission.

Development in flood hazard areas leads to increased runoff, reduction of flood storage capacity, increased size and frequency of flooding, stream bank erosion, downstream sedimentation, and the possibility of water pollution from flooded septic systems.

Headwater areas within the Township are also of concern. Headwaters are land areas which drain into ephemeral and intermittent streams. Ephemeral streams are those which carry water during and immediately following rain. Intermittent streams are defined as streams with a low flow of less than 0.1 cubic feet per second.

Incompatible development in headwater areas can have significant water quality impacts, both locally and

throughout the watershed. On the local level, development in headwater areas can result in contaminated runoff entering streams which have little or no capacity to assimilate the polluted runoff. In addition, the impervious cover associated with development can result in increased runoff and decreased ground water recharge a matter of great concern in Sourland Mountain where there are already existing ground water shortages.

8-1.6 Wetlands

Wetlands are those lands and water areas mapped by the U.S. Fish and Wildlife Service in the National Wetlands Inventory. Their mapping is based on the definition of wetlands given in the Freshwater Protection Act, NJSA 13:9B-1 et seq.

Wetlands are vital natural resources which provide flood control, recharge of aquifers, natural purification of waters, stabilization of stream flow, and habitats for a diversity of wildlife. Wetlands also act as sediment pollutant traps that remove excessive nutrients from water under certain conditions.

8-2 **SELECTED REFERENCES**

Topography and Slope

"Aerial Photo Interpretation in Classifying and Mapping Soils" (Agriculture Handbook 294). U.S. Department of Agriculture, Forest Service. U.S. Government Printing Office, Washington, D.C. 1966.

Avery, T.E. "Forester's Guide to Aerial Photo Interpretation" (Agriculture Handbook 308). U.S. Department of Agriculture, Forest Service. U.S. Government Printing Office, Washington, D.C. 1969.

Avery, T.E. "Photo Interpretation for Land Managers" (Kodak Publication M-76). Eastman Kodak Company, Rochester, NY 1970.

Barker, H.J. "Mapping Digest for New Jersey". (Bulletin 66). Bureau of Geology and Topography, N.J. Department of Environmental Protection, Trenton, N.J. 1965.

Blair, C.L. and B.V. Gutsell. The American Landscape. McGraw-Hill, New York, 1974.

Foster, G.R. and W.H. Wischmeier. 1973. Evaluating irregular slopes for soil loss prediction. Annual meeting, American Society of Agricultural Engineers. Paper no. 73-227. St. Joseph, Michigan.

Hamblin, W.K. and J.D. Howard. Physical Geology: Laboratory Manual. Burgess Publishing Company, Minneapolis. Minn. 1974.

Harper, D.P. "Atlas of Aerial Photography and Satellite Imagery" Bureau of Geology and Topography, N.J. Department of Environmental Protection, Trenton, N.J. 1977.

- Hotes, F.L., K.H. Ateshian, B. Sheikh. Comparative Costs of Erosion and Sediment Control, Construction Activities. EPA430/9-73016. U.S. Government Printing Office. Washington, D.C.
- Leopold, L.B. 1968. Hydrology for Urban Land Planning. Geological Survey Circular 554, U.S. Geological Survey, Washington, D.C.
- Lowdermilk, W.C. 1934. Accelerating of Erosion Above Geologic Norms. Transcript American Geophysical Union. 2:505-508.
- Meyer, L.D. and L.A. Kramer. 1969. Relation Between Land Slope and Soil. ASEA. Paper no. 68-749. Ag. Eng. 50 (9): 522-523.
- Snyder, J.P. The Mapping of New Jersey. Rutgers University Press, New Brunswick, N.J. 1973.
- Topographic Maps. US Geological Survey, Arlington, VA. 1969.
- U.S.D.A. Soil Survey Manual. U.S. Department of Agriculture Handbook 18.
- Way, D.S. Air Photo Interpretation for Land Planning. Douglas Way and Associates, 11 Muriel Road, Chelmsford, Mass. 1968.
- Way, D.S. Terrian Analysis: A Guide to Site Selection Using Aerial Photographic Interpretation. Dowden, Hutchinson and Ross, Inc., Stroudsburg, PA. 1973.
- Young, R.A. and C.K. Mutchler. 1969. Soil Movement On Irregular Slopes. Water Resource Research. 5 (5): 1084-1089.

Geology and Groundwater Hydrology

- "Groundwater Recharge Management Handbook" Lower Raritan/Middlesex County Water Resources Management Program. New Brunswick, N.J. 1981.

"Groundwater Contamination and the Delineation of a Well Restriction Area" N.J. Department of Environmental Protection, Trenton, N.J. 1987.

"Guidelines for Preparing Hydrogeologic Reports for Water-Allocation Permit Applications" N.J. Department of Environmental Protection, Division of Water Resources, Trenton, N.J. 1989.

Hordon, Robert, "Application of the Douglas-Trela Nutrient Dilution Model to the Non-Sewered Areas of Hillsborough Township, New Jersey" Rutgers University, New Brunswick, N.J. 1979.

Hordon, Robert, "Selected Groundwater Hydrology Figures" (Unpublished report, prepared for Montgomery Township Board of Adjustment, 7/15/85.)

"Hydrologic Study of Water-Well Failures in Argillite Bedrock of Sourland Mountain, Somerset County, New Jersey, in 1982" N.J. Department of Environmental Protection, Division of Water Resources, 1988.

Kasaback, Haig. "Geology and Groundwater Resources of Hunterdon County. N.J. Division of Water Policy and Supply, Special Report 24, Trenton, N.J. 1966.

National Water Summary 1988-89, New Jersey Floods and Droughts. U.S. Geological Survey, Trenton, N.J.

National Water Survey 1986 - New Jersey Ground-Water Quality. U.S. Geological Survey, Trenton, N.J.

National Water Summary - New Jersey Ground-Water Resources. U.S. Geological Survey, Trenton, N.J.

"New Jersey Well Head Protection Program Plan" N.J. Department of Environmental Protection, Trenton, N.J. 1991

Pendleton, J.A. "Hydrogeology of the Triassic Rocks of Mercer County, New Jersey" Department of Geological and Geophysical Sciences, Princeton, New Jersey, 1969.

- Post, Doug and H. Davis, Dr. H. Motto. "Environmental Water Quality Study Proposal" Prepared for Montgomery Township Planning Board, 1985.
- Schafer, W.M. "On-Site Waste Water Treatment" Proceedings of the Fourth National Symposium on Individual and Small Community Sewage Systems. New Orleans, LA. 1984.
- "Sourland Mountain Ground Water Management Report" MSM Regional Study Council, Princeton, N.J. 1984.
- Standards for the Construction of Individual Subsurface Sewage Disposal Systems, NJAC 7:9A.N.J. Department of Environmental Protection, Trenton, N.J. 1988.
- Surface Water Quality Standards, NJAC 7:9-4 and 9-5. N.J. Department of Environmental Protection, Trenton, N.J. 1985.
- "Two-Part Pump Test for Evaluating the Water Supply Capabilities of Domestic Wells" N.J. Department of Environmental Protection, Division of Water Resources, Trenton, N.J. 1986.
- Vecchioli, John and Louis Carswell, Haig Kasabach. "Occurrence and Movement of Ground Water in the Brunswick Shale at a Site Near Trenton, New Jersey" U.S. Geological Survey Paper no. 650-B. Trenton, N.J. 1969.
- "Water Trends in New Jersey Streams" U.S. Geological Survey Report no. 90-4046. Trenton, New Jersey. 1990.
- Water Resource Data, Water Year 1990, Vols. I and II. U.S. Geological Survey, Trenton, New Jersey.
- "Working Guide to the New Jersey Water Quality Management Planning Rules NJAC 7:15" N.J. Department of Environmental Protection, Trenton, N.J. 1990.
- Yates, Marylynn. "Septic Tank Density and Ground-Water Contamination" R.S. Kerr Environmental Research Laboratory, Ada, Oklahoma, 1986.

Soils

Soil Survey of Somerset County, New Jersey. U.S. Department of Agriculture, Soil Conservation Service, Somerset, N.J. 1976.

Tedrow, J.C.F. "New Jersey Soils" (Circular 601) New Jersey Agriculture Experiment Station, Cook College, Rutgers, New Brunswick, N.J. 1962.

United States Department of Agriculture Soil Survey Manual, U.S. Department of Agriculture, Washington, D.C. 1951.

Critical Areas

Goldshore, Lewis. "Municipal Options in the Enforcement of Environmental Law" ANJEC, Mendham, N.J. 1991.

Thurrow, Charles, William Toner and Duncan Erley. "Performance Controls for Sensitive Lands: A Practical Guide for Local Administrators" U.S.E.P.A., Washington, D.C.

Surface Drainage and Flood Hazard Areas

Federal Emergency Management Agency. Flood Boundary and Floodway Map, Township of Hillsborough, New Jersey, Federal Insurance Administration.

Flood Hazard Report no. 11, South Branch of the Raritan River. N.J. Department of Environmental Protection, Trenton, N.J. 1973.

Flood Hazard Report no. 2, The Raritan River. N.J. Department of Environmental Protection, Trenton, N.J. 1973.

Flood Hazard Report no. 12. The Millstone River. N.J. Department of Environmental Protection, Trenton, N.J. 1973.

Flood Hazard Report no. 4, Neshanic River-Third
Neshanic River. N.J. Department of Environmental
Protection, Trenton, N.J. 1973.

Leopold, L.B. Hydrology for Urban Land Planning.
Geological Survey, Circular 554. U.S. Geological
Survey, Trenton, N.J. 1968

Wetlands

"America's Wetlands: Our Vital Link Between Land and
Water" USEPA, Washington, D.C. 1989.

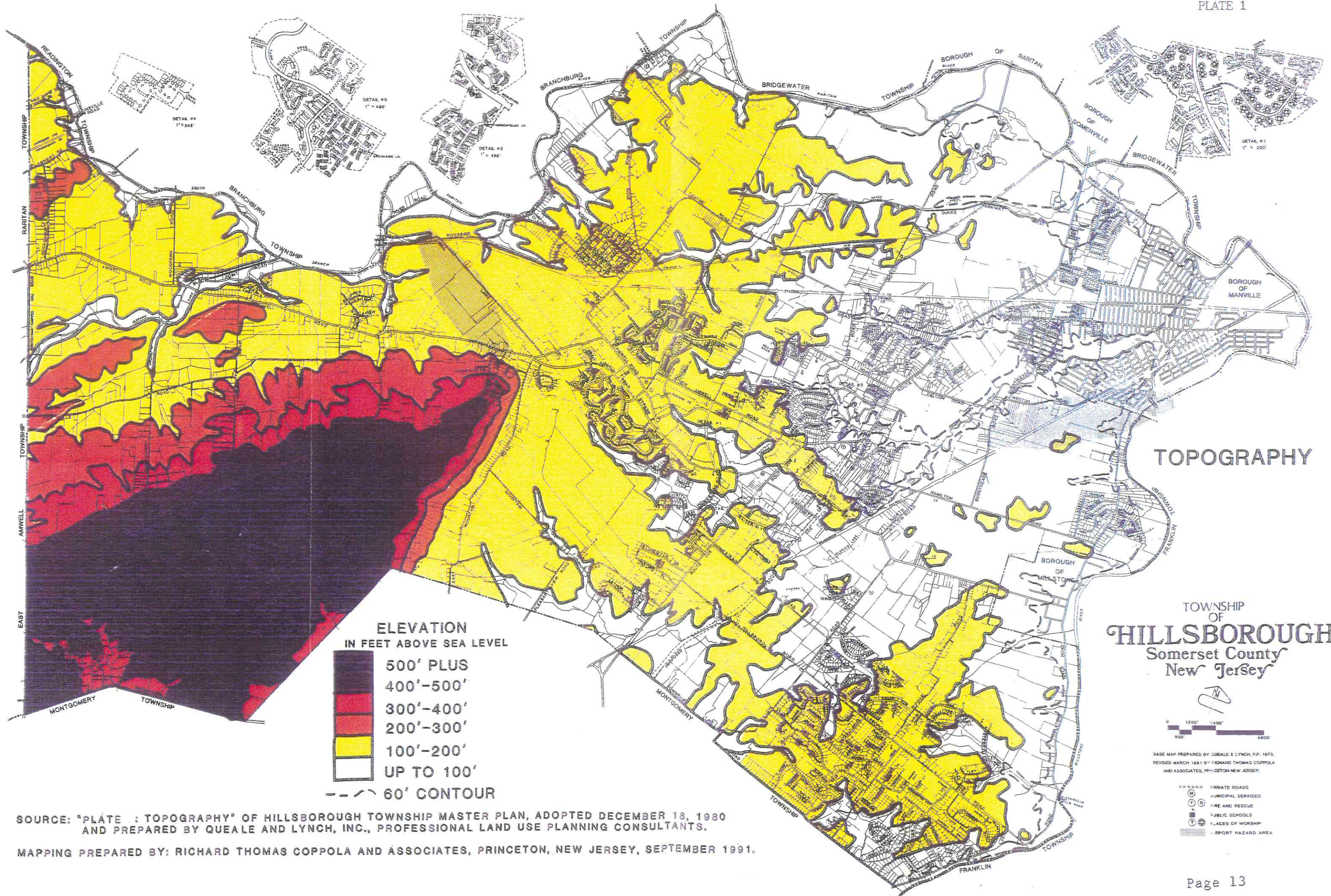
"Freshwater Wetlands Protection in New Jersey" ANJEC,
Mendham, N.J. 1989.

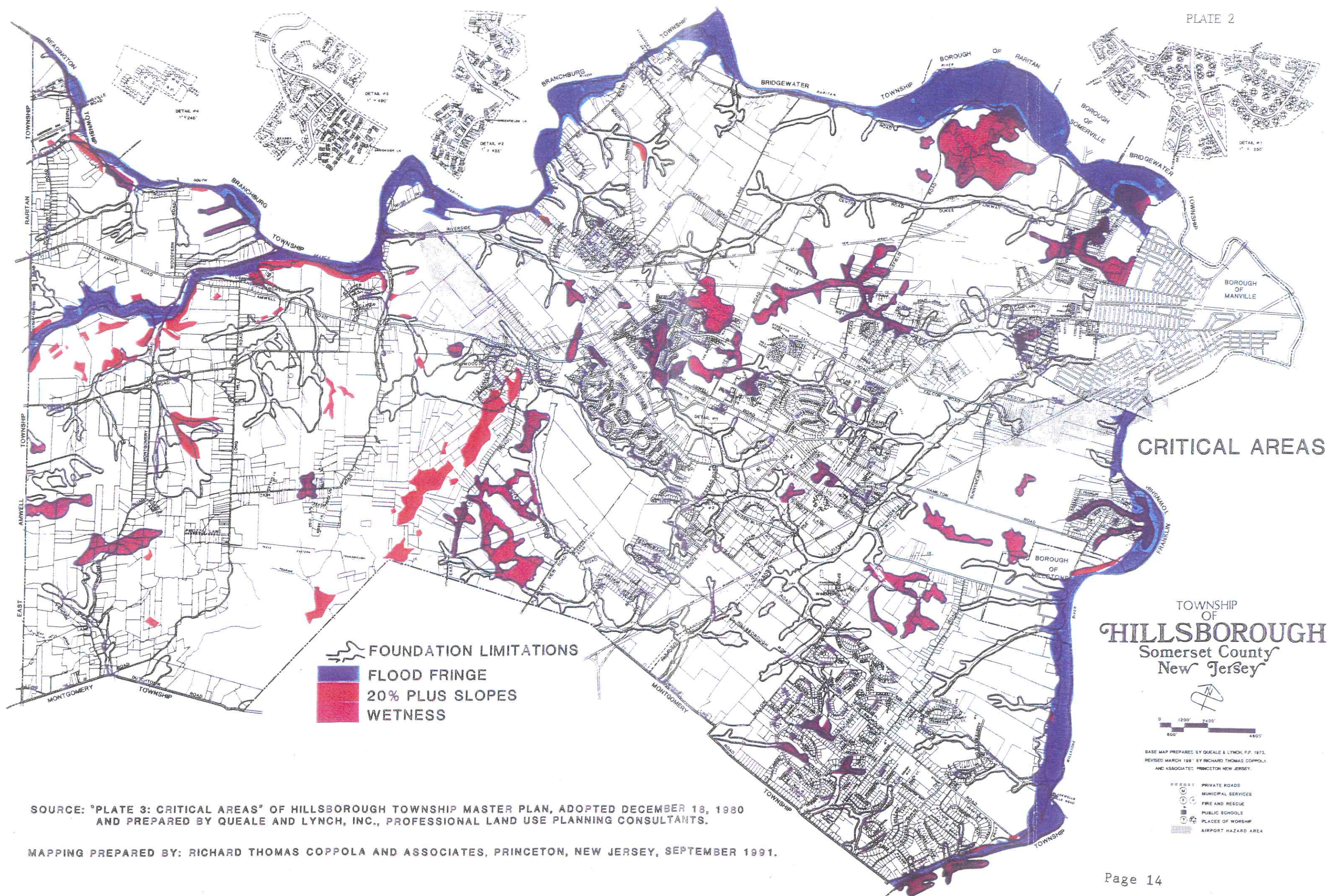
Lyons, Janet and Sandra Jordan. Walking the Wetlands.
Wiley Nature Editions, New York, N.Y. 1989.

Tiner, Ralph. Field Guide to Nontidal Wetland
Protection. U.S. Department of the Interior, Fish
and Wildlife Service, Washington, D.C. 1988.

Tiner, Ralph. Wetlands of New Jersey. U.S. Department
of the Interior, Fish and Wildlife Service,
Washington, D.C. 1985.

"Watershed Management Strategies for New Jersey" Cook
College, Department of Environmental Resources,
New Brunswick, N.J. 1989.





ECONOMIC
PLAN ELEMENT
SECTION 9

ECONOMIC PLAN ELEMENT

TABLE OF CONTENTS

9-1	INTRODUCTION.....	1
9-2	OBJECTIVES.....	1
9-3	FUTURE CONSIDERATIONS.....	2

ECONOMIC PLAN ELEMENT

9-1 INTRODUCTION

The purpose of the Economic Development Element is to focus on the non-residential development within the Township to bring about orderly and appropriate development which will be beneficial to the Township. This is accomplished by reviewing past and current conditions and projecting future scenarios.

9-2 OBJECTIVES

The goal of Economic Plan is to provide places of employment for a portion of the Township's population to ensure a vital and balanced growth of both residential and non-residential development within the Township. An objective of the Master Plan should be to provide for various types of non-residential development within the Township. Care should be taken to locate and balance such development within natural transportation corridors.

Recognition shall be given to the character of the surrounding area to encourage the least disruptive development within that area. Non-residential areas straddle the natural transportation corridors providing ease of ingress and egress from the designated areas. There are three existing transportation corridors in the Township, identified as the "Railroad Corridor" located in the northern portion of the Township, the "Route 206 Corridor" located through the central part of the Township; and the "Expressway Corridor" located in the eastern half of the Township. These are the "natural transportation corridors" along which the commercial base should be focused.

In general, the type of development for the three corridors are characterized as follows:

Railroad Corridor: Industrial, manufacturing, and warehouse related types of development are suitable for this corridor consistent with environmental constraints and compatible with the intent of the zones.

Route 206 Corridor: Retail/commercial and general office related types of development are suitable for this corridor since it is the primary traffic corridor within the Township.

Expressway Corridor: Campus-like offices, and corporate headquarters, and related types of development are suitable for this corridor and would be consistent with the open terrain and existing lower residential density of the surrounding area.

Care should be taken to take into account the existing character of surrounding development and natural topography of the corridors to minimize disruption from new commercial development.

9-3 FUTURE CONSIDERATIONS

Recognition should be given to the extraordinarily beautiful and intact tract of land known as the Duke Estate located in the northern portion of the Township. If this property ever becomes available for development, based upon rezoning should be dedicated to a high quality office headquarters park utilizing extensive amenities such as a golf course and other park-like settings.

HISTORIC PRESERVATION PLAN ELEMENT

TABLE OF CONTENTS

10-1	INTRODUCTION.....	1
10-2	MISSION STATEMENT.....	1

HISTORIC PRESERVATION PLAN ELEMENT

10-1 INTRODUCTION

Hillsborough Township's Historic Commission was formed in 1974 under an ordinance. In 1990 the ordinance was amended to comply with State mandates and the Historic Commission was renamed The Hillsborough Township Historic Preservation Commission.

Educational efforts to promote historic preservation are among the responsibilities established in the State law for historic preservation commissions, and indeed are of vital importance. Not only do they develop community awareness of historic preservation, but also serve to inform the owners of historically designated property of appropriate rehabilitation and restoration methods.

The Historic Preservation Commission recognizes that the past may be lost without future planning. Therefore, the Historic Sites survey shall be under continuous review and is one of the goals of the Hillsborough Township Historic Preservation Commission.

10-2 MISSION STATEMENT

The purpose of the Historic Preservation Commission is:

To safeguard and transmit to posterity the heritage of Hillsborough Township by preserving unified areas and single buildings and structures that reflect elements of the Township's cultural, social, economic and architectural history;

To maintain and develop an appropriate and harmonious setting for historic and architecturally significant buildings, structures and places within Hillsborough Township;

To promote the use of historic, architecturally and archaeological significant sites for the education, enjoyment and welfare of the citizens of Hillsborough Township and its visitors.

To achieve these goals the Historic Preservation Commission utilizes the following standards in accordance with the historic sites survey:

1. The distinguishing original qualities or character of a structure or site and its environment shall not be destroyed. The removal or alteration of any historical material or distinctive architectural features shall be avoided wherever possible.
2. Every reasonable effort shall be made to provide a compatible use for a property that requires minimal alteration of the structure or site and its environment, or to use a property for its originally intended purpose.
3. All buildings, structures, and sites shall be recognized as creations of an earlier time and hence worthy of preservation. Alterations which have no historical basis for an individual structure, but which seek to create an earlier appearance, shall be discouraged.
4. Changes which may have taken place in the course of time, to a building, structure, or site and its environment, are to be viewed as evidence of its history and subsequent development. These changes may have acquired significance in their own right, and this significance shall be recognized and respected.
5. Distinctive stylistic features or examples of skilled craftsmanship, which characterize a building, structure, or site, shall be recognized and respected.

6. Deteriorated architectural features shall be repaired, rather than replaced, wherever possible. In the event replacement is necessary, the new material should match the material being replaced in composition, design, color, texture, and other visual qualities. Repair or replacement of missing architectural features should be based on accurate duplications of features, substantiated by historical, physical, or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other buildings or structures.
7. The surface cleaning of structures, both interior and exterior, by the gentlest means possible in order not to damage the structural materials.
8. Every reasonable effort shall be made to protect and preserve archaeological resources affected by, or adjacent to, any acquisition, protection, stabilization, preservation, rehabilitation, restoration, or reconstruction project.
9. All applicants for development and/or permits concerning projects affecting designated historic sites, are required to submit relevant historical, documentary, and/or pictorial evidence to show that the proposed work is in conformity with the general standards as well as the specific guidelines and design criteria established by ordinance.
10. The Historic Preservation Commission of Hillsborough Township shall be the arbiter for all matters concerning buildings, structures or sites of historic significance.
11. Regarding rehabilitation projects, the Historic Preservation Commission adheres to the following standards:

- a) Present day design for alterations and additions to existing properties shall not be discouraged when such alterations and additions do not destroy significant historical, architectural, or cultural material and such design is compatible with the size, scale, color, material and character of the property, neighborhood, or environment.
- b) Whenever possible, new additions or alterations to structures shall be done in such a manner that if the additions or alterations were to be removed in the future, the essential form and integrity of the structure would be unimpaired and preserved.

RECYCLING
PLAN ELEMENT
SECTION 11

RECYCLING PLAN ELEMENT

TABLE OF CONTENTS

11-1	MANDATORY SOURCE SEPARATION AND RECYCLING.....	1
------	--	---

RECYCLING PLAN ELEMENT

11-1 MANDATORY SOURCE SEPARATION AND RECYCLING

Recognizing that recycling is a vital component in the protection of the environment and our existing natural resources and that the ever increasing cost of solid waste disposal, increasingly scarce sanitary land fill space and hauling costs exist, Hillsborough Township has embraced the recycling goals as adopted by the State of New Jersey.

Hillsborough Township adopted a recycling ordinance (Chapter 122) in 1986 in conformance with New Jersey law and thereafter amended the ordinance in conformance with the Somerset County Recycling amendment of December 1985, and P.L. 1987 Chapter 102. Hillsborough has subsequently amended the ordinance as needed to include additional materials to be recycled.

In Hillsborough Township it is mandatory for all owners, tenants or occupants of residences and commercial, industrial and institutional properties to separate for collection and recycling all materials as may be required by the ordinance.

Residential collection for both detached and condominium and apartment complexes is provided by contract with Somerset County. One day a month the township sponsors a central drop-off area at the old Sunnymeade Landfill for local businesses to recycle. The township also provides a central location drop-off at the Township Public Works facility for motor oil and provides for the collection of leaves for composting by local farmers in the Fall. Businesses also have the option to contract to recycle with their trash haulers.

The office of the Recycling Coordinator as outlined in township Ordinance Chapter 122, will continue to provide information to businesses and residents concerning all aspects of recycling, including collection schedules, changes in materials collected and recycled, and other changes in the program as they become necessary. It is anticipated that there will be increased public participation as the program expands, collection activities become more efficient and different kinds of materials are recycled.

APPENDICES AND SOURCES
SECTION 12

APPENDICES AND SOURCES

12-1 GOALS AND OBJECTIVES

Hillsborough Township Governing Body.

Hillsborough Township Master Plan, Adopted, 1965 (Part I).
Boorman and Dorram, Inc., Consultants.

Hillsborough Township Master Plan, Adopted, 1966. (Part II).
Boorman and Dorram, Inc., Consultants.

Hillsborough Township Master Plan, Amended 1975. Queale and
Lynch, Consultants.

Hillsborough Township Master Plan, Amended 1980. Queale and
Lynch, Consultants.

Hillsborough Township Master Plan, Amended 1984 - Corporate
Development Zone.

Hillsborough Township Master Plan, Amended 1986 and 1987 -
Housing Element Per Mount Laurel.

Hillsborough Township Master Plan, Amended 1990 - Land Use Plan
Element, Housing Plan Element, Circulation Plan Element and
Statement of Goals.

Hillsborough Township Zoning Board of Adjustment.

New Jersey State Development and Redevelopment Plan, Adopted
June 12, 1992. New Jersey State Planning Commission.

New Jersey Statutes Annotated, Municipal Land Use Law Chapter
291, Law of New Jersey 1975. Edition 1989. 40:55D-28b(1).

12-2 LAND USE PLAN ELEMENT

Hillsborough Township Land Use Regulations, 1991. General Code
Publishers Corp.

Hillsborough Township Ordinance 87-26. Air Safety and Hazardous Zoning. Adopted December 22, 1987.

Hillsborough Township Ordinance 89-6. Farmland Equity Preservation. Adopted April 25, 1989.

Hillsborough Township Ordinance 90-12. Home Occupation Office District (HOO). Adopted July 24, 1990.

Hillsborough Township Ordinance 90-14. Child Care Centers and Family Day Care. Adopted August 14, 1990.

Hillsborough Township Ordinance 91-6. Planned Adult Residential Retirement Community. Adopted June 25, 1991.

Hillsborough Township Zoning Map - Revised July 24, 1990.

Greenways Text and Plan, November 6, 1996.

12-3 HOUSING PLAN ELEMENT

Hillsborough Township Master Plan, Amended 1980. Queale and Lynch, Consultants.

12-4 CIRCULATION PLAN ELEMENT

Hillsborough Township Master Plan, Amended 1980. Queale and Lynch, Consultants.

Hillsborough Township Department of Engineering

Amsterdam Road Text, November 6, 1996.

12-5 UTILITY SERVICE PLAN ELEMENT

Hillsborough Township Master Plan, Amended 1980. Queale and Lynch, Consultants.

Hillsborough Township Municipal Utilities Authority.

12-6 COMMUNITY FACILITIES PLAN ELEMENT

Hillsborough Township Master Plan, Amended 1980. Queale and Lynch, Consultants.

Hillsborough Township Board of Education.

Hillsborough Township Bureau of Fire Prevention.

Hillsborough Township Police Department.

Hillsborough Township Public Library.

Hillsborough Township Recreation Commission.

Hillsborough Township Rescue Squad.

12-7 RECREATION PLAN ELEMENT

Hillsborough Township Recreation Commission.

12-8 CONSERVATION PLAN ELEMENT

"Aerial Photo Interpretation in Classifying and Mapping Soils" (Agriculture Handbook 294). U.S. Department of Agriculture, Forest Service. U.S. Government Printing Office, Washington, D.C. 1966.

"America's Wetlands: Our Vital Link Between Land and Water" USEPA, Washington, D.C. 1989.

Avery, T.E. "Forester's Guide to Aerial Photo Interpretation" (Agriculture Handbook 308). U.S. Department of Agriculture, Forest Service. U.S. Government Printing Office, Washington, D.C. 1969.

Avery, T.E. "Photo Interpretation for Land Managers" (Kodak Publication M-76). Eastman Kodak Company, Rochester, NY 1970.

Barker, H.J. "Mapping Digest for New Jersey". (Bulletin 66). Bureau of Geology and Topography, N.J. Department of Environmental Protection, Trenton, N.J. 1965.

Blair, C.L. and B.V. Gutsell. The American Landscape. McGraw-Hill, New York, 1974.

Federal Emergency Management Agency. Flood Boundary and Floodway Map, Township of Hillsborough, New Jersey, Federal Insurance Administration.

Flood Hazard Report no. 11, South Branch of the Raritan River. N.J. Department of Environmental Protection, Trenton, N.J. 1973.

Flood Hazard Report no. 2, The Raritan River. N.J. Department of Environmental Protection, Trenton, N.J. 1973.

Flood Hazard Report no. 4, Neshanic River-Third Neshanic River. N.J. Department of Environmental Protection, Trenton, N.J. 1973.

Flood Hazard Report no. 12. The Millstone River. N.J. Department of Environmental Protection, Trenton, N.J. 1973.

Foster, G.R. and W.H. Wischmeier. 1973. Evaluating irregular slopes for soil loss prediction. Annual meeting, American Society of Agricultural Engineers. Paper no. 73-227. St. Joseph, Michigan.

"Freshwater Wetlands Protection in New Jersey" ANJEC, Mendham, N.J. 1989.

Goldshore, Lewis. "Municipal Options in the Enforcement of Environmental Law" ANJEC, Mendham, N.J. 1991.

"Groundwater Contamination and the Delineation of a Well Restriction Area" N.J. Department of Environmental Protection, Trenton, N.J. 1987.

"Groundwater Recharge Management Handbook" Lower Raritan/Middlesex County Water Resources Management Program. New Brunswick, N.J. 1981.

"Guidelines for Preparing Hydrogeologic Reports for Water-Allocation Permit Applications" N.J. Department of Environmental Protection, Division of Water Resources, Trenton, N.J. 1989.

Hamblin, W.K. and J.D. Howard. Physical Geology: Laboratory Manual. Burgess Publishing Company, Minneapolis. Minn. 1974.

Harper, D.P. "Atlas of Aerial Photography and Satellite Imagery" Bureau of Geology and Topography, N.J. Department of Environmental Protection, Trenton, N.J. 1977.

Hillsborough Township Environmental Commission.

Hordon, Robert, "Application of the Douglas-Trela Nutrient Dilution Model to the Non-Sewered Areas of Hillsborough Township, New Jersey" Rutgers University, New Brunswick, N.J. 1979.

Hordon, Robert, "Selected Groundwater Hydrology Figures" (Unpublished report, prepared for Montgomery Township Board of Adjustment, 7/15/85.)

Hotes, F.L., K.H. Ateshian, B. Sheikh. Comparative Costs of Erosion and Sediment Control, Construction Activities. EPA430/9-73016. U.S. Government Printing Office. Washington, D.C.

"Hydrologic Study of Water-Well Failures in Argillite Bedrock of Sourland Mountain, Somerset County, New Jersey, in 1982" N.J. Department of Environmental Protection, Division of Water Resources, 1988.

Kasaback, Haig. "Geology and Groundwater Resources of Hunterdon County. N.J. Division of Water Policy and Supply, Special Report 24, Trenton, N.J. 1966.

Leopold, L.B. Hydrology for Urban Land Planning. Geological Survey, Circular 554. U.S. Geological Survey, Trenton, N.J. 1968

Leopold, L.B. 1968. Hydrology for Urban Land Planning. Geological Survey Circular 554, U.S. Geological Survey, Washington, D.C.

Lowdermilk, W.C. 1934. Accelerating of Erosion Above Geologic Norms. Transcript American Geophysical Union. 2:505-508.

Lyons, Janet and Sandra Jordan. Walking the Wetlands. Wiley Nature Editions, New York, N.Y. 1989.

Meyer, L.D. and L.A. Kramer. 1969. Relation Between Land Slope and Soil. ASEA. Paper no. 68-749. Ag. Eng. 50 (9): 522-523.

National Water Summary 1988-89, New Jersey Floods and Droughts. U.S. Geological Survey, Trenton, N.J.

National Water Summary - New Jersey Ground-Water Resources. U.S. Geological Survey, Trenton, N.J.

National Water Survey 1986 - New Jersey Ground-Water Quality. U.S. Geological Survey, Trenton, N.J.

"New Jersey Well Head Protection Program Plan" N.J. Department of Environmental Protection, Trenton, N.J. 1991

Pendleton, J.A. "Hydrogeology of the Triassic Rocks of Mercer County, New Jersey" Department of Geological and Geophysical Sciences, Princeton, New Jersey, 1969.

Post, Doug and H. Davis, Dr. H. Motto. "Environmental Water Quality Study Proposal" Prepared for Montgomery Township Planning Board, 1985.

Schafer, W.M. "On-Site Waste Water Treatment" Proceedings of the Fourth National Symposium on Individual and Small Community Sewage Systems. New Orleans, LA. 1984.

Snyder, J.P. The Mapping of New Jersey. Rutgers University Press, New Brunswick, N.J. 1973.

Soil Survey of Somerset County, New Jersey. U.S. Department of Agriculture, Soil Conservation Service, Somerset, N.J. 1976.

"Sourland Mountain Ground Water Management Report" MSM Regional Study Council, Princeton, N.J. 1984.

Standards for the Construction of Individual Subsurface Sewage Disposal Systems, NJAC 7:9A.N.J. Department of Environmental Protection, Trenton, N.J. 1988.

Surface Water Quality Standards, NJAC 7:9-4 and 9-5. N.J. Department of Environmental Protection, Trenton, N.J. 1985.

Tedrow, J.C.F. "New Jersey Soils" (Circular 601) New Jersey Agriculture Experiment Station, Cook College, Rutgers, New Brunswick, N.J. 1962.

Thurrow, Charles, William Toner and Duncan Erley. "Performance Controls for Sensitive Lands: A Practical Guide for Local Administrators" U.S.E.P.A., Washington, D.C.

Tiner, Ralph. Field Guide to Nontidal Wetland Protection. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 1988.

Tiner, Ralph. Wetlands of New Jersey. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 1985.

Topographic Maps. US Geological Survey, Arlington, VA. 1969.

"Two-Part Pump Test for Evaluating the Water Supply Capabilities of Domestic Wells" N.J. Department of Environmental Protection, Division of Water Resources, Trenton, N.J. 1986.

U.S.D.A. Soil Survey Manual. U.S. Department of Agriculture Handbook 18.

United States Department of Agriculture Soil Survey Manual, U.S. Department of Agriculture, Washington, D.C. 1951.

Vecchioli, John and Louis Carswell, Haig Kasabach. "Occurrence and Movement of Ground Water in the Brunswick Shale at a Site Near Trenton, New Jersey" U.S. Geological Survey Paper no. 650-B. Trenton, N.J. 1969.

Water Resource Data, Water Year 1990, Vols. I and II. U.S. Geological Survey, Trenton, New Jersey.

"Water Trends in New Jersey Streams" U.S. Geological Survey Report no. 90-4046. Trenton, New Jersey. 1990.

"Watershed Management Strategies for New Jersey" Cook College, Department of Environmental Resources, New Brunswick, N.J. 1989.

Way, D.S. Air Photo Interpretation for Land Planning. Douglas Way and Associates, 11 Muriel Road, Chelmsford, Mass. 1968.

Way, D.S. Terrian Analysis: A Guide to Site Selection Using Aerial Photographic Interpretation. Dowden, Hutchinson and Ross, Inc., Stroudsburg, PA. 1973.

"Working Guide to the New Jersey Water Quality Management Planning Rules NJAC 7:15" N.J. Department of Environmental Protection, Trenton, N.J. 1990.

Yates, Marylynn. "Septic Tank Density and Ground-Water Contamination" R.S. Kerr Environmental Research Laboratory, Ada, Oklahoma, 1986.

Young, R.A. and C.K. Mutchler. 1969. Soil Movement On Irregular Slopes. Water Resource Research. 5 (5): 1084-1089.

12-9 ECONOMIC PLAN ELEMENT

Hillsborough Township Industrial Commission.

12-10 HISTORIC PRESERVATION PLAN ELEMENT

Hillsborough Township Historic Preservation Commission.

12-11 RECYCLING PLAN ELEMENT

Hillsborough Township Department of Health.

NOTE: Public participation was encouraged and accepted as part of the process of amending the Master Plan. The public input was received between January 24, 1991 and the adoption of the amended Plan.

1992 PLANNING BOARD MEMBERS

THOMAS BATES, Chairman
SAM VAN NEST, Vice Chairman
PRESTON QUICK, Secretary
MAYOR PETER BIONDI
WILLIAM CARROLL
PETE MULLER
GARY SANTONASTASO
EILEEN STAFFORD (January to June)
HELEN HAINES (June through December)
PEG VAN PATTON
RICHARD NUNN, Alternate
GUY CUNNINGHAM, Alternate

PLANNING CONSULTANT: RICHARD COPPOLA AND ASSOCIATES

JUDI CASSIBA, PLANNING BOARD CLERK
IRENE RICCI, PLANNING BOARD CLERK

